

## PREFACE

This is the fifty-third edition of “Statistical Notes of Japan,” a series of which has been briefing statistical activities in Japan by highlighting recent topics of common interests among statisticians of all over the world.

The present edition includes the session papers presented by Japan at the 18<sup>th</sup> Voorburg Group Meeting on Service Statistics which was held in Tokyo (the Statistics Bureau of Japan, the Ministry of Internal Affairs and Communications) from 6 to 10 October, 2003. These papers were prepared on the topics such as progress reports, producer price indexes, information society, classification and turnover in service statistics.

We will be pleased if this publication is of any help to the readers’ future activities and the promotion of international cooperation in statistical areas.

Editor  
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Note: The Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) of the Japanese Government changed its English name to the Ministry of Internal Affairs and Communications (MIC), for its shortness and ease of understanding, as of 7 September 2004.

## **Progress Report From Japan**

Statistical Standards Department,  
Statistics Bureau,  
Ministry of Public Management, Home Affairs,  
Posts and Telecommunications,  
JAPAN

### **1. Classification of service activities and products**

#### **< Main achievements >**

- The eleventh revision of the Standard Industrial Classification for Japan(hereafter referred to as the “JSIC” ) was implemented in March 2002. After that, we disseminated the above new JSIC for the public as follows.
  - i ) Publication of the JSIC including general rules, structure, explanations and example of establishments, on the website of the Statistics Bureau (September 2002 )
  - ii ) Publication of the English version of the JSIC including general rules, structure and explanation (for 1 and 2 digit levels only), on the website of the Statistics Bureau (November 2002)
- In addition, we produced the following tools for the staff of the governmental statistical organizations.
  - i ) Retrieval system by keywords or type of business on the LAN shared with governmental organizations (March 2003)
  - ii ) Correspondence table of JSIC (11<sup>th</sup> revision) and ISIC (3<sup>rd</sup> revision) (March 2003)

### **2. Information Society statistics**

#### **< Main achievements and issues >**

- In order to respond the industrial and social changes caused by information technology (IT), in 2002, the “e-Japan Priority Plan-2002” was formulated, and a specialized review committee was established to study what the IT strategies should be in the future.
- In the governmental statistical services, there is a strong need to accurately respond to the systematic development of these IT-related statistics, and to develop such statistics that will serve as indicators for the measurement and evaluation of the state of progress in the development of IT. Reflecting this, there has been progress on the development of statistics that cover the IT providers and statistics that are related to the status of progress in the development of an IT infrastructure. However, it has been pointed out that there are some fields in which necessary basic data are lacking: data for an in-depth grasp of the actual state of IT-oriented development and IT-based electronic commerce (including

cross-border trading), and data on the analysis of the effects of IT-oriented development on the national life, society and economy.

- Furthermore, to strengthen the industrial competitiveness of our country, it is necessary to reinforce the policy on intellectual property rights. Consequently in the “Intellectual Property Policy Outline” (Strategic Council on Intellectual Property-July 2002), it has recently been noted that, in order to develop policies that respond promptly and accurately to users’ diverse intellectual property-related activities, statistical surveys related to intellectual property, which are the basis of the planning and designing of policies on intellectual property, shall be developed during fiscal 2002.

As a result, the Ministry of Economy, Trade and Industry (METI) has been implementing the survey on intellectual property activities since 2002 as a full-dress statistical survey on intellectual property.

#### **< Priorities and concrete measures >**

- In order to gain the basic data on the analysis of the effects of IT-oriented developments on the economy, in the area describes below, the Cabinet Office and ministries shall, on clarifying the shared role of the various statistical surveys, develop and strengthen existing statistical surveys, implement new surveys as necessary, and endeavor to ascertain the actual state of these areas:
  - i ) The actual state of services associated with the Internet, and services for creating and providing contents
  - ii ) Data for measuring capital services and the input of labor on a user basis (lease, dispatching workers, outsourcing, etc.)
  - iii ) The actual state of changes in human capital and corporate organizations
- In the area, in particular, of individuals and households using IT, the MPHPT shall develop and strengthen statistics in respect of security measures under the existing statistical surveys.

### **3. Statistics on non-profit activities**

#### **< Main achievements and issues >**

The activities of private non-profit organizations (NPOs) and of volunteer groups will have an increased importance in the economic activities in the future, and the development of statistics on these groups will become necessary. At present, the Cabinet Office maintains information on private non-profit activities on an annual basis through the Survey on the Private Non-Profit Institutions. However, because this survey relies on the name list of the Establishment and Enterprise Census to obtain population information, such bodies that have no establishments are not covered by this survey.

**< Priorities and concrete measures >**

With regard to the name list of the Establishment and Enterprise Census, which includes information of population for the “Survey on the Private Non-profit Institutions”, in order to develop and strengthen statistics on private non-profit activities or NPOs, the MPHPT shall, from fiscal 2003, develop information of population on private non-profit bodies such as NPOs, by utilizing administrative information concerning NPO.

**4. Statistics on services**

**< Main achievements and issues >**

- There are relatively many types of annual or periodic statistics, but as far as specific items (for example, gross output, etc) are concerned, some provide adequate coverage while others need refining, on the type of industry. Additionally, in monthly or quarterly statistics, few items have been measured, except in the Current Survey of Selected Industries (annual statistics are lacking in amount-based statistics in such areas as eating and drinking places, hotels, machine repair shops, etc. Furthermore, in monthly supply-side statistics, there are some areas not covered, such as broadcasting, waste disposal business, real estate brokerage, and lessons).
- Each local government holds data on public services (water and sewage, waste disposal, etc) for use in their own work, but when they are tabulated on the national basis, they are presented as an annual base and come out only at later date compared with other statistics.
- With regard to statistics for services, survey items related to the activity level (in amount-based and quantity-based items) are lacking in uniformity, thus often creating difficulty when making inter-industrial comparisons.
- Given the current situation characterized by the widespread emergence of service activities that arisen out of business diversification, it is important to measure economic activities in services on an activity basis (by type of activity). Statistical surveys that are implemented at present from these standpoints include the Survey on Services Industries and the Survey of Selected Services Industries. These surveys measure the percentage of sales from other businesses than those providing the main services aiming to measure the state of the services diversifications.

**< Priorities and concrete measures >**

- The supply-side statistics focusing on the Survey of Selected Service Industries, and the Current Survey of Selected Service Industries shall be developed and strengthened.
- With regard to public services, the Cabinet Office and ministries concerned shall make an effort to release annual statistics earlier, and shall study the further development of statistics taking into account the state of progress in computer processing of their work.
- With regard to basic statistical surveys, the Cabinet Office and ministries concerned shall

look into setting up common survey items ( number of employees, sales, revenues, etc.).

## **5. Short term indicators**

### **< Main achievements and issues >**

Since the first preliminary report for the April-June 2002 period was released on August 30, 2002, the preliminary report of the quarterly GDP (QE) has been shifted to a new method of estimation. Under the new method of estimation, which aims for a quick assessment of the economy, the release of the first preliminary report of QE has been accelerated by slightly less than one month. As a result, the first QE is released in the second month of the following quarter, with the second preliminary report of QE to be released in the following month. Furthermore, the basic statistics have been largely strengthened focusing on supply-side statistics in addition to the demand-side statistics that were used in the past.

### **< Priorities and concrete measures >**

With regard to the basic statistics used for the QE estimation, the Cabinet Office and ministries concerned shall endeavor to release these statistics earlier from fiscal 2003 by continuously improving the way in which the work is carried out, while considering the need to ensure the accuracy of statistics.

## Progress Report

Bank of Japan  
JAPAN

The Bank of Japan compiles three price indexes: the Corporate Goods Price Index (CGPI), the Corporate Service Price Index (CSPI), and the Input-Output Price Index of Manufacturing Industry by Sector (IOPI). After the Voorburg meeting at Nantes in 2002, we revised the Wholesale Price Index (WPI) from a 1995 base to a 2000 one, and renamed the WPI the CGPI in December 2002. Moreover, we also began the revision work of the CSPI from a 1995 base to 2000, and published the revision plan in May 2003.

### 1. Revision of the CGPI (former WPI) from the 1995 base to 2000 in December 2002

The revision is the largest ones in 20 years. On the BOJ website (<http://www.boj.or.jp/en/index.htm>) at the statistics corner, the explanation for this revision—known as the *Revision of the Corporate Goods Price Index* (CGPI, 2000 base)—is now available. The main points of the revision are as follows:

#### 1) Renaming the “Wholesale Price Index” the “Corporate Goods Price Index”

The name of the index has been changed from the “Wholesale Price Index” to the “Corporate Goods Price Index,” mainly because the percentage of prices surveyed at the production stage has been increased from that under the previous index. We have selected the name—the Corporate Goods Price Index—to better reflect the character of the index, which is focused on the prices of goods traded among companies, compared with the previous name, the “Wholesale Price Index.”

#### 2) Strengthening the Deflator Function—Minor Change in Principle of Stage for Price Survey

On the condition that the supply-demand conditions of transactions among companies are keenly reflected in the prices in both the wholesale and producer stages, we select the producer stage to increase its share on surveying the price data from the 2000 base index, while we select the wholesale stage on the current 1995 base index. This helps to strengthen the deflator function of this index.

### **3) Measures to Cope with the Diversification of Products and Their Prices**

#### **(1) Expansion of the Number of Price Data**

To cope with the diversification of products and their prices that reflect customized needs and that are accelerated by the development of information technology, the number of price data increased from 4,902 to 8,264 (as of October 2002).

#### **(2) Careful Adoption of Averaged Prices as Price Data**

Averaged price data (sales divided by sales quantities) are introduced within the bounds of ensuring constant quality. This is because, where transaction conditions are highly segmented, products are made-to-order, or actual prices are reflected in the rebate but not the nominal prices, it is hard to capture the true price development by surveying the nominal price data under strictly fixed conditions.

#### **(3) Change of Commodities to Reflect the Structural Changes in the Japanese Economy**

The selected commodities are changed to reflect the structural changes in the Japanese economy. The number of newly introduced commodities in the CGPI is 135; that of abolished commodities in the CGPI is 128. The total number of selected commodities in the CGPI is 1,407.<sup>1</sup>

#### **(4) Expansion of the Application of the Hedonic Regression Method**

The application of the hedonic regression method is further expanded for quality adjustment of servers (PC servers and UNIX servers) in the CGPI. This method was originally used for personal computers, mainframe computers, and magnetic disk alloys from the index of January 1990 on the 1990 base. From the index of January 2001 on the 1995 base, this method has been expanded to applications for video cameras and digital cameras, while abolished that for mainframe computers and magnetic disk alloys.

### **4) Introduction of Reference Index**

#### **(1) Introduction of the Chain-weighted Index as a Reference Index**

To supplement the weakness of the Laspeyres index, we introduce a chain-weighted index as a reference index. (The main index is the Laspeyres index.) Our chain-weighted index adopts the chain-weighted Laspeyres formula, which is the weighted arithmetic mean based on the chained value-based weights at upper classification levels (i.e., index compilation levels above the

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<sup>1</sup> “Commodities” are the indexes, which are at the lowest classification level, published as the index series of the CGPI.

commodity level), while it adopts the weighted geometric mean to compile the commodity index from sample prices (i.e., the first index compilation level).<sup>2</sup>

## **(2) Introduction of Index Excluding the Consumption Tax as a Reference Index**

To analyze the supply-demand conditions of the economy, we introduce the price index excluding the impact of the consumption tax, which was introduced in 1989 and raised in 1997, as a reference index.

## **5) Introduction of Preliminary Index and Change of Monthly Release Date**

To reduce the burden of reporting companies and also to improve the accuracy of the index, from the beginning of January 2003 we have changed the release date from the “sixth working day of the month after the index is compiled” to the “eighth or ninth working day of the month after the index is compiled” and have started to release the preliminary index of the CGPI in advance and revise it one month later.<sup>3</sup>

## **2. Revision of the CSPI from the 1995 Base to 2000 in Late 2004**

The revision plan is described in detail in the paper presented at the 18<sup>th</sup> Voorburg Group Meeting –Tokyo 2003, “Revision Plan of the Corporate Service Price Index (CSPI).” The main points of our revision plan are as follows:

### **1) Basic Strategy of the Revision**

Our basic strategy for the revision of the 2000 base CSPI is divided into three main points. First, by focusing on several sectors that are influenced by the recent structural changes in the economy, we will reorganize the items of the CSPI.<sup>4</sup> Second, to incorporate the diversification of services and their prices, we will conduct a wide review of sample prices, with the aim of grasping the reality of diversified price movements quickly and accurately.<sup>5</sup> Third, we will endeavor to reduce the reporting burden. For this purpose, if possible, we will use databases provided by private companies in collecting sample prices of some items.

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<sup>2</sup> “Sample prices” are the price data, which are collected from correspondent companies to compile the indexes at the classification level “commodity” of the CGPI.

<sup>3</sup> The release date of the CGPI is the “eighth working day of the month after the index is compiled,” except when the March and September preliminary indexes are released (i.e., when the periodic retroactive revisions of published indexes are implemented twice a year in April and October). The release date of the March and September preliminary indexes are the “ninth working day of the month after the index is compiled.”

<sup>4</sup> “Items” are the indexes, which are at the lowest classification level, published as the index series of the CSPI.

<sup>5</sup> “Sample prices” are the price data, which are collected from correspondent companies to compile the indexes at the classification level “item” of the CSPI.



## **2) Revision of Items**

In our revision plan, we plan to reorganize the CSPI items and focus on the sectors that have been influenced by the “IT revolution” and the accelerating deregulation of the past five years. Our priority is specifically given to reviewing six main groups: "information services," "communications," "overland freight transportation," "passenger transportation," "financial services," and "real estate rental."

## **3) Revision of Sample Prices**

There are four points to consider in the revision of sample prices. First, we will not only adopt new services and corresponding sample prices, but also review the services and corresponding sample prices already adopted in the 1995 base CSPI. Second, on the process of introducing new services and dividing items, we will increase the number of sample prices to maintain the CSPI accuracy. Third, in response to the diversification of prices, we will collect a wide range of discounted prices. Fourth, we will examine the further adoption of averaged prices within the bounds of ensuring constant quality as sample prices for several items.

**On Indirect Measurement Methods of Deposit and Loan Service Prices\***  
**- Using Published Interest Rate Data to Measure Deposit and Loan Services Prices,**  
**and Problems with this Method -**

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**Abstract**

One method of measuring the prices of deposit and loan services is to view the differentials between actual loan and deposit interest rates and appropriate “reference rates” as the “indirectly measured prices of deposit and loan services.” In fact, the ONS in the UK and the BLS in the US are considering the adoption of this type of estimation method for their measurements of deposit and loan services prices.

This paper reviews the prior research at the ONS and BLS, identifies the problem points, and examines the feasibility of using published interest rate data “of a constant quality” to indirectly measure deposit and loan services prices in Japan. The conclusions show: (1) published interest rate data that is indicative and “of a constant quality” is not available for certain lending rates; and (2) there are logical inconsistencies between the published-interest-rate-data-based method for measuring deposit and loan service prices which is examined in this paper and the input-output tables, which are presently utilized to determine the weights of individual service prices in the Corporate Service Price Index (CSPI). Consequently, the paper concludes that it would be difficult to incorporate indirectly measured deposit and loan service prices in the CSPI.

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## **1. Introduction**

One method of measuring the prices of the services that the banking industry creates via deposits and loans (hereafter referred to as “deposit and loan services”) is to view the differentials between actual loan and deposit interest rates and some sort of appropriate “reference rates” as the “indirectly measured prices of deposit and loan services.” In contrast with the conventional price index compilation method of directly surveying and aggregating the prices of goods and services, this approach may be referred to as an “indirect” deposit and loan services prices measurement method.

Bodies that compile statistics overseas have been considering the adoption of “indirectly measured deposit and loan services prices” in price indices as the prices of the services created by the banking industry. For example, at the 16th meeting of the Voorburg Group on Services Statistics held in September 2001, the UK Office for National Statistics (ONS) and the US Bureau of Labor Statistics (BLS) presented reports including the basic principle of “indirectly measured deposit and loan services prices,” and it seems that the measurement of deposit and loan service prices based on this approach is likely to spread.

The Bank of Japan prepares and releases a Corporate Service Price Index (CSPI) which tracks the prices of services traded among corporations. At present, the CSPI only covers the prices of those banking industry services – such as various transaction fees – that are explicitly collected. In other words, the CSPI only tracks the prices of those banking industry services that can be directly measured. Because of this, the conceptual approach and means of measuring the prices of those deposit and loan services that banking industry apparently charge for indirectly is presently an outstanding issue for the CSPI compilation, and the idea of taking the differentials between actual loan and deposit interest rates and some sort of appropriate “reference rates” as “indirectly measured deposit and loan services prices” may present the direction for one possible solution. If the prices of those deposit and loan services that banking industry apparently charge for indirectly can be grasped and measured in this manner, and then combined with the fees for banking services that are explicitly collected, the overall prices of banking industry services could then be measured in a broader manner.

Accordingly, this paper provides an overview of the prior research conducted at the ONS and BLS, identifies the differences between these two bodies of research and the problem points, and then examines if this approach could be used, at the practical level, to actually measure deposit

and loan services prices in Japan, as well as the potential implications from this for the compilation of the CSPI. To clarify the key issues, this paper focuses solely on the prices of the “indirectly measured” deposit and loan services, and does not give any consideration to transaction fees and other banking services whose prices can be directly measured.

The remainder of this paper is structured as follows. Chapter 2 presents the background to the approach of measuring banking services prices as the differential between actual deposit and loan interest rates and some sort of appropriate “reference rates.” Chapter 3 reviews the prior research by the ONS in the UK and the BLS in the US on indirect deposit and loan services prices measurement methods, and examines their merits and demerits. Based on this, Chapter 4 examines the specific means whereby an indirect method of measuring the prices of deposit and loan services would be applied in Japan, as well as the availability of the basic data required under this approach. Chapter 5 considers the implications of adopting this method for the compilation of the CSPI, and estimates the prices of deposit and loan services to private-sector corporations and to the public sector in Japan using the basic data that is actually available. Based on the results of this trial estimation, Chapter 6 presents the problems with using this indirect method to measure the prices of deposit and loan services in Japan. Chapter 7 then considers the feasibility of incorporating the indirectly measured prices into the CSPI, and Chapter 8 reviews the findings and presents the conclusions.

## **2. Relationship between Services Production Prices and the Indirectly Measured Prices of Deposit and Loan Services**

As a start, this chapter reviews the background to the approach whereby the differential between actual loan and deposit interest rates and some sort of appropriate “reference rates” may be viewed as the “indirectly measured prices of deposit and loan services.”

We begin with deposits. Let us assume that a given economic entity can manage its funds on the financial market and receive the “reference rate,” but chooses to deposit these funds in a bank instead, even though the bank pays a deposit interest rate that is less than the “reference rate.” Here, one may assume that while the economic entity chooses to sacrifice the differential between the two rates, it does receive some other kind of economic benefit equivalent to this by maintaining the bank deposit. In such cases, the economic benefit that the entity receives from holding the bank deposit may be viewed as a service that is consumed by the entity and produced

by the bank. Under these circumstances, the differential between the deposit interest rate and the “reference rate” may be considered as the price of this service that is produced by the bank.

The logic for the pricing of loan services is essentially the same. A given economic entity can procure funds from the financial market at a “reference rate,” but chooses instead to borrow from a bank at a higher rate. Presumably, the entity chooses to borrow from the bank at a higher cost because it receives some sort of economic benefit from bank borrowing that is equivalent to the differential between the two rates. Here again, this economic benefit may be viewed as a service that is consumed by the entity and produced by the bank, and the differential between the two rates may be viewed as the price of this service that is produced by the bank.

This summarizes the background behind the concept of viewing the differential between actual loan and deposit interest rates and some sort of “reference rates” as the indirectly measured prices of deposit and loan services.”

Because the interest rates that depositors receive from banks are equal to those that the banks pay, and because the interest rates paid by bank borrowers are the same as those received by the banks, the differential between the “reference rate” and the interest rate paid by the banks is the same as the differential between the “reference rate” and the interest rate received by depositors. Similarly, the differential between the “reference rate” and the interest rate the banks receive from borrowers is the same as the differential between the “reference rate” and the interest rate paid by the borrowers. These are all assumptions for measuring the prices of deposit and loan services from the side of the banks, which are the service providers.

### **3. Methods for Measuring the Prices of Deposit and Loan Services Considered by the ONS and the BLS**

At the 16th meeting of the Voorburg Group on Services Statistics held in September 2001, the UK Office for National Statistics (ONS) and the US Bureau of Labor Statistics (BLS) presented reports concerning methods of measuring the prices of deposit and loan services. Based on those reports, this chapter reviews the proposed measurement methods and considers the problems with them.

#### **3.1 Regarding the ONS Method for Measuring the Prices of Deposit and Loan Services**

While the ONS examinations of means of measuring the prices of deposit and loan services are

still in their initial stages, they are based on the “Financial Intermediation Services Indirectly Measured (FISIM)” concept put forth in the System of National Accounts 1993 (93SNA) and are being considered as a measurement and allocation method by Eurostat and other organizations. FISIM aims at measuring the value of services produced by financial intermediaries based on the differentials between the total interest receivable and the total interest payable, and then posting these as the consumption expenditures of each institutional sector.<sup>1</sup>

Tables 1 and 2 present an outline of the ONS method for measuring deposit and loan service prices, using the Eurostat FISIM measurement and allocation approaches as a reference. The essence of the ONS method, which is based on the Eurostat FISIM measurement method<sup>2</sup>, is as follows: (1) given the actual rate of interest receivable that is used for the calculation of the FISIM deflator, the actual rate of interest payable and the reference rate, the differential between the actual rate of interest receivable and the reference rate is viewed as the price of the loan services provided, while the differential between the reference rate and the actual rate of interest payable paid is viewed the price of the deposit services provided; and (2) the actual rate of interest receivable and the actual rate of interest payable are calculated as the total amount of interest receivable / loans outstanding and as the total amount of interest payable / deposits outstanding, respectively (hereafter, these are referred to as “computed interest rates”).

For convenience, the ONS measurement method as summarized above is hereafter referred to as the “FISIM-based method” to measuring deposit and loan service prices. Let us now review the problems with this FISIM-based method.

First, let us consider item (1), above, whereby the differential between the the actual rate of interest receivable used for the calculation of the FISIM deflator and the “reference rate” is viewed as price of the loan services provided, and the differential between the reference rate and the actual rate of interest payable is viewed the price of the deposit services provided.

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<sup>1</sup> The nominal value of services produced under the Eurostat FISIM method is not necessarily equal to that under the 93SNA FISIM. This is because of the differences between the Eurostat and 93SNA equations defining FISIM nominal production value, and in the ranges of financial assets and liabilities measured.(See Ohmori[2003] for details).

<sup>2</sup> The Eurostat FISIM calculation equation is “total amount of interest receivable – total amount of interest payable – {(loans outstanding – deposits outstanding) × reference rate}.” This can be rewritten as “{loans outstanding × (the actual rate of interest receivable – reference rate)} + {deposits outstanding × (reference rate – the actual rate of interest payable).” In this case, the actual rate of interest receivable is the total amount of interest receivable / loans outstanding, and the total amount of interest payable / deposits outstanding (Nakayama [2001]).

The concept of measuring the prices of loan and deposit services based on the differentials between “reference rates” and “computed interest rates” used for the calculation of the FISIM deflator is itself theoretically consistent with the SNA.

However, for the “loan services prices” and “deposit services prices” (as measured based on the differentials between the “computed interest rates” and the “reference rates”) to be consistent with the “price measures” concept of the SNA, these loan and deposit services must be homogenous at the aggregated level. In this regard, Ohmori[2003] criticizes the ONS measurement method because (1) it does not reflect the differences in the distinct categories of deposit and loan functions provided as part of financial intermediaries’ actual economic activities, or the qualitative differences in the services that they provide; and (2) it does not adequately reflect the compound settlement and financial intermediary functions provided by financial intermediaries. For these reasons, when the differential between the the actual rate of interest receivable used for the calculation of the FISIM deflator and the “reference rate” is viewed as the price of loan services, and the differential between the “reference rate” and the actual rate of interest payable is viewed as the price of the deposit services, doubts must remain as to whether or not these prices accurately measure the value of the distinct categories of deposit and loan functions provided in the context of the financial intermediaries’ actual economic activities.

The next item (2), which is a more practical issue, concerns the use of “computed interest rates” whereby the actual rate of interest receivable and the actual rate of interest payable calculated as the total amount of interest receivable / loans outstanding and as the total amount of interest payable / deposits outstanding, respectively.

When these equations are adopted, the service prices can be calculated fairly easily whenever data are available for both end-of-the-period deposits and loans outstanding and for the total amounts of interest receivable and payable over the course of the current period . Regardless, there are still certain problems with the use of “computed interest rates.”

In general, the interest receivable and payable during any given period includes interest generated from deposits and loans that were accumulated prior to that period. This is also true for the deposits and loans outstanding. In other words, the “computed interest rates” are calculated using the stock-based data of deposits and loans outstanding (which incorporate deposits and loans accumulated prior to the period in question), as well as interest receivable and interest payable that is generated, in part, from deposits and loans that were accumulated prior to the

current period.<sup>3</sup> Because of this, the selection of the “reference rates” presents various problems.

For example, let us consider the case where the interest rate on the financial market suddenly rises (or falls) during the current period. In such cases, there is a high probability that the “computed interest rates” will significantly lag behind the financial market changes. Considering this, if interbank and other financial market interest rates<sup>4</sup> are adopted as the “reference rates,” and if the prices of deposit and loan services are calculated as the differentials between these rates and the “computed interest rates,” there is a high likelihood that a bias will emerge whereby during periods of rising financial market interest rates, the prices of loan services will be underestimated (and the prices of deposit services will be overestimated), and conversely, during periods of falling financial market interest rates, the prices of loan services will be overestimated (and the prices of deposit services will be underestimated).<sup>5</sup>

To summarize, the issues with the ONS “FISIM-based method” to measuring deposit and loan service prices are: (1) when the differential between the actual rate of interest receivable used for the calculation of the FISIM deflator and the “reference rate” is viewed as the price of loan services, and the differential between the “reference rate” and the actual rate of interest payable is viewed as the price of the deposit services, doubts must remain as to whether or not these prices accurately measure the value of the distinct categories of deposit and loan functions provided in the context of the financial intermediaries’ actual economic activities; and (2) since “computed interest rates” derived from stock-based data are used to measure the prices of deposit and loan services, when financial market interest rates are used as the “reference rates,” there is a high likelihood that a bias will emerge whereby during periods of rising financial market interest rates, the prices of loan services will be underestimated (and the prices of deposit services will be overestimated), and conversely, during periods of falling financial market interest rates, the prices of loan services will be overestimated (and the prices of deposit services will be underestimated).

### 3.2 Regarding the BLS Method for Measuring the Prices of Deposit and Loan Services

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<sup>3</sup> In cases like this, some sort of deflator would normally be required to calculate the loans and deposits outstanding in real terms, and determining the correct type of deflator is problematic.

<sup>4</sup> The use of such rates as “reference rates” has been proposed by Eurostat (see Table 1).

<sup>5</sup> This problem could be mitigated by using the mid-rate between the interest rate payable (= average deposit interest rate) and the interest rate receivable (= average lending rate) as the “reference rate” since the computations would then no longer utilize financial market interest rate data.



The BLS examinations of means of measuring the prices of deposit and loan services are far more detailed than those conducted to date by the ONS, and the BLS report includes explanations using specific calculation examples. The BLS method is outlined in Tables 3-4, and may be summarized as follows: (1) a user cost approach<sup>6</sup> is introduced for measuring the prices of deposit and loan services: (2) the deposits and loans are broken down by type and term of service to levels where they are “homogenous”; (3) within each of these homogenous categories, the measurement is made on deposit and loan rates that are deemed to be indicative; (4) the prices of the deposit and loan services are calculated as the differential between these measured rates and a “reference rate”: (5) a single interest rate is used as the “reference rate” for all categories of deposits and loans (the BLS proposes the use of the official discount rate, the federal funds rate, or a weighted average of the interest rates on all banks’ securities holdings as this “reference rate”); and (6) “computed interest rates” are used for the measured indicative deposit and loan rates, with the computed rates calculated based on their average balances, total interest payable, and total interest receivable.

Unlike the ONS FISIM-based method, the BLS method of measuring the prices of deposit and loan services is based on the theoretical framework presented in Fixler and Zieschang[1992,1998] of applying a user cost approach to the measurement of deposit and loan services prices. Under the user cost approach, the deposit and financial services produced are viewed as the financial output<sup>7</sup> -- that is, as the amounts by which the actual rate of interest receivable is greater than the “reference rate” and by which the “reference rate” is greater than the actual rate of interest payable – and therefore these are the differentials that are measured. For convenience, the BLS measurement method is hereafter referred to as the “User-Cost-Approach-based method(UCA-based method)” to measuring deposit and loan service prices.

Let us begin our examinations of this UCA-based method by reviewing items (1) to (4), above. The BLS method measures the price of services as the differential between “computed interest rates” and some sort of “reference rate,” and is similar to the ONS FISIM-based method in this respect. However, different deposit and loan services are presumed under the BLS and ONS methods.<sup>8</sup>

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<sup>6</sup> See Hancock[1985] for the theoretical framework of the user cost approach.

<sup>7</sup> In this paper, the terms “financial output” and “financial input” follow Ohmori and Nakajima[2000].

<sup>8</sup> See Ohmori[2003] for further details regarding this point.

The BLS method breaks down the deposit and loan rates to distinct categories of a homogenous level,<sup>9</sup> and then measures representative deposit and loan rates within each homogenous category. In other words, the BLS method considers the contents of the services generated by the banking industry via deposits and loans to be qualitatively different in each category. In contrast, as noted above, the ONS FISIM-based method views all loans and all deposits as homogenous services at the aggregated level.

So the BLS and ONS approaches take different viewpoints toward the contents of the services generated by financial intermediaries via deposits and loans. On the whole, the BLS method may be considered as more desirable considering the compound settlement and financial intermediary functions provided by financial intermediaries.

The next issue is item (5), whereby a single “reference rate” is used for each category of deposits and loans.

The use of a single rate may be an effort to eliminate an arbitrary selection of the “reference rate,” which is often a problem with the user cost approach,<sup>10</sup> and this may also be based on the concept that lending and borrowing rates are theoretically identical when there are no financial intermediaries.

In practical terms, there is no great necessity for adopting the same “reference rate” for all deposits and loans. For example, when a distinction is made between short-term and long-term loans, it may be inappropriate to use the official discount rate or the federal funds rate as the “reference rate” for long-term corporate loans.

One of the merits of adopting a user cost approach for the indirect measurement of the prices of deposit and loan services is that the most appropriate “reference rates” can be used based on the qualitative differences among individual financial assets and liabilities. Of course, it is important to avoid arbitrariness in the selection of the “reference rates,” but some doubts must also remain concerning the BLS “reference rate,” which has such a great effect on the service price results.

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<sup>9</sup> Regardless, for loans some doubt remains as to whether the classification reaches a level that satisfies the “constant quality” condition, given the categorization into mortgage loans, agricultural loans, commercial loans and consumer loans. In particular, the BLS report does not explain how the principle of “constant quality” can be maintained for commercial loans. Given the differences in financial systems and financial markets, this issue is not examined in any great detail here.

<sup>10</sup> See Appendix 1 for the problems with applying the user cost approach to measuring deposit

Turning to item (6), like the ONS method, the BLS method uses “computed interest rates” for the interest rates payable and the interest rates receivable. The user cost approach assumes that in the process of funds management and procurement, banks, depositors and lenders conclude contracts at the beginning of each period stipulating the amounts of financial assets and liabilities and the interest rates. So, the theoretical basis is that the banks, depositors and lenders make decisions at the beginning of each period on whether or not to maintain the balances of their financial assets and liabilities (that were accumulated in the past) or to rearrange these portfolios, and these decisions are what determines payment and receipt of user costs on each financial asset and liability. However, as pointed out in Chapter 3.1 above, when prices are measured on a stock-based data, there is a high likelihood that a bias will emerge as a result of the time lag between the changes in the financial market interest rates, which are used to calculate the “reference rate”, and the “computed interest rates.”

To review, the BLS “UCA-based method” to measuring the prices of deposit and loan services provides many highly instructive points, considering the compound settlement and financial intermediary functions provided by financial intermediaries, and how they produce distinct categories of deposit and loan services. Regardless, two problems with the BLS method must be noted: (1) only one interest rate is used as the “reference rate,” and this rate is used for both deposits and loans; and (2) while the services prices are measured on a stock-based data, the “reference rate” is based on financial market interest rates at the current period.

#### **4. Using Published Interest Rate Data to indirectly measure Deposit and Loan Services**

As noted in Chapter 3, the ONS and BLS methods for measuring the prices of deposit and loan services measure different contents. So we need to clarify the position on exactly which service contents should be measured for deposit and loan services prices.

This paper takes the position that our understanding and measurement of financial intermediaries’ economic activities should be in accordance with “the actual conditions,” that the banking industry has a compound nature in providing both settlement and financial intermediation functions, and that there are qualitative differences among the distinct deposit and lending services that the banking industry provides. Accordingly, the BLS method can be used as

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and loan services prices.

a reference basis for arranging an indirect means of measuring the prices of deposit and loan services. Yet, as noted above, the BLS has the bias problem created by measuring the deposit and loan service prices on a stock-based data while using financial market interest rates at a current period as the “reference rate.”

It should be possible to improve the BLS method to more accurately determine deposit and loan service prices by adopting some sort of flow-based interest rate data (or some “reference rate” equivalent to this) in place of the “computed interest rates,” which are derived from deposits outstanding, loans outstanding, and the total amounts of interest payable and interest receivable.<sup>11</sup> This chapter examines this idea in greater detail.

#### 4.1 The Interest Rate Data User Cost Approach Concept

In Japan, data is published on all sorts of financial market interest rates, and on deposit and lending rates. If this type of data can be used at the sub-categorized level for deposit and lending rates in place of “computed interest rates,” it should then be possible to combine published deposit and lending rate data with appropriate “reference rates” to measure the prices of deposit and loan services. For convenience and comparison with the BLS method, hereafter this is called the “published-interest-rate-data-based method(PIRD-based method)” to measuring the prices of deposit and loan services.

In general, published interest rate data of deposits and loans are figures that are applied to transactions for a given period, and thus the time lag before they reflect financial market interest rate movements is relatively brief compared with “computed interest rates.” This means that the time lag bias, which is one of the problems with the BLS method, can be resolved relatively easily.

Tables 5-6 present a simple summary of this PIRD-based method to measuring the prices of deposit and loan services.

Like the BLS method, the basic concept is (1) to introduce the user cost approach to the measurement of deposit and loan services prices, (2) to break down the deposit and loan rates as much as possible by type and term of service into distinct categories of a homogenous level, (3) to then measure representative deposit and lending rates within each homogenous category, and

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<sup>11</sup> The BLS method also has the practical clerical problem of requiring interest payable and interest receivable data corresponding to each financial asset and liability.

(4) to calculate the prices of the deposit and loan services as the differentials between these measured rates and “reference rates.” (5) Unlike the BLS method (which uses a single “reference rate”), different interest rates would be adopted as the most appropriate “reference rate” for each of the distinct homogenous categories, and finally (6) published interest rate data of deposits and loans would be used as the deposit and lending rate being measured. In other words, rather than calculating the prices of deposit and loan services using “computed interest rates” derived from stock-based data, the prices of deposit and loan services would be calculated using flow interest rate data that is applied to actual market transactions over a certain period of time. The following section now examines the availability of such interest rate data at the distinct homogenous categories level that would satisfy the “constant quality” condition.

#### 4.1.1 Regarding Deposit Interest Rates

In general, deposits are categorized by the type, amount, and term. If interest rate data were available at this subcategorized level, it could be viewed as meeting the “constant quality” condition. Here, in keeping with the definitions under the Flow of Funds Statistics, deposits are broadly divided into transferable deposits and time and saving deposits.

Starting with transferable deposits, under the Flow of Funds Statistics definitions, transferable deposits are deposits with indefinite deposit term and which are used primarily for settlements. They include current deposits, ordinary deposits, savings deposits, deposits at notice, special deposits, and deposits for tax payments (Research and Statistics Department The Bank of Japan [2002]).

Current deposits bear no interest, and special deposits may also be viewed as non-interest bearing. The Bank of Japan releases weekly interest rate data for ordinary deposits and savings deposits, and monthly rates could be computed as the monthly means. However, there is no data available showing the interest rates on deposits at notice and deposits for tax payments .

Turning to time and saving deposits, these are deposits from which withdrawals can be made with certain restrictions, and which are primarily used for savings. They include time deposits, installment savings, and resident’ yen deposits with overseas financial institutions (Research and Statistics Department The Bank of Japan [2002]).<sup>12</sup>

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<sup>12</sup> Under the Flow of Funds definitions, these also include all postal savings that include ordinary savings.

Among these, the resident' yen deposits with overseas financial institutions can be excluded since the purpose here is to measure the prices of domestic banking industry services. The Bank of Japan releases weekly interest rate data on installment savings by deposit term. The Bank of Japan also releases monthly time deposits rate data by amount and deposit term. These figures could all be used to compile monthly data.

To summarize, for deposits, in many cases interest rate data is available at a level that essentially meets the “constant quality” condition, so basic data for measuring the prices of deposit services can be obtained relatively easily.

#### 4.2.2 Regarding Lending Rates

The Bank of Japan releases the following lending rate data: the short-term prime lending rate (city bank basis) and the long-term prime lending rate (fixed interest basis), which are primarily applied for corporate loans; housing loan rates (city bank basis, variable rate), which is for loans to individuals; and the average contracted interest rates on loans and discounts (new loans, stock basis), which is for loans to both corporations and individuals. Compared with deposits, there are few “typical” loan transactions, and lending rates appear to be set in accordance with individual transaction conditions (repayment period, collateral, credit rating, etc.), funds procurement costs, the prime lending rate and other interest rate level indicators. Thus, the loan rates vary by individual contract, and there is no uniform “lending rate” (Bank of Japan[1994]). Because of this, the average contracted interest rates on loans and discounts (new loans, stock basis), which is weighted based on the balance of loans outstanding at each lending rate, cannot be said to meet the “constant quality” condition.

Then, is there any indicative lending rate that would meet the “constant quality” condition? Let us shift our attention to the short-term and long-term prime lending rates, which seem likely candidates as rates of “constant quality.”

The short-term prime lending rate is the rate given on short-term loans to borrowers with the highest credit ratings. Similarly, the long-term prime lending rate is the rate given on long-term loans by financial institutions that specialize in long-term financing to borrowers with the highest credit ratings. Both the short and long-term prime lending rates may be considered as meeting the “constant quality” condition, at least in terms of the borrower risk, in that they are only applied on loans to borrowers with the highest credit ratings.

The next issue is the extent to which the short and long-term prime lending rates are indicative lending rates. The very meaning of the “prime” rate is that it is the most preferential rate, only offered to borrowers with the highest credit ratings. In usual practice, the prime is the lowest loan rate offered and spreads are then added on top of it, and thus the average contracted interest rates on new loans and discounts should always hold above the prime rate. Let us then confirm this by comparing the short and long-term prime lending rates with the average contracted interest rates on loans and discounts (new loans, stock basis).<sup>13</sup>

Chart 1 presents the short-term prime lending rate, the average contracted interest rates on new loans and discounts (short-term), the long-term prime lending rate, and the average contracted interest rates on new loans and discounts (long-term). The figure shows how the average contracted interest rates on new loans and discounts (short-term) remains somewhat above the short-term prime lending rate. The short-term average contracted interest rates on new loans and discounts is said to be a type of “spread lending” and to include a spread over the market interest rate in accordance with the level of borrower risk (Bank of Japan[1994]), and as far as Figure 1 indicates we may interpret the overall movements of the short-term average contracted interest rates on new loans and discounts as having the short-term prime lending rate as its lowest limit.

In contrast, Chart 1 also shows that the average contracted interest rate on new loans and discounts (long-term) generally holds below the long-term prime rate. Moreover, the figure shows that during periods when the prime rate rises this is not always necessarily accompanied by a following rise in the long-term average contracted interest rate. This implies that in comparison with the short-term prime lending rate (which is generally indicative of short-term lending rates) the long-term prime lending rate may not be strongly indicative of long-term lending rates. One reason for this is that the long-term prime lending rate is fixed at 0.9% above the coupon rate on five-year interest-bearing bank debentures (public offerings). Consequently at financial institutions that do not issue five-year interest-bearing bank debentures, the incentive for using the long-term prime lending rate as a standard for setting long-term lending rates is weak, and when such financial institutions provide long-term loans and discounts, they frequently set their rates considering their own funds procurement structures and lending terms, with variable

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<sup>13</sup> The average contracted interest rates on new loans and discounts was compiled on a All Banks basis from April 1990 through December 1993, and has been compiled on a domestically licensed banks basis since January 1994.

rates set as a spread above the short-term prime lending rate and fixed rates set based on (yen-yen) interest rate swap. Additionally the average term of these financial institutions' long-term loans and discounts is frequently shorter than that at the financial institutions that do provide long-term loans and discounts at the long-term prime lending rate (Bank of Japan[1994]). And this is why, as shown in Chart 2, the average contracted interest rate on new loans and discounts (long-term) generally holds below the long-term prime lending rate.

Despite all this, as explained above, the short and long-term prime lending rate are the only available interest rate data that fulfill the “constant quality” condition. So, even though the long-term prime lending rate is less than ideal as an indicative long-term lending rates, we must now adopt both prime lending rates for calculating the prices of loan services.

Next we need to examine the lending services to individuals. For housing loans, the Bank of Japan releases interest rate data on city bank variable rate housing loans, and the individual banks also announce their housing loan rates, so the interest rate data can be calculated from these public materials. While the Bank of Japan does not release interest rate data on non-housing personal loans, the individual banks do publicize their rates for all types of personal loans, and this information can be compiled for the interest rate data.

The next question is whether the personal loan rate data meet the “constant quality” condition. While a definitive answer to this will require further research, the housing and other personal loan rates presented by each bank are believed to be the most preferential rates offered to their best customers, and in this sense there is a high probability that they do meet the “constant quality” condition. We then need to consider what types of rates can be deemed “indicative” for housing loans and other personal loans based on such data as the relative weights of loans with various balances outstanding. This is an important issue together with the “constant quality” requirement.

## **5. Estimating Deposit and Loan Services Price Indices for Private Corporations and the Local Governments**

Chapter 4 presented the interest rate data user cost concept for calculating the prices of deposit and loan services, and reviewed the various interest rate data that would be available for use. In this chapter, the statistical data that is presently publicly released is used for actual calculations of deposit and loan services price indices. Considering the implications, mostly for the CSPI, the



range of this trial calculation is limited to private corporations<sup>14</sup> and to the local governments.

## 5.1 Outline of the Estimation

### 5.1.1 Range of Prices Measured, Estimation Period, Base Year, and Handling of Negative Service Prices

For deposits, considering the availability of interest rate data, the amounts of new transactions, the outstanding balances and other factors, the prices are measured on current deposits, special deposits, ordinary deposits, time deposits, and Certificates of Deposit (CDs). For loans, since the data required to separate short-term and long-term loans is not available, the measurement is on the total of all loans.

The estimation period is set from October 1987 through December 2002 considering the period for which the data are available. The base year is set as the year 2000, and indices are prepared on both fixed weight and weighted arithmetic mean bases.

In cases where the differentials between the “reference rates” and the deposit or lending rates are negative, that is, in cases with “negative service prices,” the price of the concerned deposit or loan service is taken as zero.

### 5.1.2. Weights

As for the weights used for aggregating the individual deposit and loan services prices, two patterns are adopted: (1) the annual average outstanding basis (for deposits this is the annual average of the monthly average outstanding for each type of deposit, and for loans this is the annual average of the outstanding balances as of the end of each month [hereafter referred to as the “annual average loan outstanding”])<sup>15</sup>, and (2) a mixed weight basis (for current deposits and special deposits only, the daily receipt amount is calculated as the total amount of new receipts per year divided by 365; for all other deposits and loans the amounts are on an annual average outstanding basis [Table 7 presents the data used for calculating the weights and Table 8 presents

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<sup>14</sup> Here, “private corporations” is calculated by “Loans and Discounts(Amounts Outstanding) - (“outstanding for Overseas Yen loans” + “outstanding for financial institutions” + “outstanding for owner-occupied dwellings”).

<sup>15</sup> The annual average outstanding weighting may also be viewed as a turnover ratio adjusted new transaction amount basis weighting, which has adjusted the total of all new transactions during the course of the year using a turnover ratio calculated from data on the total of all new transactions during the course of the year and on the annual average balances. See Appendix 2 for

the weights]).

The mixed weight basis is also adopted because with weighting under the annual average outstanding alone the total of new transactions over the course of the year, which is a flow basis figure, would be a large amount, but the figures would be small for current deposits and special deposits, which are used mostly for settlement purposes, and thus these amounts might then be underestimated.

The basic concept behind the mixed-basis weighting is as follows; (1) annual average outstanding basis data is used for interest-bearing deposits, and (2) the total amount of new deposits over the course of the year is used as the data basis for non-interest-bearing current deposits and special deposits. Here, the user cost approach – which specifies that decisions are made at the beginning of each period on whether or not to maintain the existing balances of financial assets and liabilities or to rearrange them – is modified to the same decision-making on a daily basis, and thus the daily deposit receipt amounts are used.

### 5.1.3 Categorization of Private Corporations, the Local Governments, and Individuals

For deposits, on the annual average outstanding, the “*Yokin, Genkin, Kashidashikin*” (Deposit, Vault Cash, Loans and discounts statistics) by type of depositor are used for the annual average outstanding data of private corporations and the local governments. For the mixed-basis current and special deposit figures, the amounts of new deposits by private corporations and the local governments are unclear, so the monthly basis figures for new receipts from the same statistics are totaled, and the annual totals are proportionately divided to private corporations and the public sector based on the ratio of the private to public deposits on the annual average outstanding basis. These annual total figures for private corporations and the local governments are then divided by 365 to generate the daily figures.

For loans, the outstanding, as calculated under the following two-step procedure, is viewed as the total balance of the private corporations and the local governments. Because of the data limitations, the loan outstanding cannot be split into short-term and long-term loans. Here, the ratio of short-term to long-term loans is assumed to be 1 : 1.

(1) Overseas Yen loans and loans to financial institutions and insurance companies are subtracted

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the details.

from the total loans figure in the Loans and Discounts Outstanding by Sector statistics; loans to nondeposit money corporations engaged in the provision of finance, credit and investment and securities companies are added, and this eliminates the overseas yen loans and loans to financial institutions and insurance companies.

(2) The loans to individuals (also from the Loans and Discounts Outstanding by Sector statistics) are then subtracted from the figure calculated in (1).

#### 5.1.4 Deposit and Lending Rates and “Reference rates”

(See Table 6 for Details)

Considering that the “constant quality” condition has been met to some extent, for deposits the published interest rate data for each type of deposit are used throughout the entire estimation period. For term deposits, the measurement is limited to deposits with a duration of one year or less, assuming that private corporations and the local governments seldom hold deposits with terms of more than one year.

For loans, two data series are prepared, as follows: (1) under the first, the short and long-term prime rates are used for the short and long-term loan rates throughout the estimation period; (2) under the second, the short-term prime rate is used for the short-term loan rates throughout the estimation period, the long-term prime rate is used for the long-term loan rates from October 1987 through May 1997, and the quotation of 5-year straight bond rated Baa by Moody’s (monthly average) is used as the long-term loan rate from June of 1997 forward.<sup>16</sup>

As for the “reference rates,” for deposits, the uncollateralized overnight call rate (overnight - 3 month) is used for all deposits from October 1987 through May 1997. From June 1997, the uncollateralized overnight call rate (overnight-1 week) is used for current deposits, special deposits and ordinary deposits only, while the Japanese yen base TIBOR (1-3 months) is used for time deposits and CDs. Turning to loans, for long-term loans the yen-yen swap interest rate (5 year) is used throughout the estimation period. For short-term loans, the uncollateralized

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<sup>16</sup> Because the interest rate on long-term bank loans competes with the bond yield incurred when firms procure funds directly from the market, these two rates generally tend to remain rather close. The data series using the distribution yield on straight corporate bonds as the long-term loan rate is prepared considering this. Moreover, the distribution yield is adopted, rather than the issuance rate, because of data limitations and because issuance rates are believed to be set based on

overnight call rate (3 months) is used from October 1987 through May 1997, and the Japanese yen base TIBOR (3 month) is used from June 1997 forward. Fundamentally, interbank market transaction rates are used as the “reference rates” for this estimation, and this is based on the following line of thought.

The differential between the actual rate of interest payable by funds procurers and the interest rates received by funds managers is believed to reflect the financial intermediation services provided by financial intermediaries. So, when these two rates are identical, this may be interpreted as an indication that no financial intermediation services have been generated. The two rates may be considered as essentially identical for interbank market trading, and since no deposit or loan services are generated the interbank rates may be adopted as “reference rates” that do not include the costs of any financial intermediation services.<sup>17</sup>

## 5.2 Estimation Results

The annual average outstanding basis estimation results are presented in Chart 4-6, and the mixed basis estimation results in Chart 7-9.

First, both total deposit and loan service price indices (annual average outstanding basis and mixed weight basis) peak in 1991-1992, decline from that time through 1997, and then rise once again from 1998 (see Chart 4 and 7). Next, looking at the separate deposit service price and loan service price indices, both deposit service price indices (annual average outstanding basis and mixed weight basis) peak around 1991, and then consistently decline. Meanwhile, the loan service price indices have both been rising from the latter 1990s (see Chart 5-6 for the annual average outstanding basis and chart 8-9 for the mixed weight basis).

On the whole, these charts indicate that during the early 1990s the deposit service price indices were dominant in dictating the movements of the total deposit and loan service price indices, and that from the latter 1990s the loan service price indices have been the dominant factor.

Next, a comparison of the series using the long-term prime lending rate for the long-term interest rate with the series using the quotation of 5-year straight bond rated Baa by

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distribution yields (Ueki[1999]).

<sup>17</sup> Because of this, we must note that this “reference rate” does not represent the interest rate on financial assets as an alternative to deposits from the depositors’ perspective, nor the interest rate on funds procurement as an alternative to loans from the borrowers’ perspective.

Moody's(monthly average) indicates that the two sets of data do not necessarily show the same movements, and actually move in opposite directions during certain time periods.

Also, looking at the influence from different weightings, the mixed-weight basis gives a relatively higher weight to special deposits compared with the annual average outstanding basis, and this apparently pushes up the deposit services price indices. As a result, during the early 1990s, the mixed-weight basis total deposit and loan service price index is also higher than the total deposit and loan service price index calculated on the annual average outstanding basis index. During the latter 1990s, however, the influence of the deposit service price index on the total deposit and loan service price index declines, and thus the mixed-weight basis index and the annual average outstanding balance basis index come to show basically the same movements.

## **6. Problems with the PIRD-based method on the Trial Calculation Results**

### **6.1 Selecting the Weights for Aggregation**

Beginning with the weighting issue, the calculation results indicate that the annual average outstanding basis is preferable to the mixed-weight basis. This is because the annual average outstanding basis weights can be viewed as flow-based weighting (as they measure the total of new transactions adjusted using turnover ratios for the individual deposit and loan), and because the basic published interest rate data for the deposit and loan can be obtained relatively easily, which makes this approach very practical. In contrast, the theoretical underpinning behind the mixed-weight basis used for the trial calculation is somewhat weak compared with that for the annual average outstanding basis because the mixed-weight basis uses the annual total deposits divided by 365 as the daily deposit amounts for the current deposits and special deposits, while the day to day transaction flows through these types of accounts are actually substantial.

However, the real problem with both the annual average outstanding and the mixed-weight basis figures is the lack of data that breaks down the amounts of new loans and the outstanding of loans by term. For convenience, the above trial calculations simply posit all loans with terms of more than one year as long-term loans and all loans with terms of one year or less as short-term loans, and assumes a ratio of short-term to long-term loans of 1 : 1. These may rightfully be criticized as very rough assumptions

## 6.2 Concerning the Deposit and Loan Interest Rates

The PIRD-based method presented here utilizes observed financial market interest rates for the deposit and loan interest rate data. These may be considered as surveyed “model fees according to fee tables” prices. So, at least as far as the deposits interest rates are concerned, it is possible to survey “model fees according to fee tables” that meet the “constant quality” condition to some extent. Additionally, the short-term loan rates use the short-term prime lending rate, which may be considered somewhat appropriate as “model fees according to fee tables.”

Unfortunately, it is difficult to select long-term loan rates that are both indicative and satisfy the “constant quality” condition. There are certain problems with the use of the long-term prime lending rate and of the quotation of 5-year straight bond rated Baa by Moody’s (monthly average) as the long-term loan rates in the above estimation, as follows.

First, let us consider the use of the long-term prime lending rate. While the long-term prime lending rate data constitute “model fees according to fee tables” and thus meet the “constant quality” condition to some extent, as noted above, there are problems with the extent to which the long-term prime lending rate is “indicative.”

There are also various issues with the use of the distribution yield (monthly average) on straight five-year corporate bonds. Strictly speaking, this does not satisfy the “constant quality” condition. Also, in addition to the question of the appropriateness of using the distribution yield rather than the issuance yield, there are also problems with the extent to which this yield is indicative as a long-term loan rate when firms’ long-term interest rates for direct funds procurement are used as an alternative to the long-term loan rate offered by banks (under indirect financing).<sup>18</sup>

Furthermore, another problem with the loan data in general is that adjustments cannot be made to account for changes in overall private corporation and the local governments credit risk. For example, in cases where a fixed “reference rate” is assumed and the prices of lending services change as loan interest rates change due to changes in the overall credit risk of private corporations and the public sector, these may provide misleading information as they would

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<sup>18</sup> For loans, see References 1 and 2 for comparisons of the total deposit and loan service price index on the average contracted interest rates on new bank loans and discounts basis, the total loans outstanding basis, and the estimation results herein. It should also be noted that the average contracted interest rates on new bank loans and discounts basis corresponds to the “unit value” concept which does not consider the “constant quality” condition, and that these data include

appear as increases (or decreases) in the prices of loan services, or as changes in service prices due to qualitative changes and not as changes in the prices of loan services. It is doubtful that this problem could be resolved solely by adjusting the “reference rates.”

As noted above, in recent years the movements of the loan service price index have dominated the total deposit and loan service price index. Therefore, in calculating the total deposit and loan service price index it is extremely important to utilize short-term and long-term loan interest rate data that is “indicative” and also satisfies the “constant quality” condition.

## **7. Regarding the Feasibility of Incorporation into the CSPI**

This chapter considers the feasibility of incorporating the deposit and loan service prices as measured using the PIRD-based method into the CSPI.

### **7.1 The “Constant Quality” Condition**

The CSPI compiles service price data that meets the “constant quality” condition into an index. As noted in Chapter 6, for deposits the PIRD-based method does meet the “constant quality” condition to some extent, and for each distinct category of deposits interest rate data that is believed to be “indicative” is available. For loans, however, data meeting these conditions is not available. There would thus be accuracy problems at the practical level with using these data for a service price index.

### **7.2 Weights for Introduction to the CSPI**

Hypothetically, even if loan data that came much closer to being “indicative” and of a “constant quality” were to become available, weighting the prices of deposit and loan services as measured under the PIRD-based method would still be inconsistent with the basic logic of the CSPI, which uses the value of the imputed service charges under the input-output tables to determine the service price weightings.

The CSPI calculates weights for aggregating the prices of individual services with reference to the framework of the input-output tables. Under Japan’s input-output tables, the financial industry’s service output has only two components: “imputed service charges” and “fees.” At present, the CSPI only measures “fees” in determining the services prices, and their weight is

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interest rates charged on loans to individuals.

calculated from the “fees” output under the input-output tables. Thus, it should be possible to use the weight calculated from the “imputed service charges” output, for example, by integrating the deposit and loan services price index as measured by the PIRD-based method with the “fees” price index under the CSPI, and to then integrate this into the CSPI overall average

However, when deposit and loan services prices are measured via the user cost approach, the contents of the assumed deposit and loans services are different from those under the “imputed service charges” of the input-output tables. Specifically, under the input-output tables, the “imputed service charges” nominal output is defined as the differential between the financial industry’s “property income receipt ” and its “interest disbursements” When the “imputed service charges” is defined in this manner, (1) no room is left for making qualitative distinctions among various services and all services must be treated as homogenous; and (2) it is not possible to separate the “imputed service charges” generated by deposits from that generated by loans. Thus the user cost approach, which recognizes the products generated by various distinct deposit and loan services is incompatible with the basic logic of the price indices that make up the CSPI.

Then what about the idea of defining the nominal output of the deposit and loan services based on the prices of deposit and loan services as measured under the user cost approach, calculating some sort of weights, and then incorporating them into the CSPI?

Hypothetically, there would be two possible approaches if the nominal output of the deposit and loan services were defined based on deposit and loan services price concept under the user cost approach: (1) the differentials between the “reference rates” and the deposit and loan interest rates divided out from the “financial output” multiplied by the deposits outstanding and loans outstanding, respectively, and then totaled; and (2) multiplying the differential between the “reference rates” and the deposit and loan interest rates divided out from the “financial input” by the deposits outstanding and loans outstanding respectively, totaling these two figures, and then subtracting this the total from the sum reached under (1),

However, the “financial output” and “financial input” concept under the user cost approach simply does not exist in the input-output tables or the SNA. So even if the nominal products of the deposit and loan services were defined based on the price concept of the user cost approach, using these for deposit and loan service price weightings, integrating them with the “fees” price index of the CSPI, whose weights are calculated based on the input-output tables, and then incorporating them into the overall CSPI average would just be theoretically inconsistent.



To summarize, we must take a negative stance toward introducing the deposit and loan service prices measured by the PIRD-based method into the present CSPI because this would likely distort the accuracy of the service price index, and because it would be inconsistent with the fundamental logic of the CSPI.

## **8. Conclusions**

This paper has reviewed the prior research at the ONS in the UK and the BLS in the US regarding indirect methods of measuring the prices of deposit and loan services, and noted the problem points. The paper has applied the PIRD-based method, developed in an effort to overcome the problems under the ONS and BLS methods, to measure the prices of deposit and loan services in Japan and, based on the measurement results, summarized the problems with using this indirect method to measure the prices of Japanese deposit and loan services. Finally, the paper has examined the feasibility of incorporating deposit and loan service price data measured by the interest rate data user cost approach into the CSPI.

The conclusions are (1) among the various interest rate data required for measuring the loan services prices, there is no available long-term loan interest rate data that is both “indicative” and of a “constant quality”; and (2) there are inconsistencies between the basic logic of the user cost approach and that of the present CSPI, which calculates weights by aggregating the prices of distinctive services under the industry input-output tables, and therefore it would be difficult to incorporate deposit and loan services prices as measured by the interest rate data user cost approach into the present CSPI.

Nevertheless, the PIRD-based method for measuring deposit and loan services prices presented in this paper does present one realm for future examinations, including further discussions on the appropriateness of indirectly measuring the prices of deposit and loan services using the differentials between deposit and loan interest rates and some sort of “reference rates.”

The points of debate regarding the definitions of deposit and loan service prices and their measurement methods are closely linked with the conceptual approaches to the service contents that the financial intermediaries generates via deposits and loans, and these discussions must be further advanced from a wide-ranging perspective, including the appropriate service price concepts corresponding to the assumed service contents.

## Appendix 1

### Problems with Applying the User Cost Approach to Measure Deposit and Loan Services Prices

The main body of this paper examines the PIRD-based method to measuring the prices of deposit and loan services. In general, the user cost approach entails the following problems.

#### 1. Problems with Selecting “Reference rates”

When the user cost approach is adopted for measuring the prices of deposit and loan services, the services prices are recognized as the differentials between the interest rates on distinctive categories of deposits and loans and some sort of “reference rates.” So, in addition to the selection of deposit and loan interest rates, the selection of the “reference rates” also becomes important. Yet, there are no practically appropriate selection criteria for determining the optimal “reference rates” for each distinct category of deposits and loans. In other words, the selection of the “reference rates” is always somewhat arbitrary, and different selections may well result in different deposit and loan services prices.

In response to this problem, the BLS “UCA-based method selects a single interest rate as the “reference rate.” In theory, this rate is close to the interest rate at which final lenders would provide funds directly to borrowers if no financial intermediaries existed. Moreover, the BLS method applies this same “reference rate” to all types of deposits and loans. However, it is difficult to argue that the use of a single rate for all deposits and loans is necessary. Thus, appropriate “reference rates” must be selected recursively.

#### 2. The Handling of “Negative Service Prices”

The user cost approach, which is used in the productivity analyses of banks, compares the user costs of financial assets and liabilities with “reference rates.” Financial assets are viewed as output when the financial asset user cost is greater than the opportunity cost, and as input when the opposite holds true. Financial liabilities are considered output when the financial liability user cost is less than the opportunity cost, and input when the opposite holds true (see Ohmori and Nakajima[2000] and Ohmori[2003]).

Looking at this in relation with deposit and loan services prices, when the deposit or loan is a financial input, a “negative service price” is generated, and decisions must be reached on how this is to be handled.

There are two approaches to handling this issue when measuring the prices of deposit and loan services. The first is to disregard all negative deposit and loan services costs and the second is to include them in the measurement. This is also closely related to the issue of whether or not to recognize negative service products when measuring deposit and loan services output.

Considering the clarity of the relationship between the price concept and the total output of deposit and loan services, as well as the practical issues in compiling price indices, it may be deemed appropriate to eliminate any “negative service output” from the total deposit and loan services output, and also to leave out any “negative deposit and loan services prices” in the price measurements.<sup>19</sup>

From the standpoint of maintaining consistency with the logic of the user cost approach, however, it could just as well be argued that any “negative service output” should be included in the total deposit and loan services output calculations and similarly that any “negative deposit and loan services prices” should be included in the price measurements. There are really no clear criteria for determining which stance is more appropriate.

What is comparatively clear is that under the definition of total deposit and loan services output, because of the differences in the corresponding pricing concepts, when the “negative service output” are excluded from the total deposit and loan services output any “negative deposit and loan services prices” should also be excluded. Similarly, when the “negative service output” are included in the total deposit and loan services output, any “negative deposit and loan services prices” should also be included.

This issue of how to handle “negative deposit and loan service prices” is extremely important for the discussion of indirectly measuring the prices of deposit and loan service prices, and it demands detailed further examinations, including discussions on the definition of the total deposit and loans services output concept.

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<sup>19</sup> The BLS method of measuring banking services prices adopts a similar stance by eliminating measured financial asset and liabilities that show “negative service prices” from the aggregations until positive values are realized.

## Appendix 2

### On Selecting the Weights for Aggregating Distinct Deposit and Loan Services Prices

When the PIRD-based method presented in the main body of this paper is adopted for measuring the prices of deposit and lending services, observed published interest rate data are adopted as the distinct deposit and loan measured interest rates, and this means that the service prices are being calculated from flow-basis data.

Various approaches may be used for the weighting when aggregating the distinct deposit and loan services prices, such as the average outstanding basis and the new transactions amount basis. So, which approach is most appropriate for aggregating the prices of the distinct deposit and loan services measured under the PIRD-based method?

Considering that the services prices are calculated from flow-basis data, using the new transaction amount data, which is on a flow basis, might seem most appropriate. This approach, however, might overestimate the weight of deposits and loans with short transaction periods and high transaction frequencies.

One possibility would be to use a turnover ratio for each of the distinct deposit and loan services, which would be calculated from both the total amount of new transactions and the average outstanding, to adjust the total amount of new transactions (the total amount of new transactions divided by the average outstanding could be adopted as the turnover ratio, and the total amount of new transactions could then be divided by this turnover ratio). However, the flow-based weights when the total amount of new transactions is adjusted by this turnover ratio would become the same as the weights based on the average outstanding. That is, the turnover ratio for the individual deposit and loan services being measured would be defined by the following equation.

$$\text{Turnover ratio} = \text{Total amount of new transactions} / \text{Average outstanding} \quad [\text{Equation 1}]$$

Next, the total amount of new transactions after adjustment by the turnover ratio would be defined as follows.

Total amount of new transactions after adjustment by the turnover ratio = Total amount of new transactions / Turnover ratio [Equation 2]

Substituting Equation 2 into Equation 1, we find

$$\begin{aligned} \text{Equation 2} &= \text{Total amount of new transactions} / (\text{Total amount of new transactions} / \text{Average} \\ &\quad \text{outstanding}) \\ &= \text{Average outstanding} \end{aligned}$$

Thus, even when the deposit and loan services prices are calculated using flow-basis interest rate data, there is apparently no problem with using the average outstanding weighting for aggregating the measured deposit and loan services prices.

## Reference

- Ueki, N., “Corporate Bond Spreads in the Secondary Market”, Financial Markets Department Working Paper E-Series, 99- J –5、 Financial Markets Department, Bank of Japan, 1999.
- Ohmori, T., and Nakajima, M., “*Nihon no Ginkou-gyou ni okeru zen-youso-seisan-sei to Tyuukai • Kessai-Saabisu* (Total Factor Productivity of Japanese Bank and Settlement and Financial Intermediation Services). *Kin’yu Kenkyu*, IMES, Bank of Japan, 2000.
- Ohmori, T., “*Kansetu-teki ni keisoku sareru Kinyuu-tyuukai saabisu gainen no kenntou*” *Tyousa-Toukei-Kyoku Working Paper* 03-09, 2003.
- Nakayama, H., “FISIM(*Kansetu-teki ni keisoku sareru Kinyuu-tyuukai saabisu* ) no *suikei-syuhou-an oyobi suikei-ti bunseki*(An Estimation Method of FISIM <Financial Intermediation Services Indirectly Measured> , Estimation Result and Examination). *Kikan Kokumin-Keizai-Keisan*, No.126, 2001.
- Bank of Japan, “A Guide to Using Interest Rate Indicators Reported by the Bank of Japan” *Bank of Japan Quarterly Bulletin*, Vol. 2, No.4, 1994.
- Research and Statistics Department The Bank of Japan, “Guide to Japan’s Flow of Fund Account” 2002. (<http://www.boj.or.jp/en/stat/exp/exsj01htm>), 2002.
- Takeno, H., “*Kokumin-Keizai-KeisanNyuumon* (A Guide to System of National Accounts), Yuuhikaku, 2001.
- Fixler, D. J., and Zieschang, K., “User Costs, Shadow Prices, and the Real Output of Banks” in *Output Measurement in the Service Sectors*, ed., Z. Griliches, National Bureau of Economic Research, University of Chicago Press, 1992, pp. 219-243.
- , “Economic Statistics and the Transmission of Monetary Policy to the Real Economy” mimeo, prepared for: Brookings Workshop on Measuring Banking Output, 1998.
- Hancock, D., “The Financial firm: Production with Monetary and Nonmonetary Goods,” *Journal of Political Economy* , 93, 1985, pp. 859-880.
- United Nation, *System of National accounts 1993*, United Nations Publication, ST/ESA/STAT/SER, F/2/Rev. 4, New York, 1993.

**Table 1**

FISIM-based method considered by the ONS  
for indirectly measuring deposit and loan service prices

Basic concept	<ul style="list-style-type: none"> <li>• FISIM measurement and allocation method considered by the Eurostat.</li> </ul>
Interest rates of deposit and loan	<ul style="list-style-type: none"> <li>• Interest rate of deposit = the actual rate of interest payable = (total amount of interest payable – deposit-related fee) / deposit outstanding</li> <li>• Interest rate of loan = the actual rate of interest receivable = (total amount of interest receivable – loan-related fee) / loan outstanding</li> </ul> <p style="text-align: center;">using the stock-based data to measuring deposit and loan service price</p>
Reference rate	<ul style="list-style-type: none"> <li>• reference rate of FISIM measurement and allocation method is used. the Eurostat has proposed three type of interest rate as “reference rate”</li> <li>1. “interbank rate”</li> <li>2. mid-rate between the actual rate of interest payable and the actual rate of interest receivable</li> <li>3. mid-rate between the “interbank rate” and the yield on bonds</li> </ul>
Handling of fees	<ul style="list-style-type: none"> <li>• Deposit-related fees are deducted from total amount of interest payable, loan-related fees are added to total amount of interest receivable.</li> </ul>
Aggregating weight	<ul style="list-style-type: none"> <li>• based on volumes of transactions(flow basis)</li> </ul>
Handling “negative service prices”	<ul style="list-style-type: none"> <li>• unclear</li> </ul>
Qualitative differences in the services	<ul style="list-style-type: none"> <li>• Deposit and loan services are homogenous at the aggregated level such as total outstanding of deposits ,or total outstanding of loans.</li> </ul>
Corresponding nominal output	<ul style="list-style-type: none"> <li>• Nominal output of FISIM as Eurostat definition.</li> </ul>

**Table 2**

Outline of the “FISIM-based method” by the ONS

$$P_L = \frac{(I_L + F_L)}{L} \times 100 - RF$$

$$P_D = RF - \frac{(I_D - F_D)}{D} \times 100$$

$$P = w_L \times P_L + w_D \times P_D$$

$$w_L + w_D = 1$$

$P_L$  : Loan service price index,  $P_D$  : Deposit service price index

$P$  : Deposit and Loan service price index,  $RF$  : Reference rate

$I_L$  : Interest receivable,  $F_L$  : Loan-related fees

$L$  : Loans and discounts outstanding

$I_D$  : Interest payable,  $F_D$  : Deposit-related fees

$D$  : Amount outstanding of deposits

$w_L$  : Weight for loan service price

$w_D$  : Weight for deposit service price



**Table 3**

UCA-based method considered by the BLS  
for indirectly measuring deposit and loan service prices

Basic concept	<ul style="list-style-type: none"> <li>• Based on User Cost Approach.</li> </ul>
Interest rates of deposit and loan	<ul style="list-style-type: none"> <li>• Interest rate of pre-selected representative deposit = the actual rate of interest payable for each representative deposit = (interest payable for a deposit – deposit-related fees)/ Average outstanding of that deposit</li> <li>• Interest rate of pre-selected representative loan = the actual rate of interest receivable for each representative loan = (interest receivable for a loan – loan-related fees)/ Average outstanding of that loan using the stock-based data to measuring deposit and loan service price</li> </ul>
Reference rate	<ol style="list-style-type: none"> <li>1. Official discount rate (Central bank lending rate)</li> <li>2. Federal fund rate (interbank lending rate)</li> <li>3. weighted average of the interest rates on all banks' securities holdings where the weights are shares of the different securities in a banks' securities portfolio. the same reference rate should be used for both loans and deposits.</li> </ol>
Handling of fees	<ul style="list-style-type: none"> <li>• Deposit-related fees are deducted from interest payable of each deposit, loan-related fees are added to interest receivable of each loan.</li> </ul>
Aggregating weight	<ul style="list-style-type: none"> <li>• Net interest revenue will be allocated between loan and deposit products by using the reference rate.</li> </ul>
Handling "negative service prices"	<ul style="list-style-type: none"> <li>• Negative service price is excluded from index calculation until it becomes positive</li> </ul>
Qualitative differences in the services	<ul style="list-style-type: none"> <li>• Break down the deposit and loan to distinct categories of a homogenous level.</li> <li>• The services generated by banks via deposits and loans to be qualitatively different in each category.</li> </ul>
Corresponding nominal output	<ul style="list-style-type: none"> <li>• Total Financial output that is defined by user cost approach.</li> </ul>

**Table 4**

Outline of the UCA-based method by the BLS

$$P_L = \sum_{i=1}^m w_{L_i} \left\{ \frac{(I_{L_i} + F_{L_i})}{L_i} \times 100 - RF \right\}$$
$$P_D = \sum_{j=1}^n w_{D_j} \left\{ RF - \frac{(I_{D_j} - F_{D_j})}{D_j} \times 100 \right\}$$
$$P = w_L \times P_L + w_D \times P_D$$
$$w_L + w_D = 1$$
$$w_L = \sum_{i=1}^m w_{L_i}$$
$$w_D = \sum_{j=1}^n w_{D_j}$$

- $P_L$  : Loan service price index,  $P_D$  : Deposit service price index  
 $P$  : Deposit and Loan service price index,  $RF$  : Reference rate  
 $I_{L_i}$  : Interest receivable of loan category  $i$   
 $F_{L_i}$  : Loan-related fees of loan category  $i$   
 $I_{D_j}$  : Interest payable of deposit category  $j$   
 $F_{D_j}$  : Deposit-related fees of deposit category  $j$   
 $L_i$  : Average outstanding of loan category  $i$   
 $D_j$  : Average outstanding of deposit category  $j$   
 $w_{L(i)}$  : weight of loan category  $i$   
 $w_{D(j)}$  : weight of deposit category  $j$

**Table 5**

PIRD-based method for indirectly measuring  
deposit and loan service prices

Basic concept	<ul style="list-style-type: none"> <li>Based on User Cost Approach.</li> </ul>
Interest rates of deposit and loan	<ul style="list-style-type: none"> <li>Published interest rate data of representative deposit and loan. using flow-based data to measuring deposit and loan service price.</li> </ul>
Reference rate	<ul style="list-style-type: none"> <li>Using Interbank rates in principle(see table 9 for detail).</li> </ul>
Handling of fees	<ul style="list-style-type: none"> <li>Unclear(There are inconsistencies between the basic logic of the user cost approach and that of the present CSPI, which calculates weights by aggregating the price of distinctive services under the input-output table).</li> </ul>
Aggregating weight	<ol style="list-style-type: none"> <li>Annual average outstanding basis (= turnover ratio adjusted new transaction amount basis. See Appendix 2 for detail).</li> <li>Mixed weight basis (current deposits and special deposits: the daily receipt amount that is calculated as the total amount of new receipt per year divided by 365. for all other deposits and loans: annual average outstanding basis).</li> </ol>
Handling “negative service prices”	<ul style="list-style-type: none"> <li>In cases where the differential between the “reference rates” and the deposits or lending rates are negative, the price of the concerned deposit or loan service is taken as zero.</li> </ul>
Qualitative differences in the services	<ul style="list-style-type: none"> <li>Break down the deposit and loan as much as possible to distinct categories of a homogenous level.</li> <li>The services generated by banks via deposits and loans to be qualitatively different in each category.</li> </ul>
Corresponding nominal output	<ul style="list-style-type: none"> <li>the differentials between the “reference rates” and the deposit and loan interest rates divided out from the “financial output” multiplied by the deposits outstanding and loans outstanding, respectively, and then totaled.</li> </ul>

**Table 6**

Outline of the PIRD-based method

$$P_L = \sum_{i=1}^m w_{Li} \{RL_i - RF_{Li}\}$$

$$P_D = \sum_{j=1}^n w_{Dj} \{RF_{Dj} - RD_j\}$$

$$P = w_L \times P_L + w_D \times P_D$$

$$w_L + w_D = 1$$

$$w_L = \sum_{i=1}^m w_{Li}$$

$$w_D = \sum_{j=1}^n w_{Dj}$$

$P_L$  : Loan service price index,  $P_D$  : Deposit service price index

$P$  : Deposit and Loan service price index

$RL_i$  : Published interest rate of loan category i

$RF_{Li}$  : Reference rate of loan category i

$RD_j$  : Published interest rate of deposit category j

$RF_{Dj}$  : Reference rate of deposit category j

$w_{L(i)}$ : weight of loan category i

$w_{D(j)}$  : weight of deposit category j

**Table 7**

Data used for calculating the weights

**1. Deposits**

Average amount outstanding	“ <i>Yokin, Genkin, Kashidashikin</i> ” (Deposit, Vault Cash, loans and discounts)
----------------------------	--

Source: Bank of Japan (only Japanese basis)

**2. Loans and Discounts**

Loans and Discounts outstanding ( amount outstanding at end of month)	“Loans and Discounts Outstanding by Sector”
Individuals	“Loans and Discounts Outstanding by Sector”
Finance and Insurance	“Loans and Discounts Outstanding by Sector”
Nondeposit money corporations engaged in the provision of finance, credit and investment	“Loans and Discounts Outstanding by Sector”
Securities companies	“Loans and Discounts Outstanding by Sector”
Overseas Yen Loans	“Loans and Discounts Outstanding by Sector”

Source: Bank of Japan

**Table 8**

## The weight data of deposits and loans

	Annual average outstanding basis	Mixed weight basis	Percentage of the private corporations and the local governments (annual average outstanding basis)
Current deposits	3.2% (166,074)	2.6% (135,589)	97.7%
Special deposits	0.5% (24,673)	3.9% (207,388)	96.7%
Ordinary deposits	7.9% (404,479)	7.7% (404,479)	36.4%
Time deposits	17.0% (874,101)	16.5% (874,101)	30.5%
Negotiable certificates of deposit	3.6% (183,095)	3.5% (183,095)	99.5%
Short-term loans and discounts	33.9% (1,740,594)	32.9% (1,740,594)	—
Long-term loans and discounts	33.9% (1,740,594)	32.9% (1,740,594)	—
total	5,133,612	5,285,841	—

Figures in parentheses are value data , 100 million yen

**Table 9**

## Deposit and Lending rates, Reference rates

## 1. Deposit

	Interest rates	Reference rates
Current deposits		Call rate(uncollateralized overnight)
Special deposits		Call rate(uncollateralized overnight)
Ordinary deposits	Monthly average of Ordinary deposit rate	Call rate(uncollateralized 1 week)
Time deposits (1 month-less than 2 month)	Average interest rates on time deposits by term(new receipt)	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 1 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 1 month)</li> </ul>
Time deposits (2 month-less than 3 month)	Average interest rates on time deposits by term(new receipt)	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 2 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 2 month)</li> </ul>
Time deposits (3 month-less than 6 month)	Average interest rates on time deposits by term(new receipt)	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 3 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 3 month)</li> </ul>
Time deposits (6 month-less than 1 year)	Average interest rates on time deposits by term(new receipt)	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 3 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 3 month)</li> </ul>
Negotiable certificates of deposit (90 days -180 days)	Average interest rates on certificates of deposit(new issues)	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 3 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 3 month)</li> </ul>

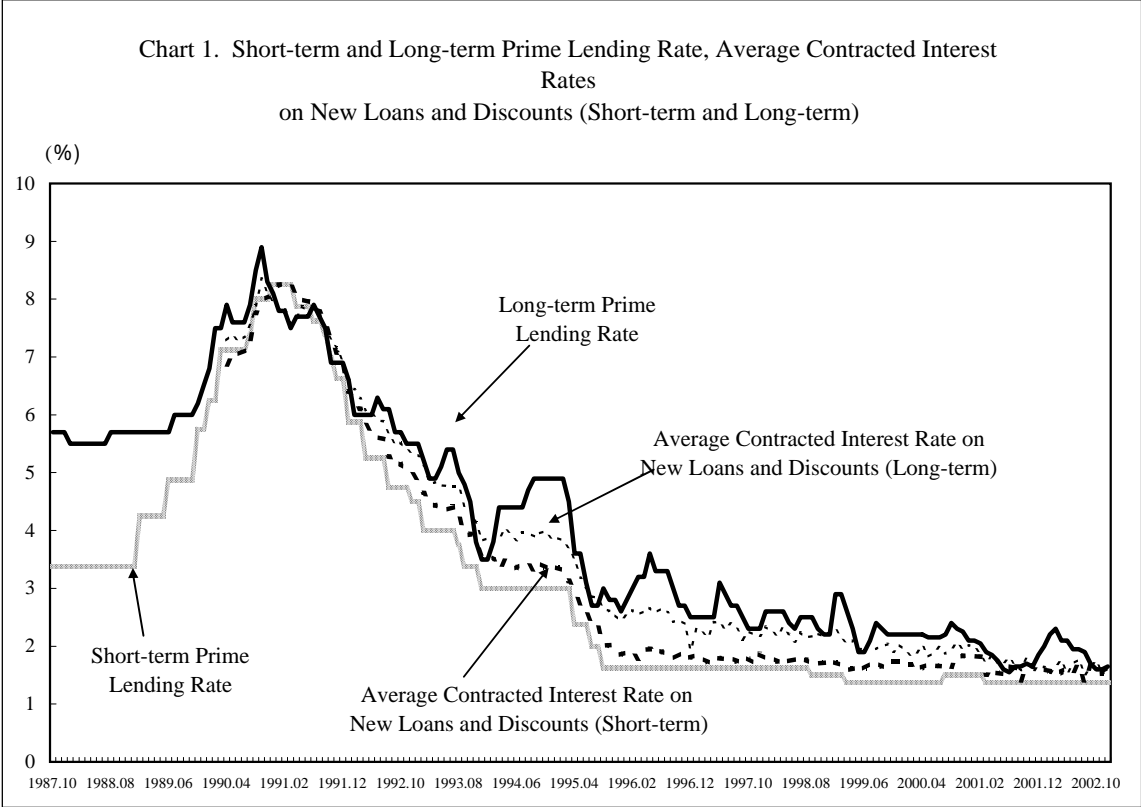
Source: Bank of Japan, Japanese Bankers Association

## 2. Loans and Discounts

	Interest rates	Reference rates
Short-term loans and discounts	Short-term prime lending rate	<ul style="list-style-type: none"> <li>• 87/10-97/5: Call rate(uncollateralized 3 month)</li> <li>• 97/6- :TIBOR(Tokyo Interbank Offered Rate: Japanese yen 3 month)</li> </ul>
Long-term loans and discounts	Long-term prime lending rate (From Jun. 97, the quotation of 5-year straight bond rated Baa by Moody's is also used)	5-years yen interest rate swap

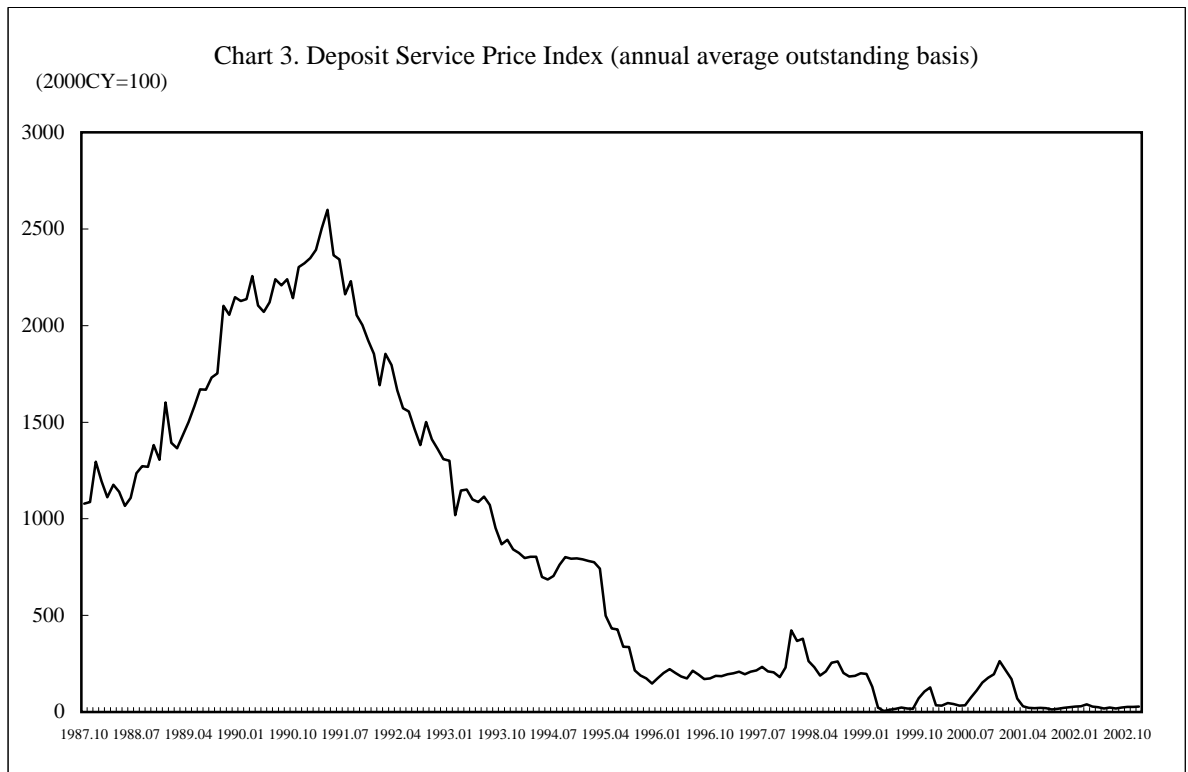
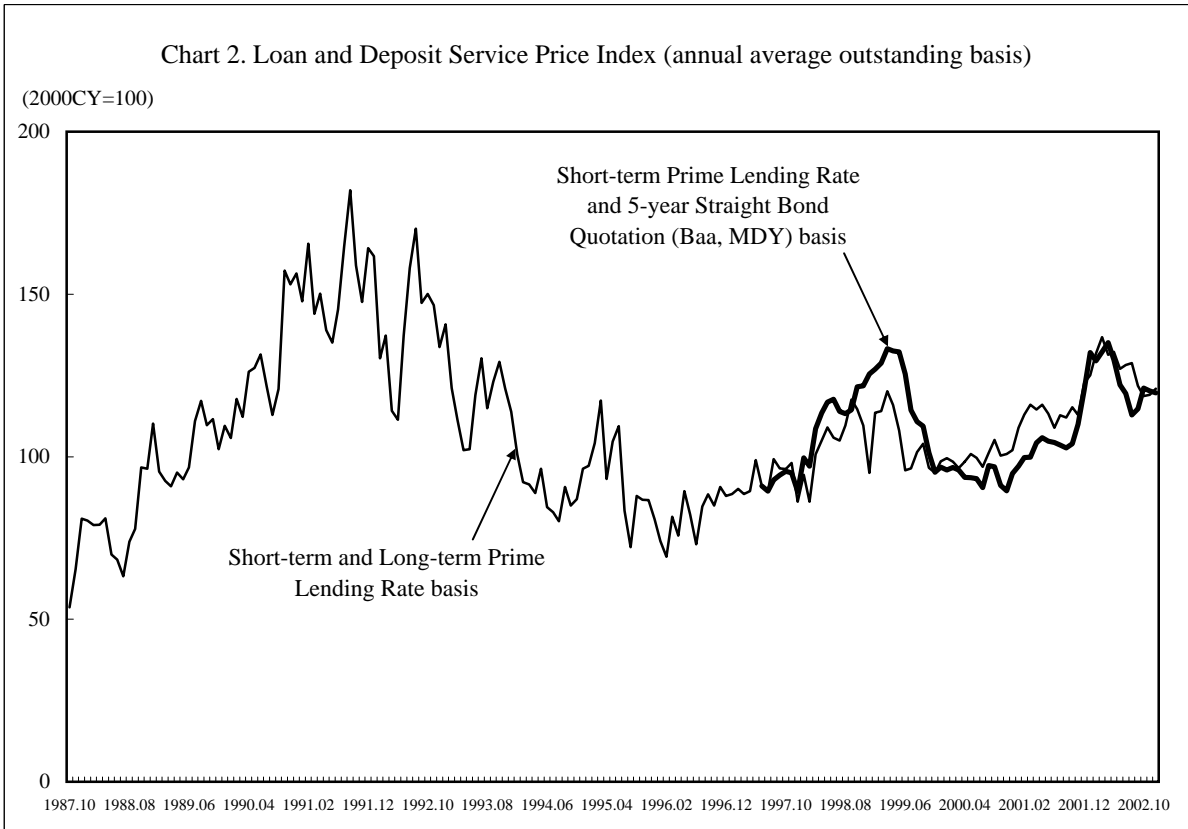
Source: Bank of Japan, Japanese Bankers Association, Japan Securities Dealers Association, Totan Derivatives Co, Ltd

**Chart 1**

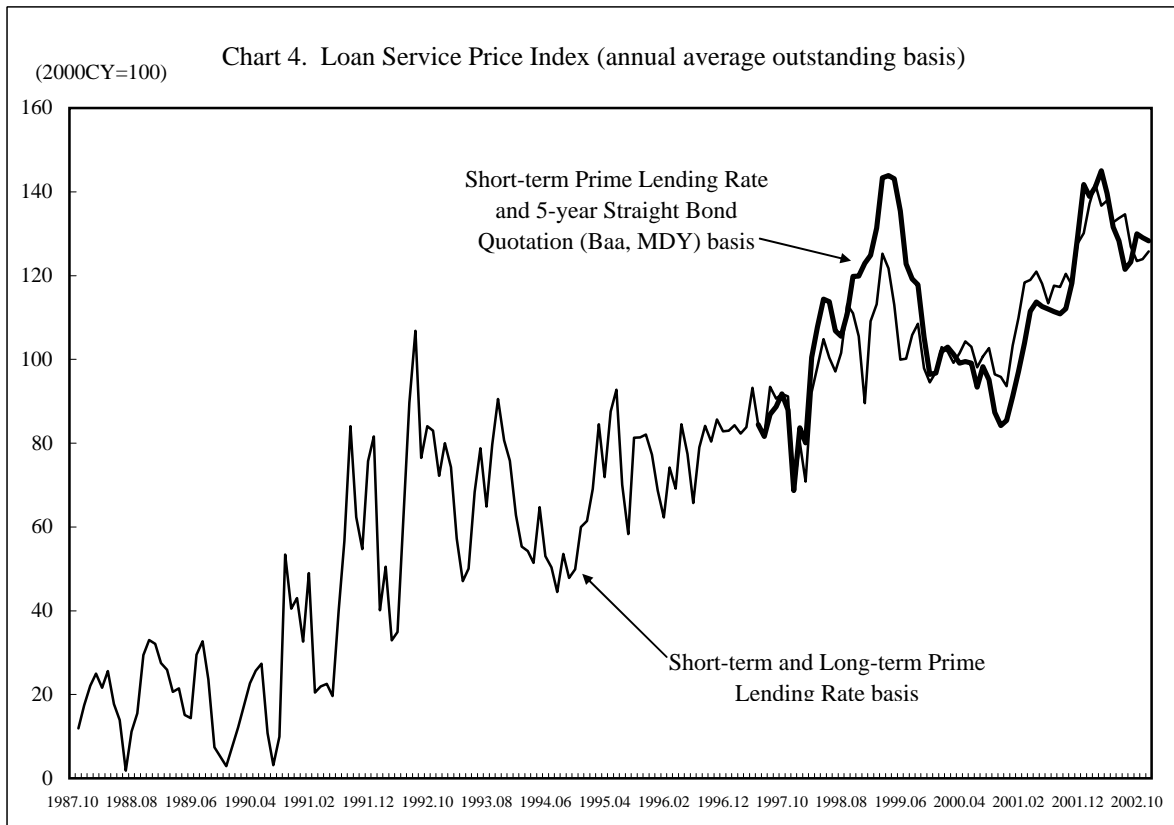




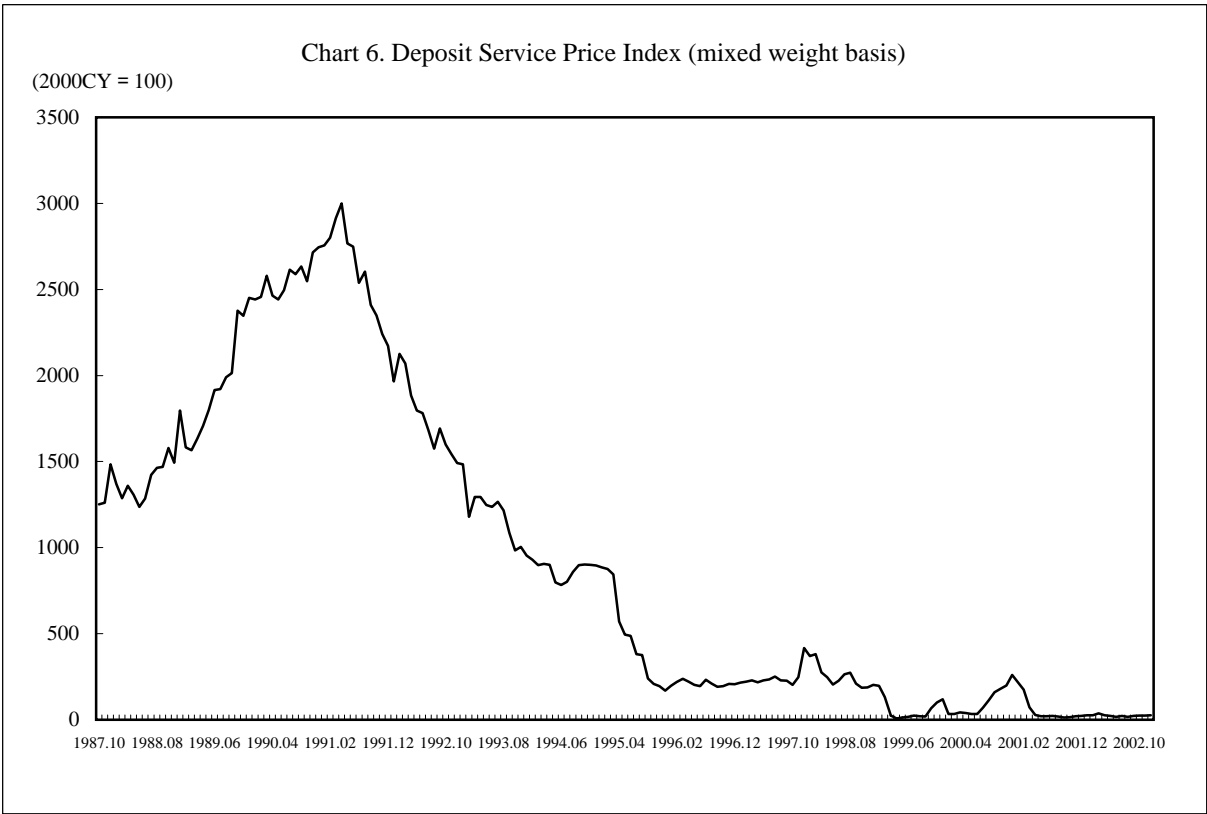
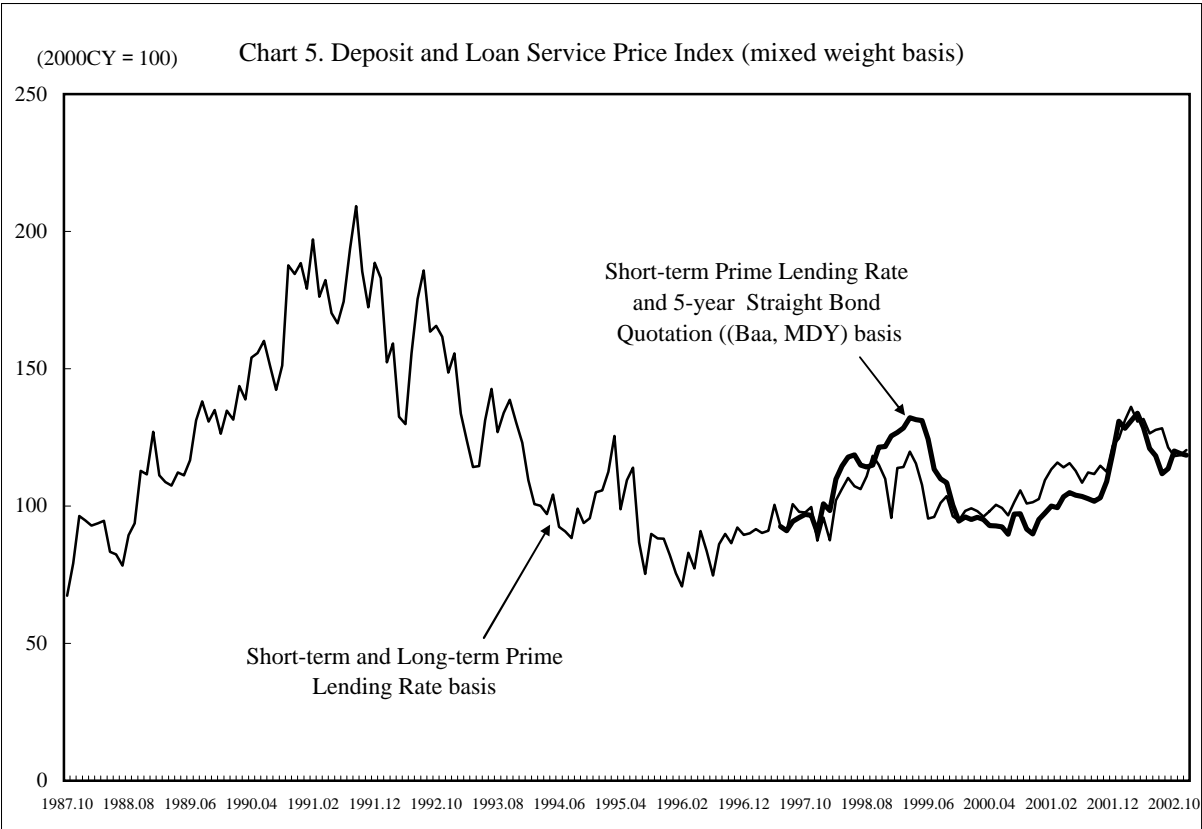
### Chart 2,3



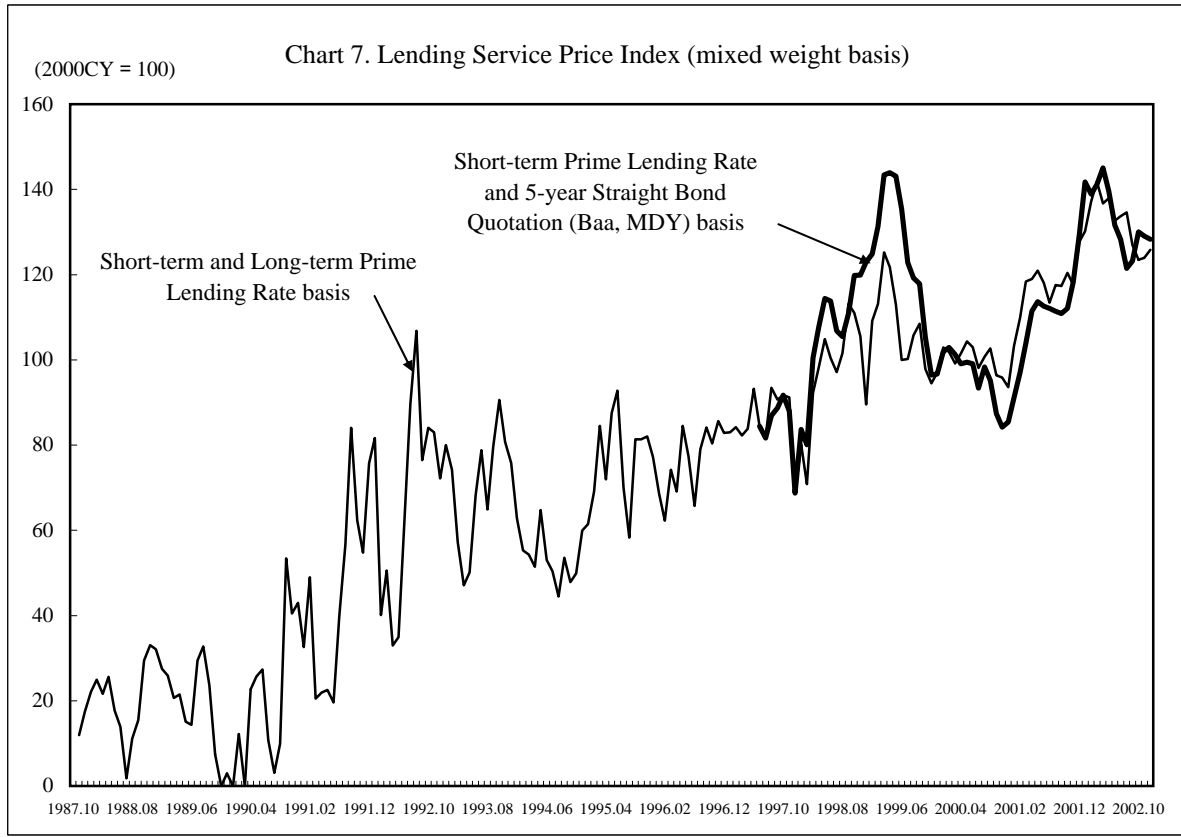
**Chart 4**



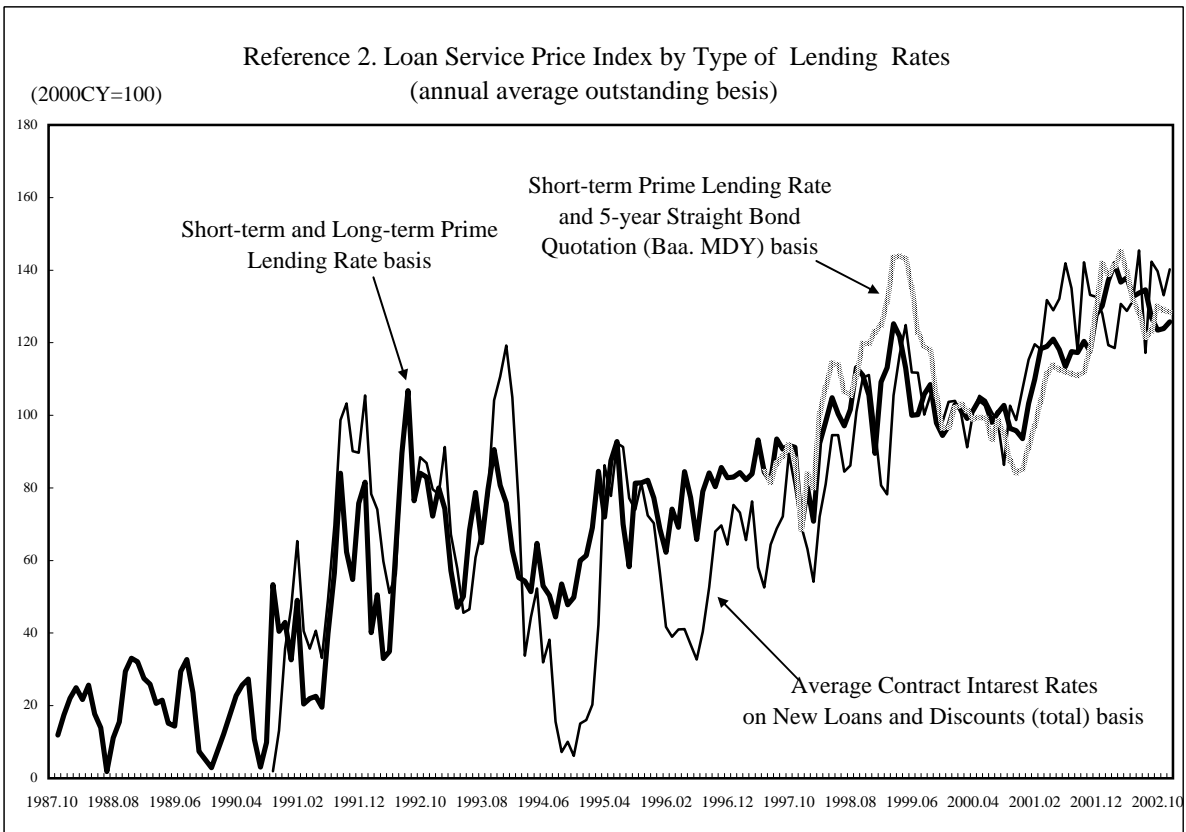
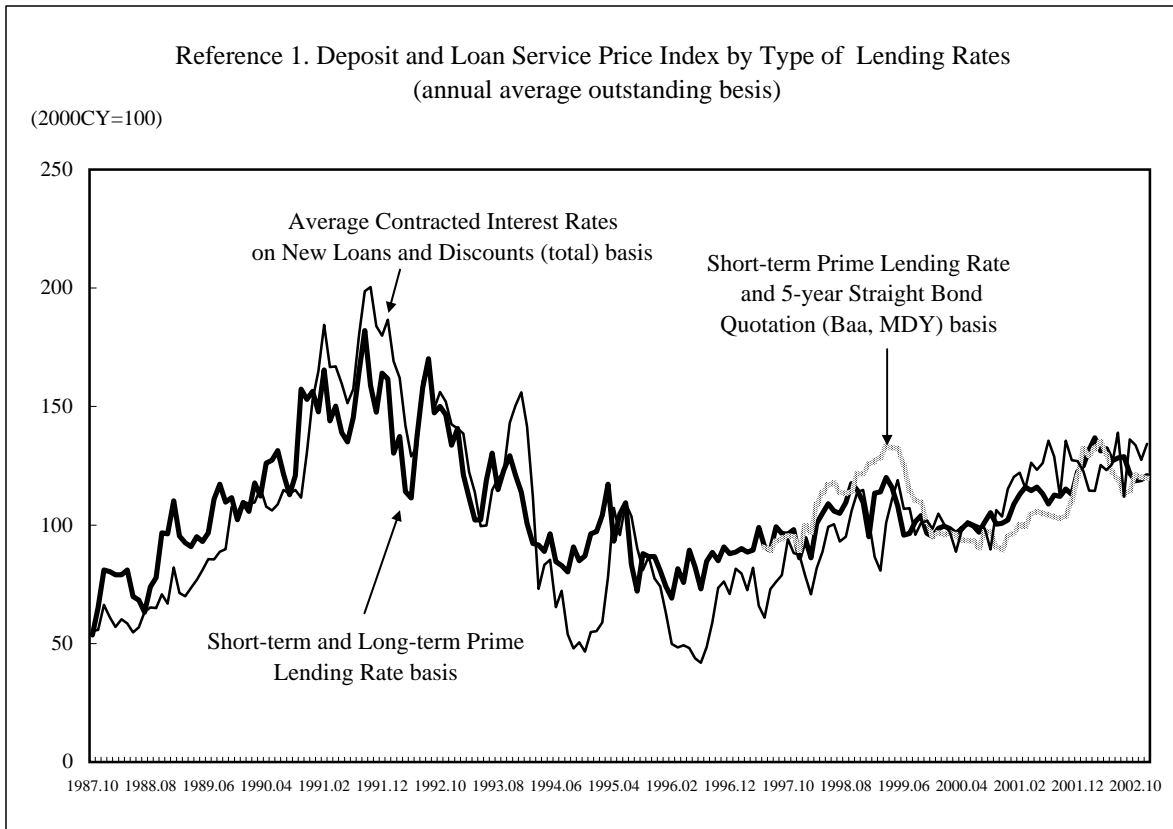
**Chart 5,6**



### Chart 7



## Reference 1,2



## Revision Plan of the Corporate Service Price Index (CSPI)

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### 1. Introduction

The Bank of Japan revises the Corporate Service Price Index (CSPI) every five years.<sup>1</sup> Since we started releasing the CSPI in 1991 on the 1985 base, we have conducted CSPI revisions twice, in 1994 and 1999. Now we are conducting the works for the CSPI revision to change the 1995 base to the 2000 base. The 2000 base CSPI will be released at the end of 2004.

This revision is intended to incorporate the structural changes in the Japanese economy over the past five years such as the emergence of various new services and diversification of services, reflecting information technology development and accelerating deregulation. Moreover, faced with severe competition, service providers have diversified their prices to meet various demands, adopting discounted prices such as volume discounts and seasonal discounts. Deregulation in several sectors has also accelerated such diversification of prices. Under such circumstances, we need not only to update the weights and the base year for the index calculation but also to review the selection of the items and the sample prices for the 2000 base CSPI.<sup>2</sup>

In this paper, we describe our preliminary revision plan of the 2000 base CSPI. In section 2 we summarize our strategy for the revision. In sections 3 and 4, we respectively explain the revision plan of items and sample prices in detail. In section 5, we conclude the paper with some remarks.

### 2. Basic Strategy of the Revision

Our basic strategy for the revision of the 2000 base CSPI is divided into three main points. First, by focusing on several sectors that are influenced by the recent structural changes in the economy, we will reorganize the items of the CSPI. That is, we will adopt new services as new items, expand the range of items covered, and divide some existing items into smaller items so that users of the CSPI will be able to grasp price movements in

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<sup>1</sup> The CSPI is a price index that compiles the prices of services traded among companies. The main purpose of the index is to investigate price movements that reflect most sensitively the supply and demand conditions of individual services, with a view to facilitating analyses of macroeconomic conditions. The indexes of less-aggregated levels (e.g., item) also have a “deflator” function that transforms nominal output values into real quantities.

<sup>2</sup> “Items” are the indexes, which are at the lowest classification level, published as the index series of the CSPI. “Sample prices” are the price data, which are collected from correspondent companies to compile the indexes at the classification level of “item.”

detail.

Second, to incorporate the diversification of services and their prices, we will conduct a wide review of sample prices, with the aim of grasping the reality of diversified price movements quickly and accurately. To be more specific, we will review the range of services surveyed and their sample prices. In the process of introducing new services and dividing items, we will increase the number of sample prices as necessity. Further, to incorporate the diversification of service prices, we will expand the types of service prices, such as discounted prices. On the specification of sample prices, we survey a specific transaction price on the condition that both its customer and transaction condition are fixed, in principle. When it is impossible for some services to follow the principle, however, we will adopt other methods for specifying sample prices, such as averaged prices within the bounds of ensuring constant quality. We think that we can manage to keep the quality of services, for which averaged prices are adopted, fairly constant by bundling similar services.

Third, we will endeavor to reduce the reporting burden. For this purpose, if possible, we will use databases provided by private companies in collecting sample prices of some items. At the moment, we have found an available database for prices on ship chartering services. In addition, in collecting sample prices, we will reduce the reporting burden as much as we can by considering the customs of transactions and the availability of data held by correspondent companies.

### **3. Revision of Items**

In our revision plan, we plan to reorganize the CSPI items and focus on the sectors that have been influenced by the "IT revolution" and the accelerating deregulation of the past five years. Our priority is specifically given to reviewing six main groups: "Information services," "Communications," "Overland freight transportation," "Passenger transportation," "Financial services," and "Real estate rental." The plan is shown in Table 1.

In this section, we describe "Information services" and "Communications" as IT-related sectors.

#### **3.1 "Information Services"**

In "information services," whose weight is expected to become larger with time,<sup>3</sup> we plan to divide "Software development" into "Customized software" and "Pre-packaged software," and also to divide "Data processing" into "Data processing services" and "System management and operation services."

In the past, the main software development services were large-scale developments

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<sup>3</sup> According to our preliminary calculations, the weight of "Information services" would be more than 100/1,000 in the 2000 base CSPI while it is 69/1,000 in the 1995 base CSPI.

that were made-to-order for specific customers like large banks. However, small-scale and diversified software developments, which use standardized pre-packaged software to suit the needs of customers, have grown. For these reasons, the division of "Software development" can be regarded as reflecting the present conditions in this field.

With regard to "Data processing," as internet and intranet services come into wide use in small companies, the outsourcing of system management becomes increasingly popular in Japan. Thus, we will respond to the recent rapid growth of system management and operation services, including computer server maintenance service for companies, by dividing the item as described above.

### 3.2 "Communications"

In "Communications," technological innovations brought about various combinations of services and a wide variety of discount packages. In recent years especially, discount packages that combine domestic and international telephone services are in widespread use. Popularization of internet telephone services will also make moot the distinction between domestic and international telephone services. To cope with this integration of services, we combine "Domestic fixed telephone services," "International fixed telephone services," and "ISDN (Integrated Services Digital Network)" into "Fixed telephone services," and combine "Domestic leased circuits" and "International leased circuits" into "Leased circuits." Such rearrangements of items in "Communications" broaden the coverage of each item, but they will bring certain advantages in coping flexibly with the modification of service contents.

Moreover, the abolishment of "Pager services" is planned, considering the decrease in transaction value due to the demand shift to cellular phone services.

## 4. Revision of Sample Prices

### 4.1 Basic Idea

In principle, sample prices are selected so that we can survey the actual transaction prices of representative services on the condition that both customer and transaction conditions are fixed. Considering the recent emergence of new services and diversification of services, we are reviewing a wide range of sample prices. There are four points to consider in the revision of sample prices.

First, we will not only adopt new services and corresponding sample prices, but also review the services and corresponding sample prices already adopted in the 1995 base CSPI, especially those in "Information services," "Communications," and "Financial services." Newly introduced services are summarized in Table 2.

Second, on the process of introducing new services and dividing items, we will increase the number of sample prices to maintain the CSPI accuracy. Due to regional and individual differences in services, price levels and their movements tend to vary. Thus, we need to collect a large number of sample prices for each item, in comparison with the



Corporate Goods Price Index (CGPI), to ensure the accuracy of the price index.

Third, in response to the diversification of prices, we will collect a wide range of discounted prices. Indeed, we have already incorporated some discounted prices in telecommunications services in the 1995 base CSPI. We plan to start collecting discounted prices in other fields of services in the 2000 base CSPI.

Fourth, we will examine the further adoption of averaged prices within the bounds of ensuring constant quality as sample prices for several items. In principle, we survey a specific transaction price on the condition that both its customer and transaction condition are fixed. When it is difficult to survey prices following the principle, however, we will adopt sample prices based on other methods for specifying sample prices, such as list prices, model prices, and averaged prices within the bounds of ensuring fixed quality. Needless to say, averaged prices are likely to fluctuate because not all the contents of services corresponding to the averaged prices have the same quality, although we bundle similar services as much as we can. In practice, however, it is often the case that we cannot survey a specific transaction price of a representative service continuously, depending on characteristics of the services. The averaged price with constant quality is perhaps the second-best solution to this problem.

The following sections will explain the third and fourth points in more detail.

#### 4.2 Discounted Prices

To grasp real price movements more accurately, we need to incorporate the various discounted prices that have become popular in recent years. To be more specific, we will collect discount airfares like "zone PEX fares"<sup>4</sup> (for item "International air freight transportation"), discount airfares for specified flights, and ticket booklets (for item "Domestic air freight transportation"). We will also collect discounted prices like ticket booklet fares and round-trip fares for the item, "*Shinkansen* bullet train." For "Hired cars and taxis," we plan to use long-distance discount fares and late-night or early-morning extra charges.

While "formal" discounted fares for transportation have become popular, reflecting recent deregulation and loose supply-demand conditions, individual discounted prices determined by volume, type of customer, and transaction conditions are also diversified, especially in "financial services," "overland freight transportation," and "advertising services." Since the 1995 base CSPI collects "list prices" in these groups, it is necessary to incorporate individual discounted prices to reflect the actual situation. Therefore, we will ask correspondent companies to report actual prices, which are specified for an individual customer and a transaction condition.

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<sup>4</sup> "Zone PEX (Purchase Excursion) fares" are formal discount airfares determined by each airline company. The fares are cheaper than fares for normal tickets, but there are restrictions on validity and changes in reservations. Also, the tickets are nonrefundable or partly refundable.

### 4.3 Averaged Prices

Basically, the CSPI surveys specific prices that are defined by certain conditions such as content, customers, transaction volume, etc. However, if such a survey becomes impossible, we will consider adopting sample prices defined by other methods for specifying sample prices, such as averaged prices within the bounds of ensuring constant quality, as the second-best solution. In fact, “averaged prices” are collected in four items out of the 102 items in the 1995 base CSPI. In the item “office space rental,” we survey “actual contracted rental rate” and “averaged rental rate” as sample prices from the very beginning of the CSPI survey. From the 1995 base CSPI, we also adopted averaged prices to “motor vehicle maintenance,” “temporary employment services,” and “securities issuance and related services.”

Needless to say, we will cautiously check the validity of averaged prices when we adopt them into the CSPI. Taking this into consideration, in the revision to the 2000 base index, we are planning to further apply averaged price within the bounds of ensuring constant quality to the following fields.

#### 4.3.1 Advertising Services and Financial Services

In advertising services, the advertisement volume of each advertiser fluctuates within the short term due to changes in the strategies of advertisers. As a result, it is difficult to collect price data continuously with fixed advertiser and transaction conditions, such as advertising volume. In addition, because the movements of the price transacted with a specific advertiser depend on its advertising strategy, we cannot simply regard such price data as representative of the service price movements. In the current CSPI we survey list prices, but they are not actual prices. Therefore, we are now considering the adoption of other methods for specifying sample prices, including averaged prices within the bounds of ensuring constant quality.

The situation in financial services is almost the same as that in advertising services in the sense that it is difficult to specify sample prices. In the current CSPI we survey list prices. In fact, since prices of financial products were regulated in the past, there used to be no need to collect discounted prices. Reality, however, has changed. We will thus explore the possibility to apply averaged prices within the bounds of ensuring constant quality to various cases in financial services as well.

#### 4.3.2 Information Services

For “Software development” in the 1995 base CSPI, we collect either the invoiced monthly rate per person (unit price per person), such as programmer and system engineer, in a specific transaction with a specific client, or the listed monthly rate per person, as sample prices<sup>5</sup>. In general, large-scale software developments—which used to constitute

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<sup>5</sup> Tracking price changes in the monthly rate is problematic in the sense that it cannot capture price changes stemming from changes in productivity. However, there is no better survey method at present.

the majority of software development—are usually transacted with the same client over the long run. In these cases, the prices for software development are quoted by the quantity of work and the monthly rate per person. Hence our survey method is well-matched for this field. In recent years, however, small-scale software developments have grown due to the diversification of customers, including small companies, and the shortening of development schedules. Thus, it becomes difficult to determine a continuous transaction with the same client for the small-scale software developments. Additionally, small-scale software developments, where total price is quoted without estimating the quantity of work and without making an agreement about the monthly rate per person, are also increasing.

To cope with this change, we plan to introduce for item “Customized software” in the 2000 base CSPI “the averaged monthly rate per person,” which is defined as a unit amount of sales divided by the number of months and persons required for the development, as sample prices. This survey method is based on the fact that software development companies necessarily estimate the quantity of work and the number of months and persons required for the development.

Needless to say, it is absolutely essential to calculate an averaged monthly rate per person within the bounds of ensuring constant quality. A better way to keep quality constant is to survey software developments that need persons such as programmers and system engineers with the same skills. However, it is not so easy to group such developments. Thus, as the second-best way, we will collect the averaged monthly rate per person providing “a certain similar group of services” or “services to a certain similar group of clients.” For example, we plan to bundle software developments using the same package in a group, or bundle software developments for the same corporation or industry in a group, in calculating the rate.

Let us illustrate our preliminary estimated index using the averaged monthly rate per person for the item, “Customized software” (see Chart 1). It fluctuates in the first half of 2001, but after that, its fluctuation diminishes, and we can find a downward trend contrary to the present 1995 base index. This movement fits the condition that the IT industry has faced hard times since 2001. It can be said that the introduction of the averaged monthly rate per person improves of the accuracy of the price index for the item “Customized software.”

## **5. Concluding Remarks**

Our preliminary revision plan was published in May 2003 to elicit commentary and feedback from the public. So far, most comments are generally in favor of our plan. As for introducing averaged prices within the bounds of ensuring constant quality in some sectors, if anything, there are some preferable comments that the preliminary 2000 base index in chart 1 illustrates reality more accurately than the current index does.

We are now negotiating with correspondent companies to review sample prices by visit, phone, or e-mail. For example, when we discuss adopting the averaged prices within the bounds of ensuring constant quality, we ask companies to group individual kinds of services adequately. However, the risk that reporting companies will combine services with different qualities exists. If this causes serious fluctuations or biases, we must give

up the adoption of averaged prices.

At the same time, as we endeavor to reduce correspondent companies' reporting burdens as much as possible, we are discussing methods for specifying sample prices with them to select the most efficient survey methods.

Our schedule for the 2000 base CSPI revision is as follows: (1) we will fix our revision plan by the end of 2003, (2) we will review and collect sample prices by around March 2004, (3) we will calculate weights for the 2000 base CSPI by around May 2004, (4) we will calculate indexes and check those movements by autumn or winter of 2004, and (5) we will release the 2000 base CSPI by the end of 2004.

**Table 1 Revision Plan of Items**

**Group “Financial Services”**

**1995 base**

Subgroup	Item
Banking services	Remittance services
	Finance bills collection services
	Direct debit services
	Electronic banking services
	Foreign exchange and related services
	Stock transfer agency services
	Securities issuance and related services
	Trust business services
Securities Securities	Underwriting services

**2000 base**

Subgroup	Item
[C] Financial services	[C,E] Domestic exchange services
	[N] Foreign exchange services
	[C,E] Settlement services through customer accounts
	[A] Trust business services
	[S] Securities brokerage services
	[N] Underwriting services
	[S] Securities selling services
	[C] Securities issuance, transfer, and related services
	[S] Financial agency services
	[S] Custody services
[S] Credit guarantee and related services	

**Major Group “Real Estate Services”**

**1995 base**

Subgroup	Item
Real estate rental	Office space rental
	Sales space rental
	Hotel rental
	Parking space rental

**2000 base**

Subgroup	Item
[D] Office space rental	[D] Office space rental <areas around Tokyo>
	[D] Office space rental <areas around Nagoya>
	[D] Office space rental <areas around Osaka>
	[D] Office space rental <other areas>
[D] Other space rental	[N] Sales space rental
	[N] Hotel rental
	[N] Parking space rental

**Group “Overland Freight Transportation”**

**1995 base**

Subgroup	Item
Railroad freight transportation	Railroad freight
Road freight transportation	Less-than-truckload freight
	Truckload freight

**2000 base**

Subgroup	Item
Railroad freight transportation	[N] Railroad freight
Road freight transportation	[C,D] Less-than-truckload freight
	[C,D] Door-to-door parcel delivery
	[C,D] Drops off deliveries in postboxes
	[C,D] Chartered truckload freight
	[C,D] Specific truckload freight

**Group "Passenger Transportation"**

**1995 base**

Subgroup	Item
Railroad passenger transportation	Railroad passenger transportation
Road passenger transportation	Buses Hired cars Taxis
Air passenger transportation	International air passenger transportation Domestic air passenger transportation

**2000 base**

Subgroup	Item
Railroad passenger transportation	[D] <i>Shinkansen</i> bullet train
	[D] Railroad passenger transportation (excluding <i>Shinkansen</i> bullet train)
Road passenger transportation	[D] Route bus
	[D] Chartered bus
	[C] Hired cars and taxis
Air passenger transportation	[N] International air passenger transportation
	[N] Domestic air passenger transportation

**Major Group "Information Services"**

**1995 base**

Subgroup	Item
Software development	Software development
Other information services	Data processing
	Providing databases
	Market research

**2000 base**

Subgroup	Item
Software development	[D] Customized software
	[D] Pre-packaged software
Other information services	[D] Data processing services
	[D] System management and operation services
	[N] Providing database services
	Market research

**Group "Communications"**

**1995 base**

Subgroup	Item
Postal services	Letters
	Postcards
	Other postal services
Domestic and international telecommunications services	Domestic fixed telephone services
	International fixed telephone services
	ISDN (Integrated Services Digital Network)
	Data transmission services
	Domestic leased circuits
	International leased circuits
Mobile telecommunications services	Cellular phone services
	PHS (Personal Handyphone System) services
	Pager services
Access charges	Access charges

**2000 base**

Subgroup	Item
Postal services	Letters
	Postcards
	[D] Third-class mail (approved periodicals, unsealed)
	[D] Principal special mail services for letter
	[D] Parcel post
[N] Fixed telecommunications services	[C] Fixed telephone services
	[C] Leased circuits
	[N] Fixed data transmission services
[N] Mobile telecommunications services	Cellular phone services
	PHS (Personal Handyphone System) services
	[A] Pager services
Access charges	Access charges

Note:

Letters in parentheses denote subgroups/items which have been changed in accordance with the revision to the 2000 base Corporate Service Price Index. The letter "S" denotes items that have been newly selected, "A" denotes items that have been abolished, "D" denotes subgroups/items that have been divided, C denotes subgroups/items that have been combined, "E" denotes items that have been expanded, and "N" denotes subgroups/items whose names have been changed.

**Table 2 Newly Introduced Services (Planned)**

<i>Major group / Group Item</i>	<i>Newly introduced services (planned)</i>
<b>Group: Financial services</b>	
Domestic exchange services	Interbank charges for remittance
Securities brokerage services	Equity brokerage commissions
Underwriting services	Equity underwriting fee, Public bond underwriting fee
Securities selling services	Selling fee for beneficiary certificates, etc.
Financial agency services	Bank of Japan's agency commissions, Government's agency commissions
Custody services	Safe custody commissions, Safe deposit box commissions
Credit guarantee and related services	Commissions received for acceptance and guarantee of payments, etc.
<b>Group: Overland freight transportation</b>	
Drops off deliveries in postboxes	"Mail express"(deliver relatively light packages <sup>1</sup> such as magazines or catalogs directly to recipient's mailbox. )
Specific truckload freight	Overland freight part of air freight, etc.
<b>Group: Marine freight transportation</b>	
Ship chartering services	Trip charter, etc.
<b>Group: Passenger transportation</b>	
Route bus	Highway bus
Chartered bus	Chartered bus
<b>Group: Warehousing and other transportation services</b>	
General warehousing and storage	Document storage, Magnetic tape storage
<b>Major group: Information services</b>	
Customized software	Packaged solution development
Pre-packaged software	Business-oriented pre-packaged software
Data processing services	Application service provider (ASP) services <sup>2</sup>
System management and operation services	System management services, Housing services, System security operation services, etc.
<b>Group: Communications</b>	
Fixed telephone services	Internet telephone services
Cellular phone services	wireless access to the Internet services
<b>Major group: Advertising services</b>	
Internet advertising	Banner advertising, E-mail advertising, etc.

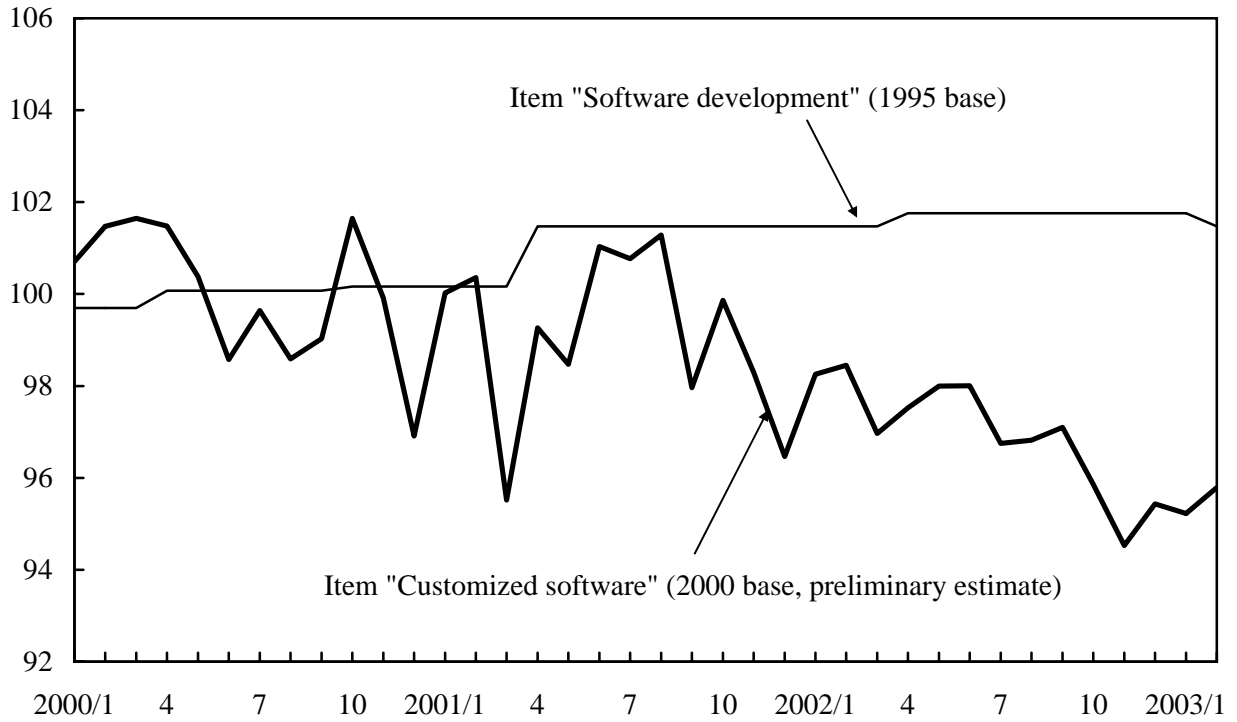
Notes:

<sup>1</sup> Weight must be less than 1kg. Size must be within 70cm total surface area. The longest side must be less than 40cm, and thickness less than 2cm.

<sup>2</sup> Service that grants customers the right to use provider's computer and software. Customers send data to provider's computer through the Internet and process the data using provider's software.

**Chart 1. Preliminary estimated index of "Customized software"**

( 2000 average = 100 )





# Quality adjustment in practice: Case studies in the Corporate Service Price Index (CSPI)

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## 1. Introduction

The Bank of Japan produces two price indexes for capturing the price movements of goods and services traded among companies: the Corporate Goods Price Index (CGPI), and the Corporate Service Price Index (CSPI). While the CGPI has its own long tradition (since 1897) as the Wholesale Price Index (WPI), the CSPI has been published since 1991, where data have been available since 1985. The present CSPI is calculated based on the weight data of 1995. Nowadays, the CSPI functions as an essential indicator for judging Japan's economic conditions and deflators for the Gross Domestic Products (GDP). Moreover, the CSPI is often used as a standard for price negotiation.

However, with the country's rapid technological development and diversification in service industries, representative transactions are frequently changed and, consequently, prices compiled in the CSPI are continuously required to be replaced from the old samples to new ones. An important issue is that it is difficult to employ quality adjustment in replacing representative samples.

As is well known, quality adjustment for service prices is far more difficult to achieve than that for goods. Conceptually, quality in services like comfort is quite diverse and ambiguous. Practically, even if quality is defined as a certain concept, we can hardly find suitable data for evaluating quality changes that occur continuously.

Nevertheless, to a certain extent, we have endeavored to employ quality adjustment in the CSPI by collecting information from correspondent companies. Our strategy is to do our best with the information we have available.

This paper is organized as follows: Section 2 overviews the methodology of quality adjustment. Section 3 surveys our practical application of quality adjustment in price replacements in 2002. In section 4 we show several examples and explain our experiences of quality adjustments in more detail. Section 5 concludes with some remarks.

## 2. Overview of the Methodology

The quality adjustment methods we have used are: the direct comparison method, the unit price comparison method, the production cost method, the overlap method, and the hedonic regression method. The imputation method, in which the price information of other similar products is imputed to the price index and the price gap caused by quality differences is eliminated from the price index, has not been used so far.

### Direct Comparison Method

When we replace sample prices, it does not necessarily cause a change in quality between the old and new services. If there is no difference in quality, we can use the direct comparison method, which incorporates the prices of new products into the index by comparing them with those of old products directly. For example, this is often the case when the product numbers have changed but the quality has not. In the sense that we judge whether a quality difference exists, the direct comparison method is regarded as a quality adjustment method. When the direct comparison method is selected as a quality adjustment method for a sample price replacement, there is no practical work to adjust the quality of sample prices.

### Unit Price Method

The unit price method adjusts the difference between the prices per same quantity unit when there are changes in price and transaction volume. As in the direct comparison method, quality of the old and new products is treated as unchanged. It should be noted that volume discounts are regarded as changes in quality because there are changes in the transaction condition between the old and new sample prices. In these cases, the unit price method cannot be simply applied.

### Production Cost Method

The production cost method adjusts prices on the foundation that the difference between the qualities of old and new products corresponds to the difference in costs to make products. The cost information is obtained from corresponding companies. Thus, although we check the provided information carefully, quality adjustment basically depends on their information. The advantage of the production cost method is that, so long as the data can be obtained from each correspondent company, the information can be incorporated instantly. Therefore, the applied range of this method is broad, even in service prices.

### Overlap Method

When the old and new products are sold simultaneously during a certain period of time and when the difference between the two prices is steady, we could apply the overlap method. In this method, we suppose that the price difference between them comes solely from differences in quality, which captures all the quality differences between two sample prices that cannot be specifically extracted by methods such as the production cost and the hedonic regression method. The basic rule is to maintain the level of the new and old price indexes.

### Hedonic Regression Method

The hedonic regression method treats products as a collective entity constituted by several functions and degree of performance (both are a part of “characteristics”). Prices in market equilibrium are supposed to be explained by those characteristics under perfect competition. Thus, if a significant regression model explaining the relation between prices and characteristics is obtained using actual data, the theoretical price change corresponding to quality change is calculated based on the volume of the characteristics. So, we can obtain pure price movements by excluding the price change caused by this quality change.

The advantage of the hedonic regression method is that quality adjustment can be made

statistically based on the objective characteristics of a product without relying on subjective judgments about its quality. Besides, this method reduces the burden of reporting firms because they are freed from our inspection of production cost.

### **3. Price Replacements During 2002**

#### **3.1 Practical Application of Quality Adjustment Methods**

With the continued development of information technology and the accelerating diversification of services, representative services are changing rapidly. We are forced to replace sample prices continuously. In recent years, the number of cases in which samples need to be replaced has been increasing. Table 1 shows that price replacements made during 2002 for the CSPI totaled 413 among 2,957 sample prices, indicating that the number of replacements of price data comprises 14 percent of the CSPI sample prices in one year.

However, as described before, it is quite difficult to employ proper quality adjustment for service prices. As shown in Table 2, three-quarters of price replacements in the CSPI during 2002 were judged as incomparable cases, where the indexes of new services start in the same level as old ones. Indeed, the number of “difficult to compare” in 2002 was partly inflated due to the special circumstance that the sample prices for real estate services were intensively revised in the latter half of that year.

The direct comparison method was applied to around 10 percent of replacements of sample prices for the CSPI during 2002. It should be borne in mind that this number includes such cases as organizational changes of corresponding companies due to affiliations without any change in service itself or conditions of transaction.

When we adjust substantial quality differences between the old and new services, the production cost method is relatively popular, and comprised 8 percent of all the replacements—one-third of comparable cases in 2002. Although this method depends on the information provided by correspondent companies, it is broadly applicable to various cases.

Under certain conditions, the overlap method is also usable. The number, 14, looks small, but this means that we coped with more than one case a month on average by using the overlap method.

The number of the cases using the hedonic regression method was only three in 2002, all of which were the quality adjustment of computer rental, where we applied the hedonic regression model developed for the quality adjustment of computers in the CGPI to the CSPI.

Other than computer rental, the index of leasing of computers and related equipment is indirectly influenced by the indexes of computers in the CGPI, whose quality changes are adjusted by the hedonic regression method. These cases are not included in Table 1.

#### **3.2 Effect on the CSPI in 2002**

Table 3 summarizes the effect of quality adjustments on the year-to-year change in the CSPI by major group. In 2002, quality adjustment had a negative effect on the year-to-year change of the price indexes of leasing and rental, professional services, and other services by 0.1 percent, while in information service, price replacement had a positive effect. In the result, quality adjustment itself was not a factor that moved the total CSPI in 2002. On the other hand, the figures including the effects of quality adjustment of goods related to leasing services show that

quality improvement in computers lowered the year-to-year change of the index of leasing and rental by 2.8 percent, and the CSPI total by 0.2 percent.

#### **4. Quality Adjustments in Practice**

Compared with quality adjustment in goods, that in the service sectors is admittedly difficult, but we actually adjusted 50 cases in 2002. In the revision plan for the 2000 base CSPI, we will try to improve our methods of quality adjustment. The following section describes our practice and ideas using examples.

##### **4.1 Production Cost Method**

In general, the price difference between the old and new products reflects additional costs to produce new ones such as costs of materials, labor expenses, research and development expenses, etc. Consequently, when we employ the production cost method, we need information on all of these costs. However, because services are provided by labor intensive work, changes in the cost corresponding to those of qualities are, to some extent, derived from changes in labor costs. If labor productivity is unchanged, it is not so difficult for correspondent companies to report such changes in labor costs. Therefore, when we face alternations in representative contracts, in particular, of services provided by relatively homogeneous workers, we persistently collect information on cost differences, and compare those differences of the cost and the price change.

###### **Example 1: “Market Research”**

In the business of “market research,” a researching firm makes a contract with a customer on certain terms such as the number of items, areas, etc. If those terms of the representative service are changed, we must replace the sample price accordingly. In example 1, while the price was unchanged, the number of items to be researched increased from 95 to 98. The correspondent company reported that the cost for market research was basically in proportion to the number of items, and that price should have been raised by at least three percent. So, we treated the difference between the new price, 23,550 yen, and the quality adjusted price, 24,278.35 ( $=23,550/(1-0.03)$ ) yen, as the pure price change.

###### **Example 2: “Building Cleaning Service”**

The price for building cleaning service is determined by manpower, frequency, and area to be cleaned. In example 2, the correspondent company reported that cleaning frequency defined by the contract decreased from eight times to six times a month and reduced the cost for cleaning by 103,500 yen. Therefore, we treated the difference between the actual new price, 666,000 yen, and the quality adjusted new price, 907,500 ( $=1,011,000-103,500$ ) yen obtained from the price of old price (1,011,000 yen) minus the decrease in cost (103,000 yen), as the pure price change.

In addition to these examples, we can apply the same approach to the prices of services like facility management services, security services, etc. In applying the cost production cost method to the quality adjustment of services provided by labor-intensive work such as software development services, we should take the price change caused by the improvement of labor productivity into consideration. However, the price change caused by the improvement of labor productivity is not measured by the production cost method in practice due to lack of information.

Moreover, in applying the production cost method, there is the general problem that we do not always obtain the exact cost information corresponding to the quality change by the correspondent companies' reports. As cost information is extremely confidential, we sometimes face the obstacle that, due to correspondent companies' strategies, they cannot provide cost information at all, or may they provide only a part of cost information. In addition, the reporting burden on correspondent companies would increase, in particular, when we survey many sample prices from a certain correspondent company, or we survey services that have briefer product cycles.

On the other hand, we have different types of examples using the production cost method. In "certified social insurance and labor specialist service," we calculate the cost for quality change with a simple regression model.

#### Example 3: "Certified Social Insurance and Labor Specialist Service"

"Certified social insurance and labor specialist service" is a consulting service for a company's labor management. Basically the costs for consulting correspond to the number of employees to be managed in customer's company. Thus, if we identify this relation statistically, we can apply the production cost method to the change in the contract about the number of employees.

At present we use a tariff table of monthly consulting fees, with 14 ranks set by the number of employees of customer's company ranging from "from one to less than five" to "from 400 to less than 500." So, even if the number of employees is beyond this range, we obtain theoretical prices based on consulting costs for any case from a simple regression function between monthly fees and the number of employees.

In example 3, the prices of old and new services were defined as consulting fees with employees ranging at "from 1800 to 1899" and "from 2300 to 2399" respectively. In this case, putting medians of employees, 1849.5 and 2349.5, into the regression model, we calculated the theoretical increase rate of price based on the consulting cost corresponding to the quality change, which was 26.2 percent. Consequently, we obtained the quality adjusted price of the new service 1,009,600 (=800,000\*1.262) yen by multiplying the price of the old services (800,000 yen) by the rate of price change due to the quality change (1.262). The price difference of the minus 129,600 (=880,000-1,009,600) yen derived from the price of new services (880,000 yen) minus the quality adjusted price of the new services (1,009,600 yen) is counted as the pure price change.

Another problem in the production cost method is that sometimes reported cost information includes not only the additional cost for the change in quality to be adjusted, but also that for other factors due to the limitation of information provided by the correspondent companies. It is difficult to extract the exact cost for quality change.

Under such circumstances, to conduct quality adjustment of sample prices, we use available information as much as possible. In the CSPI of 2000 base, we will try to apply the production cost method to the newly introduced index for packaged software. Since the packaged software is produced by relatively small firms, if a responding firm specializes in the products to be sampled and develop a new series of these products, it is relatively easy for us to collect the accurate cost information of the new products. This is because we can regard that the total cost of the company is equal to the cost of the products produced.

## 4.2 Unit Price Method

The unit price method is applicable as long as the quality per unit is kept in the same between the old and new samples. Since it is used for only one case in the replacements of samples implemented during 2002, we will explain two examples, one of which was reported in 2001.

### Example 4: “Taxis”

In taxi services, quality in terms of transportation is not supposed to change significantly although there might be slight differences in ride quality like comfort. Therefore, when faced with the price change in taxi services, we compare the unit price, such as a price per meter. In example 4, the driving distance benchmark for counting fees was changed from 273 meters to 292 meters. Since our sample price was set at the fee for the driving distance benchmark, the theoretically adjusted price for new driving distance benchmark, 292 meters, was 855.68 ( $=800 * 292/273$ ) yen by multiplying the price of the old services (800 yen) by the rate of change in the driving distance benchmark ( $292/273$ ). Thus we regarded the price difference to be minus 155.68 ( $=700-855.68$ ) yen, which was derived from the price of new driving distance benchmark (700 yen) minus the adjusted unit price of the old services (855.68 yen), and is counted as the pure price change.

### Example 5: “Newspaper Advertising”

In “newspaper advertising,” size is an important factor that determines the price of advertising. In other words, when the size of representative newspaper advertising changes, as long as other conditions are the same, prices per unit size between the old and new advertising are comparable because quality of the same unit is the same. In example 5, while the size of advertisement was changed from 36.85 square centimeters ( $=5.5$  by  $6.7$  centimeters) to 44.28 ( $=5.4$  by  $8.2$  centimeters), the price increased from 840.1 yen to 1088.9. However, unit price per 1 square centimeter (22.8 yen) remains almost the same. Taking into account that other qualities remained unchanged, we apply the unit price method and made the index level remain unchanged.

The idea of the unit price method is quite simple. However, as mentioned before, we should be cautious about the volume discount effect on price. If the unit price is determined by the volume of services, differing amounts of services are not comparable.

## 4.3 Overlap Method

### Example 6: “Outdoor Advertising”

In “outdoor advertising” we collect advertisement rates of specified contracts that are defined by location and size. If one of those contracts expired, we replace it with another. In this case we often use the overlap method because the new sample coexists with the old one. In example 6, although the price of the new sample is much higher than the old one, the responding firm told us that the price difference had been stable in the past. So, regarding the price difference as that of quality, we applied the overlap method and kept the same index level as before.

This is considered a rational method when the two services coexist simultaneously, the transaction volume of both products is stable, and those prices move in parallel. However,

actual application of this method is limited, because this does not usually occur in services facing relentless technological innovation and diversification. In general, old services rapidly lose their attraction within the market due to the introduction of new ones. Furthermore, if new services are priced strategically to increase their market share, the assumption that the price gap reflects the quality difference does not hold.

One of the applicable prices for the overlap method seems to be airfares, where various kinds of discount tickets are sold and replaced, reflecting recent deregulation in the airline industry. We are sure that there are quality differences between normal tickets and discount tickets. However, it is not so simple to incorporate quality adjustment in air passenger transportation. Let us discuss the issue using our future plan of the CSPI.

#### Example 7: “Domestic Air Passenger Transportation”

In the 2000 base CSPI, we are planning to expand the variety of discount tickets in “domestic air passenger transportation.” This will reflect the actual price movements more accurately, but we will have to cope with the lack of term- providing services of seasonal discount tickets. In Japan there are several seasonal discount tickets that are sold only in off-peak seasons. These discount tickets have several conditions such as no cancellation, no reservation change, purchase in advance, etc. In this sense their quality is obviously inferior to normal tickets.

The point is whether the price difference is regarded as the quality difference between discount seasonal tickets and normal tickets. If it is true, we can apply the overlap method to the price replacement whenever each season ends. In the price index there is no jump between seasons.

However, we decided not to adopt this way of quality adjustment in the 2000 base CSPI. The reasons are following two points. First, the price difference does not seem to reflect that of quality. In other words, the price difference is too large, despite satisfying the basic service of transporting a person to his or her destination. This is partly because airline companies could control their oligopolistic prices in Japan. Second, the possibility of purchase, which is one factor of quality of services changes depending on the timing of ticket purchase. For example, when customers purchase normal tickets during peak season, they must reserve them in advance and cannot change their plan freely just before traveling because they have little chance to purchase other tickets. This means that customers never enjoy the quality of normal tickets in peak season. Therefore, we cannot simply define the price difference in air passenger transportation as differences in quality.

#### **4.4 Hedonic Regression Method**

The hedonic regression method is applied only to “computer rental.” We apply our hedonic regression model used in the CGPI to the CSPI as a substitute. This is because we regard the quality change in services of computer rental equal to the quality change in computer products.

#### Example 8: “Computer Rental”

The index of “computer rental” is compiled by rental fees of representative computers, which rapidly and continuously change in line with technological development. Therefore, we apply our hedonic regression model used in the CGPI to the CSPI. In example 8, our sample price was a rental fee of a notebook computer for six months, and the spec of the representative computer changed in main memory, from 384MB to 768MB, and clock

frequency, from 1.0GHz to 1.6GHz. Then, using the parameter of the hedonic regression model for the CGPI, we obtained the rate of the change corresponding to the quality improvement of the representative notebook computer, 48.7 percent. Since we assumed that quality of computer rental service was defined by the computer to be rented, the level of the theoretical price corresponding to the quality of the new rental service was 39,702.9 yen ( $=26,700 \times 1.487$ ). Consequently, the difference between this theoretical price (39,702.9 yen) and the actual price (38,900 yen) was treated as a price decrease in the CSPI.

In the indexes of “leasing of computers and related equipment,” the effect of quality adjustment using the hedonic regression method is indirectly influenced. Leasing service prices are usually calculated by multiplying the prices of products to be leased by the commission rate for leasing services. In the CSPI, sample prices of leasing services are compiled by multiplying the commission rate for leasing services collected from corresponding companies by the prices of products to be leased. As prices of products to be leased, we selected the corresponding index series from the CGPI—what we call “inflator.” As for “leasing of computers and related equipment,” the inflator is the index of personal computers or electronic computers and computer equipment in the CGPI. Therefore, whenever quality adjustment using the hedonic regression method occurs in these indexes of the CGPI, it has some effects on leasing of computers and related equipment in the CSPI.

As described above, the hedonic regression method has the advantage in objectively quantifying quality. However, there are various issues to be solved in practice. First, the possibility of specifying the principle characteristics representing the quality of each product must be secured before using this method. Second, these characteristics need to be shown quantitatively. Third, to obtain a stable estimation, a vast amount of data on prices and characteristics must be collected within a short period. These restrictions prevent us from applying this method to various items in the CSPI.

## **5. Concluding Remarks**

This paper explains our practical experiences and ideas in employing quality adjustments in the CSPI. While intensive discussion on the methodology about quality adjustment is progressing, we are struggling to adjust quality change as much as possible by using available data and information. Our practical approach might look simple in the sense that it does not necessarily rely on complex calculations. However, under the circumstance that representative services alternate continuously, it is essential for us to manage various price replacements for adjusting the quality differences between the old and new services without judging it to be “difficult to compare.” Otherwise, the CSPI will be seriously distorted and we will not grasp the real situation in service sectors. Therefore, we will continue to make efforts to improve the accuracy of quality adjustment by collecting as much information as possible. The most important point is to keep close contact with correspondent companies. Practical success in quality adjustment depends on statistics compilers’ back-to-basics mindsets and actions.



**Table 1 -- Number of Replacements of Price Data in the CSPI**

**(During 2002)**

figures in ( ) are those of the previous year  
figures in [ ] are the number of price data in Dec.2002

Major group	No. of cases
Finance and insurance	86 (31)
Real estate services	83 (14)
Leasing and rental	82 (5)
Other services	77 (57)
Transportation	35 (64)
Total[2,939]	413 (208)

Note: Changes in surveyed prices indicate changes in the content of commodities, transaction condition, and surveyed company.

**Table 2 -- Number of Replacements by Quality Adjustment Method**

**(During 2002)**

figures in ( ) are those of the previous year

Production cost method	32 (30)
Overlap method	14 (16)
Hedonic regression method	3 (—)
Direct comparison method	43 (40)
Unit comparison method	1 (3)
Difficult to compare	318 (109)
Other	2 (10)

Note: The hedonic regression method has been applied to “computer rental” from April 2002.

**Table 3 Quality Adjustment Effect on the CSPI**

y/y % chg.

	2002 <1995base>		
	After quality adjustment (A)	Before quality adjustment (B)	Quality adjustment effect (A)-(B)
All items	-0.6	-0.6	<b>0.0</b>
Finance and insurance	-0.1	-0.1	<b>0.0</b>
Real estate services	-1.2	-1.2	<b>0.0</b>
Transportation	-0.1	-0.1	<b>0.0</b>
Information services	-0.3	-0.4	<b>0.2</b>
Communications and broadcasting	-1.2	-1.2	<b>0.0</b>
Advertising services	1.7	1.7	<b>0.0</b>
Leasing and rental	-2.7	-2.5	<b>-0.1</b>
Industrial waste and sewage disposal	2.7	2.7	<b>0.0</b>
Motor vehicle and machinery maintenance	-0.9	-0.9	<b>0.0</b>
Professional services	-0.9	-0.7	<b>-0.1</b>
Other services	-3.2	-3.0	<b>-0.1</b>

Reference: Calculated based on the assumption that the price declines in leasing and rental are regarded wholly as quality change.

y/y % chg.

	2002 <1995base>		
	After quality adjustment (A)	Before quality adjustment (B)	Quality adjustment effect (A)-(B)
Leasing and rental	-2.7	0.1	<b>-2.8</b>
contribution to CSPI	-0.2	0.0	<b>-0.2</b>

- Notes: 1. To observe the quality adjustment effect of the relevant year, the year-to-year percent changes are calculated by using the index as of December and that of the previous December.
2. To observe the quality adjustment effect, some cases are excluded. For example, the case when Direct comparison method or Unit price comparison method is adopted (the qualities of the old and new products are regarded as fundamentally the same) or the case when the price differences between old and new products are over 50% and it is irrelevant to see year to year % change as quality adjustment effect.
3. The price decline in leasing includes not only quality changes but also the pure price decline of the item. Thus, this calculation is estimated as the upper limit value of quality adjustment. Changes in interest rates are not regarded as changes in prices of items but as changes in leasing rates.

**Table 4 -- Examples of Quality Adjustment**

No.	Item	Sample price	Change in quality	Price in actual transaction	Method for quality adjustment
1	Market research	Panel research on POS (Point of Sales)	Transaction contract --- Increase in items to be researched (Old: 95 items→ New: 98 items)	Old: 23,550 yen → New: 23,550 yen	Production cost
2	Building cleaning services	Office building cleaning --- 9,572 square meters	Transaction contract --- Decrease in the frequency of cleaning (Old: 8 times a month→ New: 6 times a month)	Old: 1,011,000 yen → New: 666,000 yen	Production cost
3	Certified social insurance and labor specialist services	Consulting fee	Transaction contract --- Increase in the number of employees in customer's company (Old: 1800-1899 employees→ New: 2300-2399 employees)	Old: 800,000 yen → New: 880,000 yen	Production cost
4	Taxis	Unit additional fee	Driving distance benchmark (Old: 273 meters → New: 292 meters)	Old: 800 yen → New: 700 yen	Unit price
5	Newspaper advertising	Advertisement in general news pages	Size (Old: 5.5×6.7 cm→ New: 5.4×8.2 cm)	Old: 840,100 yen → New: 1,008,900 yen	Unit price
6	Outdoor Advertising	Outdoor advertising in Tokyo	Location (Old: on the top of A building → New: on the top of B building)	Old: 34,000 yen → New: 50,000yen	Overlap
8	Computer rental	Rental fee of a notebook personal computer per month	Computer spec ---Main memory, Clock frequency (Old: 384 MB, 1.0 GHz → New: 768MB,1.6GHz)	Old: 26,700 yen → New: 38,900 yen	Hedonic regression

Note: Since Example 7 shows our idea for the 2000 base CSPI, it is eliminated from this table.

## **A New Direction in the Development of Information Society Statistics in Japan**

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### **Summary**

As to information society statistics in Japan, future directions for the development of ICT statistics and statistics on intellectual property were formulated in “New Directions in the Development of Government Statistical Services”, which was decided in June 2003 as an agreement of Meeting of the Heads of the Statistical Departments of the Cabinet Office and Ministries.

In this paper we introduce the present situations and future directions of information society statistics in Japan based on the “New Directions” with some results of recent surveys on ICT.

### **1. Introduction of some results of recent statistical surveys on ICT**

As I introduced in the last Voorburg Group meeting, at least 41 kinds of official statistical surveys containing questions related ICT have been conducted in the past five years (refer to “Japanese ICT Statistics and New JSIC with the Information and Communications Division”, H.Kitada, 17<sup>th</sup> Voorburg Group Meeting in 2002).

In this section we introduce some interesting results relating ICT from recent statistical surveys namely the Establishment and Enterprise Census (final results) and the Survey of Time Use and Leisure Activities. (As to the outlines of the surveys see Annex.)

#### **(1) The Results of Establishment and Enterprise Census on E-commerce (2001)**

**Engagement Ratio in electronic commerce was 10.5%.**

The number of enterprises which engaged in electronic commerce stood at 169,000 enterprises as of October 1, 2001, and the ratio of the number to the total number of enterprises is 10.5% (in this

section “enterprises” mean incorporated enterprises). From the viewpoint of trading partners, the engagement ratio of B to B (ratio of the number of enterprises engaged in electronic commerce with other enterprises) was 8.1%, and the one of B to C (ratio of the number of enterprises engaged in electronic commerce with consumers) was 4.0%.

**Engagement ratio increased in proportion to the size of employees.**

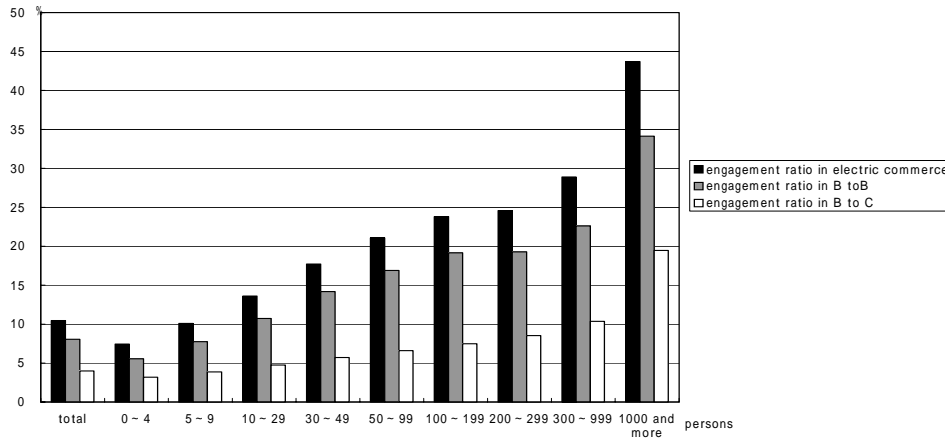
Regarding the engagement ratio in electronic commerce by size of regular employees, the ratio was 10% or less in “less than 10 persons” regular employee size, and between 10% and 20% in “10 to less than 50 persons” regular employee size. And the ratio grew in proportion to the capital sizes, such as 23.8% in “100 to less than 200 persons” regular employee size, 28.9% in “300 to less than 1000 persons” regular employee size, and 43.7% in “1000 persons or more” regular employee size (See Table 1-1 and Figure 1-1).

**Table1-1: Engagement Ratio in Electronic Commerce of Enterprises by Size of Regular Employees (2001)**

Size of regular employees	Total number of enterprises	Engagement ratio in electronic commerce (%)*	Transactions with other enterprises (B to B) (%)		Transactions with the consumers (B to C) (%)	
			(B to B)	(%)	(B to C)	(%)
Total number of enterprises	1,617,600	10.5	8.1		4.0	
Less than 4 persons	829,625	7.5	5.6		3.2	
5 to less than 10 persons	329,998	10.1	7.8		3.9	
10 to less than 30 persons	301,085	13.6	10.7		4.8	
30 to less than 50 persons	66,093	17.7	14.2		5.7	
50 to less than 100 persons	48,144	21.1	16.9		6.6	
100 to less than 200 persons	23,179	23.8	19.2		7.5	
200 to 300 persons	7,491	24.6	19.3		8.5	
300 to 1000 persons	9,139	28.9	22.6		10.4	
1,000 persons or more	2,846	43.7	34.1		19.5	

\*: Summing up the ratio of each transaction does not equal the total, because plural answers were allowed.

**Figure1-1: Engagement Ratio in Electronic Commerce of Enterprises by Size of Regular Employees (2001)**



**High engagement ratio in E-commerce in “Banks and trust banks” and “Information services and research”**

Regarding the engagement ratio in electronic commerce of enterprises by medium industrial group with more than 100 enterprises, “Banks and trust banks” showed a remarkably high ratio of 59.9%, and, “Information services and research” marked 31.5%. Then “Retail trade, general merchandise” recorded 27.8%, followed by “Retail trade (motor vehicles and bicycles)” (27.5%) (See Table 1-2).

**Table 1-2: Industry with High Engagement Ratio in E-Commerce by Medium Industrial Group (Top 10) (2001)**

Ranking	Industry	Number of enterprises	Engagement Ratio in E-commerce (%)	
			Number of enterprises engaged in E-commerce	Engagement Ratio in E-commerce (%)
1	Banks and trust banks	157	94	59.9
2	Information services and research	18,445	5,818	31.5
3	Retail trade, general merchandise	1,144	318	27.8
4	Retail trade (motor vehicles and bicycles)	32,722	8,987	27.5
5	Wholesale trade, general merchandise	791	185	23.4
6	Telecommunications	3,142	681	21.7

7	Wholesale trade (machinery and equipment)	42,239	8,780	20.8
8	Hotels, boarding houses and other lodging places	19,453	4,010	20.6
9	Manufacture of beverages, tobacco and feed	4,366	888	20.3
10	Retail trade (furniture, household utensil and household appliance)	35,009	6,928	19.8

Note: Medium industrial groups with more than 100 enterprises

\*1 Including insurance agents, brokers and services

## (2) The Results of Survey on Time Use and Leisure Activities (2001)

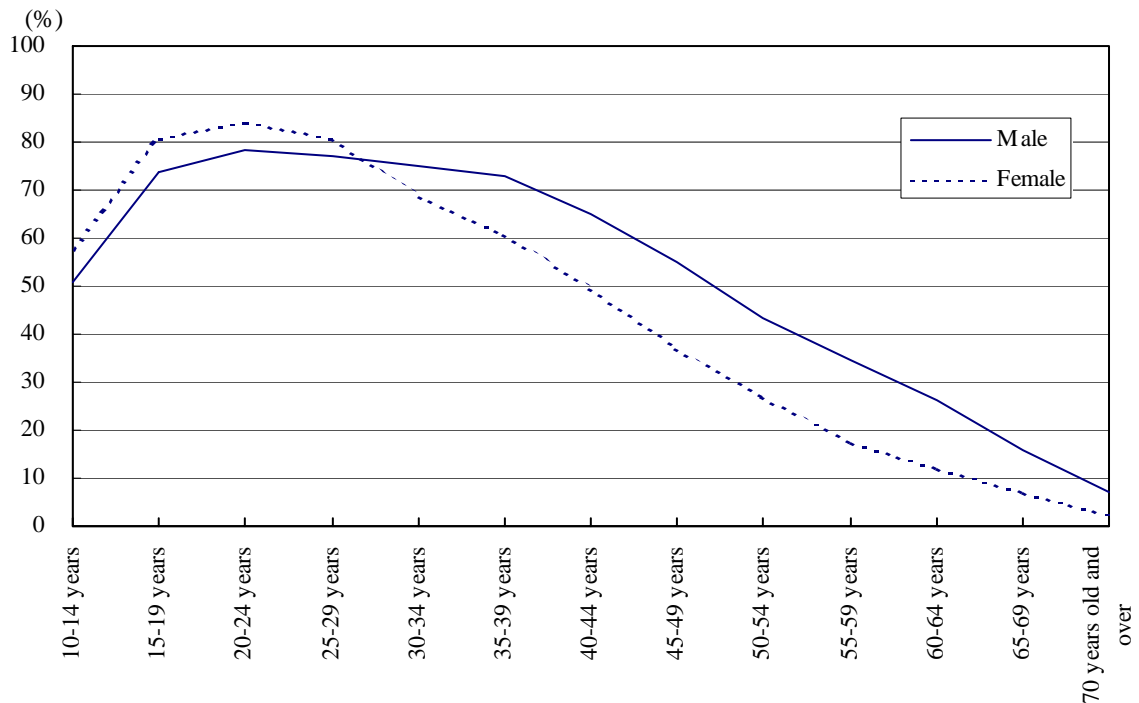
### Early 20s years show the highest participation rate in using “Internet”

**Approximately 50% of males and approximately 40% of females used the Internet.**

In the past one year, approximately 52,450,000 people (10 years old and over) used the Internet. The user rate was 46.4%. Broken down by sex, 51.5% of males used the "Internet" and 41.5% of females did. The male user rate was therefore 10 percentage points higher than female.

When “Internet” user rate is broken down by age group, both males and females in their early 20s show the highest participation rate. In the younger generation of less than 30 years old, females show a higher participation rate than teenage males but males in the 30 years old and over age group show higher participation rate than females in the same age group (See Figure2-1).

**Figure2-1: “Internet” User Rate by Sex and Age Group**



**Approximately 40% of “Internet” use was for “exchanging information”, and approximately 10% for “reserving or buying goods or services, making payment”.**

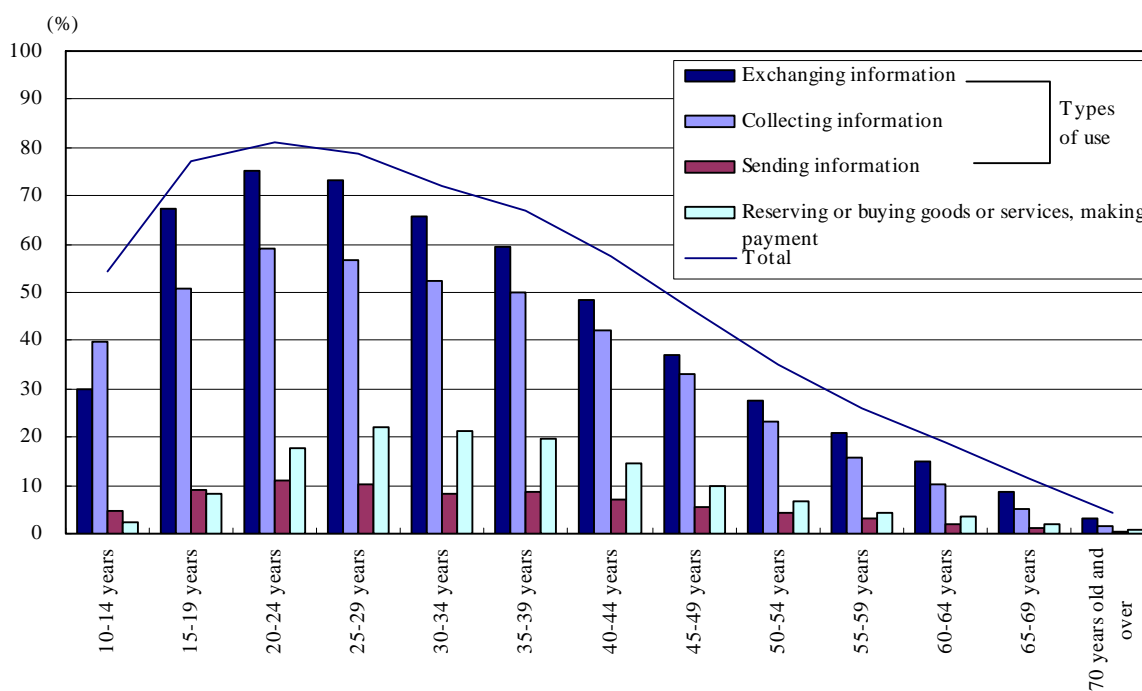
by type of use, 39.5% of people used it for "exchanging information" such as by e-mail, 32.4% people used it for "collecting information" such as viewing Web sites, and 5.6% people used it for "sending information" such as creating Web sites.

Also, 10.1% of people used the "Internet" for "reserving or buying goods or services, making payments".

Broken down by age group, “exchanging information” (75.2%) and “collecting information” (59.2%) are the main reasons people in their early 20s used the “Internet”.

people in their late 20s use the “Internet” for "reserving or buying goods or services, making payments" the most at 21.9% (See Figure 2-2).

**Figure2-2: “Internet” user rate by age group and type of use**



## 2. Development of IT related statistics

“New Directions in the Development of Government statistical Services” (hereafter as “New Directions” in this paper), was decided in 27 June 2003 as an agreement of Meeting of the Heads of the Statistical Departments of the Cabinet Office and Ministries. The “New Directions” is a



guideline for government statistical services in coming 5 to 10 years.

The “New Directions” includes a chapter on development of statistics responding to social and economic changes. As to information society statistics, development of IT relating statistics (ICT statistics) and development of the statistics on intellectual property are dealt with in the chapter.

As to the background and present situation of ICT statistics the following are described.

- In Japan, the Basic Law on Formation of an Advanced Information and Telecommunications Network Society was enforced on January 6, 2001, which obliged the government to work out a basic strategy to promote the formation of advanced IT network society. “e-Japan Strategy” and the “e-Japan Priority Plan” were formulated as the national IT strategy and as the nation’s basic IT plan, respectively. Under these circumstances, aiming at the steady implementation of the e-Japan Priority Plan, and continuous monitoring of its progress and achievements, the IT Basic Law states in Article 14 that “the government shall compile statistics on the society of advanced information and telecommunication network, prepare other data that are instrumental to the formation of the society of advanced information and telecommunication network, and release them to the public from time to time using the Internet or other appropriate methods”.
- In the government statistical services, there is a strong need to accurately respond to the systematic development of these IT-related statistics, and to develop such statistics that will serve as indicators for the measurement and evaluation of the state of progress in the development of IT. Reflecting this, there has been progress on the development of statistics that cover the IT providers and statistics that are related to the status of progress in the development of an IT infrastructure. However, it has been pointed out that there are some fields in which necessary basic data are lacking: data for an in-depth grasp of the actual state of IT-oriented development and IT-based electronic commerce (including cross-border trading), and data on the analysis of the effects of IT-oriented development on the national life, society and economy.
- Amid the rapid growth of IT in national life, society and the economy, in the international theater the Organization for Economic Co-operation and Development (OECD) has produced definitions and classifications in the Information and Communication Technology (ICT) sector based on the International Standard Industrial Classification of all Economic Activities (ISIC). Work on the definition and classification of ICT products and services is also under way at present. In our country too, in order to accurately understand the effect of IT-oriented development, it is necessary to clarify the scope of the IT field, and accordingly, with regard to IT-related statistics, definitions of “IT related industries” that are common to the Cabinet Office and ministries are required.

Based on these situations the following basic directions and concrete measures were decided.

**<Basic direction>**

- (1) In order to develop the basic data needed for understanding the actual state of IT-oriented development and for the analysis of its effect, the Cabinet Office and ministries concerned shall implement new statistical surveys and investigate the revision of existing statistical surveys.
- (2) Defining and classifying of “IT-related industries” that are well coordinated among the Cabinet Office and ministries shall be discussed.

**<Concrete measures>**

- (1) With regard to statistical areas and statistical data related to IT that are not yet developed, development shall be sought, as required, from fiscal 2003, including:
  - a) Basic data used for the SNA estimation.

With regard to investment and the methods of depreciation of software (especially regarding in-house and general-purpose software), the Cabinet Office and ministries shall implement new basic surveys, and also study the development and strengthening of existing statistical surveys, taking account of adjustments with existing statistical surveys and the feasibility of conduction of the surveys.
  - b) Basic data on the analysis of the effects of IT-oriented developments on the economy

In the areas described below, the Cabinet Office and ministries shall, on clarifying the shared role of the various statistical surveys, develop and strengthen existing statistical surveys, implement new surveys as necessary, and endeavor to ascertain the actual state of these areas:

    - the actual state of services associated with the Internet, and services for creating and providing contents
    - data for measuring capital services and the input of labor on a user basis (lease, dispatching workers, outsourcing, etc.)
    - the actual state of changes in human capital and corporate organizations
  - c) Statistics concerning security measures

In the area, in particular, of individuals and households using IT, the MPHPT shall develop and strengthen statistics in respect of security measures under the existing statistical surveys.
  - d) Statistics concerning the use and dissemination of the IT in the public service areas such as medical services, welfare, education, culture, and transport.

The Cabinet Office and ministries shall take positive steps to study this subject.
- (2) With regard to the definition and classification of “IT-related industries”, a meeting for deliberation between the Cabinet Office and ministries concerned shall be set up in fiscal 2003

to facilitate a prompt start of the study.

The issue of how to handle the matter of the definition and classification of “IT-related products” shall also be dealt with at the same meeting.

### **3. Development of the statistics on intellectual property**

As to the background and present situation of the statistics on intellectual property the following are described.

To strengthen the industrial competitiveness of our country, it is necessary to reinforce the policy on intellectual property rights. Consequently in the “Intellectual Property Policy Outline” (Strategic Council on Intellectual Property – July 2002), it has recently been noted that, in order to develop policies that respond promptly and accurately to users’ diverse intellectual property-related activities, statistical surveys related to intellectual property, which are the basis of the planning and designing of policies on intellectual property, shall be developed during fiscal 2002.

As a result, the Ministry of Economy, Trade and Industry (METI) has been implementing the Survey on Intellectual Property-Related Activities since 2002 as a full-dress statistical survey on intellectual property.

**(see the note below)**

In the Basic Survey on Japanese Business Structure and Activities (METI), “the state of owning and trading technology” has also been surveyed.

#### **(Note) Outline of the Survey of Intellectual Property-Related Activities**

##### **(Characteristics of this survey)**

1 The Survey of Intellectual Property-Related Activities is the first full-dress statistical survey which surveys the present situation of intellectual property-related activities of enterprises from the following viewpoints.

utilization of the industrial property right system

revenue and expenditure relating industrial property right

organization and costs for intellectual property-related activities

violation of intellectual property right

- 2 The survey made it possible to know the balance of license in intellectual property-related activities with overseas which had not been captured through previous surveys.
- 3 The survey is able to grasp the present situation of intellectual property-related activities quantitatively and useful for the planning of intellectual property-related policy.
- 4 The respondents of this survey are Japanese corporations, individuals and public organs which filed the following applications in 2000

All corporations, individuals and public organs which filed 3 or more patent applications, 2 or more utility model applications, 4 or more design applications or 3 or more commercial symbol applications (16,136)

1/100 samples among corporations, individuals and public organs which files any applications except

**(Survey date)** October 2002

**(response rate)** 41.1% (In terms of patent applications : 69:4%)

There are two types of software, namely those purchasable in the market (order-made software and general-purpose software) and those developed in-house (in-house type software). In the United Nation's 93 SNA recommendation, they are handled as intangible fixed assets, but under the existing statistical surveys, a comprehensive estimation is impossible for both general-purpose software and in-house-type software.

Similarly, royalties should be included in services, but they are not estimated in Japan's SNA. Furthermore, intangible assets such as amusement and hobbies, literature and artwork should be included in the formation of fixed assets, but they are not estimated in Japan's SNA. This is because there are no basic statistics available, or the collection of data is extremely difficult. Therefore, these procedures have not been introduced into the Japanese SNA.

Based on these situations the following basic directions and concrete measures were decided.

**<Basic direction>**

The development and strengthening of statistics related to the intellectual property shall be sought focusing on the implementation and strengthening of the survey on intellectual property activities.

**<Concrete measures>**

- (1) With regard to "Survey on Intellectual Property-Related Activities ", the METI shall seek to strengthen the survey, as necessary, depending on the results of the survey carried out in fiscal

2002.

(2) With regard to the SNA, an effort should be made to approximate it to the U.N. 93 SNA recommendations. To help improve the SNA, the Cabinet Office shall, from fiscal 2003, take following steps regarding intellectual property.

a) With regard to in-house-type software, in collaboration among the Cabinet Office and ministries as necessary, and from fiscal 2003, grasping the state level of acquisition of in-house-type software assets shall be sought through the development of IT-related statistical surveys.

The study into the state of acquisition of general-purpose software assets shall be continued together with a study on the possibility of grasping it.

b) With regard to royalties, the utilization of the results of the Survey on Intellectual Property-Related Activities shall be discussed.

c) With regard to how to evaluate acquisition amount of intangible assets such as amusement, literature or artwork, research and study shall be conducted including the state of handling these matters in other countries.

## ANNEX

### Data Sources

#### 1. Establishment and Enterprise Census

**Purpose:** To clarify the basic structure of establishments and enterprises at national and regional levels by type of industry and employment size as well as to provide a sampling frame for various statistical surveys concerning establishments and enterprises.

**Survey frequency:** Twice every five years. The main census is conducted in the year ending with 1 or 6, and the simplified census is conducted in the year ending with 4 or 9. The last main census was conducted in 2001 and the last simplified census in 1999.

**Entities surveyed:** All the establishments and enterprises operating in Japan excluding privately managed establishments engaged in agriculture, forestry and fisheries establishments belonging to domestic services, and foreign governments' and international agencies' offices in Japan (Around 6.5millions establishments).

**Survey method:** Complete enumeration; by enumerator.

**Survey date:** October 2001

#### 2. Survey on Time Use and Leisure Activities

**Purpose:** To obtain comprehensive data on how people allocate time to various activities, and on their leisure activities such as sports, studies, hobbies, social activities, and travel. It is designed to make clear the quality of life and the status of non-economic activities such as unpaid work or voluntary activities.

**Survey frequency:** Quinquennial.

**Entities surveyed:** About 210,000 members from 77,000 households.

**Survey method:** Random sampling; by enumerator.

**Survey date:** October 2001

## **Comments from the viewpoint of JSIC on the ISIC structure paper proposed by United Nations**

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### **Introduction**

International Standard Industrial Classification of All Economic Activities (ISIC) Rev 3.1 is under the revision work by the United Nations International Economic and Social Classification Expert Group and its Technical Sub Group for 2007 revision.

Meanwhile, the 11<sup>th</sup> revision of Japan Standard Industrial Classification (JSIC) was made in March 2002. The revision was made in order to conform to the rapid changes in the structure of industry, owing to highly -developed information and communication technology (ICT), diversification in the service industries, declining fertility and an aging population. In the 11<sup>th</sup> revision of JSIC, five new divisions (top level categories) were established, namely, 1) Information and Communications, 2) Eating and Drinking Places, Accommodations, 3) Medical, Health Care and Welfare, 4) Education, Learning Support, 5) Compound Services. (for a correspondence table of Divisions between the 10<sup>th</sup> and the 11<sup>th</sup> versions of JSIC, see annex 1.)

In this paper, I will present some comments from the viewpoint of JSIC and Japanese situation on the ISIC structure paper proposed by United Nations, which was sent to national statistical offices for comments last May as a part of the questionnaire on ISIC and CPC revision. Comments will be made mainly for service sectors.

### **1. On the top-level categories proposed as newly established ones**

In the structure paper, reorganization of Sections (top-level categories) of ISIC Rev 3.1 is made and establishing the following six new Sections are proposed (for a correspondence table of Sections between ISIC Rev 3.1 and the structure paper, see annex 2.)

Section 4 - Repair and Maintenance

Section10 - Information and Communication

Section13 - Professional, Scientific and Technical Services

Section14 - Administration and Support Services

Section16 - Water Supply; Sewage, Waste Treatment and Remediation

Section19 - Arts, Entertainment and Recreation

Determination of introducing these Sections should be made on the basis of observing whether the scale of industries of these Sections is much enough to be introduced as top-level categories in countries and whether definitions of these Sections can be clearly distinguished from those of other Sections and data for these Sections are available in countries, except Information and Communication, industries of which have been emerging significantly all over the world. Particularly, introducing Professional, Scientific and Technical Services and Administration and Support Services needs a deep deliberation based on making sure of whether clear definitions of these services can be established in developing countries since these services are specific for developed countries in which service industries are dominant and outsourcing within industries is highly developed.

1) Repair and Maintenance (Section 4)

Introduction of Repair and Maintenance Section by separating industries only engaged in these activities from manufacturing, wholesale or retail industries is appreciated since it enables to grasp clearly repair and maintenance industries which may have a certain scale in national economies and to ensure conceptual consistency by discriminating these different kind of activities.

Treatment of repair and maintenance industries in JSIC is as follows and it is similar to the above proposal in the structure paper in treating industries engaged only in repair and maintenance activities as an independent statistical group.

- Industries only engaged in repair activities are classified in Major Groups (2 digits categories) of 86 - Automobile Maintenance Services or 87 - Machine, etc. Repair Services, except Otherwise Classified in the Division (top-level category) Q - Services, N. E. C.
- Industries engaged in manufacturing or selling the same kind of goods as those of repair services are classified in the Division F - Manufacturing or the Division J - Wholesale and Retail Trade.
- Industries engaged in ship repairs, the repair or remodeling of the rolling stock (excluding those for railway's own use), and the overhaul of aircraft and its engines are classified in the Division F - Manufacturing even if they have not been engaged in any manufacturing activities during the past year. In cases where machinery repair factories are fitted with machine tools or metal working machinery and conduct manufacturing, processing and repairing of various types of machinery and components, these will be



classified in the Division F - Manufacturing. They are classified in Manufacturing as an exception because, in view of the large-scale facilities present at the factories, these activities are not feasible in the absence of a manufacturing capability.

However, the scale (the ratio of the number of establishments and employees to those of all industries) of industries of the above Major Groups 86 and 87, which are corresponding to industries of Repair and Maintenance in the structure paper, is 1.57 % and 0.95 % respectively as shown in the table 1. The scale of these industries is not much enough to be introduced as a top-level category. Thus, on the basis of Japanese situation, it is preferable to introduce Repair and Maintenance industries as a 2 digits category in, for example, the section 20 - Other Services of the revised ISIC.

Table 1 The scale of automobile maintenance services and machine, etc. repair services industries

Industries	Establishments		Employees	
	Number	Ratio to all industries	Number	Ratio to all industries
86 Automobile maintenance services	67,309	1.06%	319,141	0.53%
87 Machine, etc. repair services	32,259	0.51%	251,785	0.42%
Total	99,568	1.57%	570,926	0.95%

Source : Establishment and Enterprise Census 2001

For the treatment of establishments engaged in both repair and manufacturing (or trade), it is appropriate to treat them as follows.

- For establishments which repair goods and at the same time manufacture or sell the same kind of goods, they are classified in Manufacturing or Trade, regardless of which value added is high, since repair activities are considered incidental services to manufacturing, wholesale or retail activities.
- For establishments which repair goods and at the same time manufacture or sell the different kind of goods, they are classified in any of Repair and Maintenance, Manufacturing and Trade, depending on the value added, since they are considered to be engaged in two different activities.

## 2) Information and Communication (Section 10)

Proposal in the structure paper concerning the introduction of the Information and Communication Section as a new top-level category is highly appreciated since it enables to grasp comprehensively information and communication industries which have been emerging rapidly all over the world.

However, for computer services, particularly data processing services and software supply services, which are proposed to be included in the section 13 - Professional, Scientific and Technical Services, they are closely related to activities of producing, storing and communicating of information. So, it is appropriate to place them in the framework of information and communication and move them to the Information and Communication Section. It seems incongruous that in classifying software-producing services the top-level category varies depending on whether the software is ready-made or order-made.

Meanwhile, definition of establishments included in the Division H - Information and Communications in JSIC is as follows.

“Establishments engaged in information transmission, services such as processing and providing information, Internet based services, or processing information for the purpose of its transmission.”

1-3 digits level structure of the Division H - Information and Communications is as follows and both of custom software services and data processing services are included in 39 - Information Services.

### 1-3 digits level structure of the Division H in JSIC

#### H - Information and Communications

##### 37 - Communications

371 - Transmission of correspondence

372 - Fixed Telecommunications

373- Mobile Telecommunications

374 - Services Incidental to Telecommunications

##### 38- Broadcasting

381 - Public Broadcasting, except Cablecasting

382 - Private-Sector Broadcasting, except Cablecasting

383 - Cablecasting

##### 39 - Information Services

391 - Computer Programming and Other Software Services

392 - Data Processing and Information Services

##### 40 - Internet Based Services

401 - Internet based services

41 - Video Picture, Sound Information, Character Information Production and Distribution

411 - Video Picture Information Production and Distribution

412 - Sound Information Production

413 - Newspaper publishers

414 - Publishers, except newspapers

415 - Services Incidental to Video Picture, Sound Information, Character Information Production and Distribution

### 3) Water Supply; Sewage, Waste Treatment and Remediation (Section 16)

The newly proposed Section 16 - Water Supply; Sewage, Waste Treatment and Remediation consists of some environment related industries which are placed across several Sections in ISIC 3.1 such as D - Manufacturing, E - Electricity, Gas and Water Supply and O - Other Community, Social and Personal Service. So, this Section is the compound of different nature of activities, that is, 1) collection, transportation and disposal services of waste (not for recycling), 2) new commodities production activities by using recycled waste as materials, and 3) supplying services of water which is consumed by households and business. This treatment is not compatible with the classification principle of grouping economic activities with homogeneity.

In addition, the scale of industries in Japan corresponding to the Section 16 is very small as shown in the table 2. (the ratio of number of establishments and employees to those of all industries is 0.57% and 0.77% respectively.). And further, in Japan water supply are provided as public utilities (which has function of providing indispensable commodities in daily life by network facilities) by local government organizations such as cities, towns or villages. So, on the basis of Japanese situation, it is preferable to include these services in the Section 5 - Utilities together with electricity and gas supply services as before.

Table 2 The scale of water supply, sewage, recycling and waste disposal industries

Industries	Establishments		Employees	
	Number	Ratio to all Industries	Number	Ratio to all industries
36 Collection, Purification and Distribution of Water, and Sewage Collection, Processing and Disposal	7,442	0.12%	119,985	0.2 %
524 Wholesale Trade of Recycled	11,530	0.18%	68,785	0.11 %

Material				
85 Waste Disposal Business	17,519	0.27%	275,927	0.46%
Total	36,491	0.57%	464,810	0.77%

Notes 1. Source : Establishment and Enterprise Census 2001

2. Recycling related manufacturing industries are included in some 4 digits level industries in the Division F - Manufacturing. So, data on them are not available.

#### 4) Arts, Entertainment and Recreation (Section 19)

In newly introducing the Section 19, it is necessary to consider closely whether the definition of the Section can be clearly identified being distinguished from that of other Sections, bearing in mind that the scope of arts, entertainment and recreation tends to be different across countries due to difference of their historical and cultural backgrounds.

As for Japan, the scale of industries corresponding to the Section 19 is shown in the table 3. The scale, that is, the ratio of number of establishments and employees to those of all industries is 1.16% and 1.67% respectively. It is not much enough to introduce them as a top - level category. Thus, on the basis of Japanese situation, it is preferable to introduce Arts, Entertainment and Recreation industries as a 2 digits category in, for example, the Section 20 - Other Services of the revised ISIC.

Meanwhile, for museums and botanical and zoological gardens in the Division 19.2 in the ISIC draft, they are classified in the Division (top-level) O - Education, Learning Support in JSIC and for cinemas which are classified in 10.2 of the Section 10 - Information and Communication in the ISIC draft, they are classified in the Major Group (2 digits level) 84 - Services for Amusement and Hobbies of the Division Q - Services, N. E. C. in JSIC.

Table 3 The scale of arts, entertainment and recreation industries

Establishments		Employees	
Number	Ratio to all industries	Number	Ratio to all Industries
73,938	1.16%	1,002,866	1.67%

Source : Establishment and Enterprise Census 2001 (total of the Major Group 84 - Services for Amusement (except cinemas) and museums, botanical and zoological gardens and aquariums from the Group 771 - Social Education)

## 2. On the existing top-level categories

Some issues are raised for the existing top-level categories in the structure paper. The following is comments on some of the existing top-level categories.

1) Transportation and Storage (Section 9)

For the issue of whether transportation should be subdivided by mode of transportation (land, water, air) or by another criterion (e.g. passenger/freight), it should be decided on the information of statistical survey systems and related law systems in countries. In Japan both statistical survey systems and transportation related laws are organized according to the mode of transportation and each mode of transportation are divided by transportation for passenger and that for freight.

For the newly proposed Division 9.4 - Scenic Transportation, I think that there are some problems in introducing it in the revised ISIC. First, the definition of it is rather obscure. Second, it is difficult to statistically capture it separately from ordinary transport services. Third, coexistence of classification by transportation mode and that of transportation purpose in the same 2 digits category is conceptually inconsistent.

In JSIC, charter boat fishing is classified in 8493 - Recreational Fishing Guide Business of the Major Group 84 - Services for Amusement and Hobbies of the Division Q - Services, N. E. C. and dinner cruises are probably classified in the Division M - Eating and Drinking Places, Accommodations. In Japan, data on chartered buses for recreation and regular buses for sight- seeing places, which are regarded as scenic transportation, cannot be statistically captured separately from ordinary transportation by buses

2) Real Estate, Rental and Leasing Activities (Section 12)

The proposal of separating rental and leasing activities from this Section and moving them to the Section 14 - Administrative and Support Services is appropriate since there is little relationship between real estate and rental and leasing activities and rental and leasing activities are thought to be one of support services.

Also in JSIC, real estate and rental and leasing activities are placed different Divisions (top-level categories) as follows. Real estate is itself the Division L - Real Estate. Rental and leasing activities are classified in the Major Group 88 - Goods rental and leasing of the Division Q - Services, N. E. C.

3) Public Administration and Defence; Compulsory Social Security (Section 15)

Regarding the scope of public administration, the structure paper proposes that only essential government activities such as the enactment and judicial interpretation of laws and regulations and the administration of programmes based on them be classified in public administration and that operating units (with output other than administration, policy,

legislative, executive, etc.) be classified in corresponding Sections. This proposal follows the concept of ISIC 3.1 on the scope of public administration.

The Section 15 in the structure paper corresponds to the Division R - Government, N. E. C. in JSIC. Definition of the Division R of JSIC is as follows.

This Division comprises, out of the state and local public organs, the Diet, court, central government offices and their local branch offices and bureaus, prefectural government offices, municipal and ward offices, town and village offices, etc., all of which are the government and public agencies that are essentially engaged in legislative, judicial and administrative affairs.

The government and public agencies solely engaged in non-authoritative operations, which the state or local public organs themselves manage directly for the sole interest of the public, are included in each relevant classification according to the type of operations, in the same manner as in the cases of general industries.

This definition basically conforms to that of ISIC except that JSIC limits operating activities which are classified in relevant industries other than public administration to non-authoritative activities. For authoritative operating activities, they should be classified in public administration. For example, collection of tax, which is mentioned as boundary issues in the structure paper, is obviously an authoritative activity. Therefore, it should be classified in public administration.

Annex 3 enumerates the government and public organs solely engaged in non-authoritative operations. They are classified in relevant industries other than public administration according to the type of operations they conduct.

#### 4) Education (Section 17)

The structure paper proposes that the Division 17.1 - Education be disaggregated by educational level such as primary education, secondary education, etc. with various educational activities included in each educational level. This approach is in line with ISCED and adopted in the existing ISIC 3.1. In ISIC 3.1, for example, Class 8010 - Primary Education includes pre-primary education, primary education, special education for handicapped students at this level, and provision of literacy programmes for adults. It seems incongruous that these different kinds of activities are included in the same group of Primary Education. In order to make use of statistics disaggregated by educational activities, it is appropriate to establish the structure of the Division 17.1 by educational activities, then by educational levels.

The structure of the Division (top-level) O - Education, Learning Support in JSIC is as follows.

The Division O - Education, Learning Support

- 76 - School Education
  - 761 - Elementary Schools
  - 762 - Lower Secondary Schools
  - 763 - Upper Secondary Schools, Secondary Schools
  - 764 - Institution of Higher Education
  - 765 - Special Education Schools
  - 766 - Kindergartens
  - 767 - Specialized Training Colleges and Miscellaneous Schools
- 77 - Miscellaneous Education, Learning Support
  - 771 - Social Education
  - 772 - Vocational and Educational Support Facilities
  - 773 - Supplementary Tutorial Schools
  - 774 - Instruction Services for Arts, Culture and Technical Skills
  - 779 - Educational and Learning Support Services, N. E. C.

In this structure, for example, in the Group 761 - Elementary Schools only elementary schools as a regular education are classified and schools for the special education for handicapped students at elementary school level are classified in the Group 765 - Special Education Schools.

In addition, for the treatment of educational TV, another issue raised in the structure paper, if it is not interactive, it is classified in the Division H - Information and Communications in JSIC.

One of definitions of education should be that it is interactive. So, correspondence courses which are interactive should be classified in education.

## Annex 1

### Correspondence Table of Divisions between JSIC Rev. 10 and Rev. 11

< JSIC Rev. 10 ( October 1993 ) >	< JSIC Rev. 11 ( March 2002 ) >
A Agriculture	A Agriculture
B Forestry	B Forestry
C Fisheries	C Fisheries
D Mining	D Mining
E Construction	E Construction
F Manufacturing	F Manufacturing
G Electricity, Gas, Heat Supply and Water	G Electricity, Gas, Heat Supply and Water
H Transport and Communication	H <u>Information and Communications</u>
I Wholesale and Retail Trade, Eating and Drinking Places	I Transport
J Financing and Insurance	J Wholesale and Retail Trade
K Real Estate	K Finance and Insurance
	L Real Estate
	M <u>Eating and Drinking Places, Accommodations</u>
	N <u>Medical, Health Care and Welfare</u>
	O <u>Education, Learning Support</u>
	P <u>Compound Services</u>
L Services	Q Services, N.E.C
M Government (not elsewhere classified)	R Government, N.E.C
N Establishments not adequately described	S Industries Unable to Classify



## Annex 2

### Correspondence Table of Sections between ISIC Rev 3.1 and ISIC Rev 4 draft in the Structure Paper

< ISIC Rev. 3.1 ( March 2002 ) >	< ISIC Rev. 4 draft in the structure paper >
A Agriculture, Hunting and Forestry	1 Agriculture, Hunting, Forestry and
B Fishing	Fishing
C Mining and Quarrying	2 Mining and Quarrying
D Manufacturing	3 Manufacturing
	4 <u>Repair and Maintenance</u>
E Electricity, Gas and Water Supply	5 Utilities
F Construction	6 Construction
G Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	7 Trade
H Hotels and Restaurants	8 Accommodation and Food Services
I Transport, Storage and Communications	9 Transportation and Storage
	10 <u>Information and Communication</u>
J Financial Intermediation	11 Financial and Insurance Services
K Real Estate, Renting and Business Activities	12 Real Estate, Rental and Leasing Activities
	13 <u>Professional, Scientific and Technical Services</u>
	14 <u>Administrative and Support Services</u>
L Public Administration and Defence; Compulsory Social Security	15 Public Administration and Defence; Compulsory Social Security
	16 <u>Water Supply; Sewage, Waste Management and Remediation</u>
M Education	17 Education
N Health and Social Work	18 Health and Social Services
O Other Community, Social and Personal Service Activities	19 <u>Arts, Entertainment and Recreation</u>
	20 Other Services
P Activities of Private Households as	21 Households

Employers and Undifferentiated Production	
Activities of Private Households	
Q Extra-Territorial Organizations and Bodies	22
Extra-Territorial Organizations	

### **Annex 3**

The government and public organs solely engaged in non-authoritative operations which are classified in relevant industries other than public administration according to the type of operations they conduct.

- (1) Establishments engaged in the production and distribution of agricultural products (including mulberry, cocoon, and livestock),
- (2) Establishments engaged in the direct control and management of national and public forests and fields,
- (3) Establishments engaged in fish and shellfish aquaculture, and the production and distribution of seeds,
- (4) Establishments engaged in quarrying rocks and stones, gravels and sands,
- (5) Establishments in which the state and local public organs conduct, administer or directly manage construction work in the public interest; the construction work including roads, bridges, rivers, erosion control, ports, reclamation, land reclamation, agricultural utilization of water, etc.,
- (6) Establishments engaged in manufacturing printed matter, products made of clay and stones, currency, medals, badges, and other alloy or metallic artifacts, fertilizers,
- (7) Establishments engaged in the supplying electricity, gas and water,
- (8) Establishments engaged in the operation of transport such as railway, tramways, roads, and shipping; in the management of structures that are necessary for marine, air and land transport involving airports, lighthouses, and wharves; and in other services incidental to transportation
- (9) Establishments engaged in the purchase and sales of foods and other products,
- (10) Establishments engaged in savings, money orders, giro services and postal life insurance,
- (11) Establishments engaged in the management of public housing, and leasing other real estate,
- (12) Establishments engaged in providing medical and health care such as hospitals, clinics, health consultation offices, etc.,
- (13) Social welfare facilities such as social welfare offices, child welfare facilities, welfare facilities for the aged, rehabilitation facilities for handicapped persons, and home care help establishment,
- (14) The school education facilities such as kindergartens, elementary schools, lower secondary schools, higher secondary schools, universities and training centers for certified nurses; the education facilities such as agricultural universities; and the facilities for fostering and training staff,

- (15) Social education facilities such as libraries, museums, art museums, zoos, botanical gardens, aquariums, public halls, etc.,
- (16) Establishments engaged in postal services,
- (17) Testing and research facilities on natural science, and humanities and social sciences,
- (18) Establishments engaged in providing services to citizens regarding crematories, graveyards, public bathhouses, lodgings, wedding ceremony halls, etc.,
- (19) Establishments engaged in operations of bicycle racing, horse racing and others of a similar type,
- (20) Establishments engaged in repairing machinery and equipment,
- (21) Facilities of slaughterhouses, waste disposal, waste treatment, dead domestic animal disposal, etc.,
- (22) Establishments engaged in the test and certification of various products and livestock, consultations and guidance on business management and skills, and providing services focusing on business management concerning the introduction of local products and their displays.

## **Turnover by Detailed Products in Japanese Service Statistics**

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### **summary**

In Japan, service statistics which grasp turnover by detailed products are limited on selected service industries such as information services and on communications industry as well as on wholesale and retail services. This can be related to guidelines to develop service statistics in Japan, and seems to be partly caused by the fact the main purpose of the detailed statistics on individual service fields is to provide basic data for administrative policy planning. We can see that grasping turnover by detailed service products in Japan is the consequence of grasping turnover of service fields on the activity basis in detail.

In this paper, we introduce the current situations of service statistics which grasp turnover by detail products and the related guideline to develop service statistics in Japan. The views expressed herein are those of the author, and are not necessarily those of the Statistics Bureau or other Japanese government authorities.

### **1. Current situations of service statistics which grasp turnover by detailed products in Japan**

In Japan, service statistics which grasp turnover by detailed products are on selected service industries such as information services and on communications industry as well as on wholesale and retail services. (refer to Appendix 1)

Through the Survey of Selected Service Industries conducted by the Ministry of Economy, Trade and Industry (METI), turnover by category of business is grasped on the selected service industries including rental and leasing business and information service business.

(As to the Survey of Selected Service Industries, there will be another presentation to introduce the survey in this Voorburg Meeting.)

As to communications industry, through the Survey of the Communications Industry

conducted by the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT), turnover by service activity is grasped on telecommunications, broadcasting and cable television.

(As to results of the survey, see Appendix 2)

In addition, as to dynamic Statistics, through the Current Survey on Selected Services Industries conducted METI, trends of turnover etc. as grasped on the selected service industries.

## **2. Purposes to grasp turnover by detailed service products**

The purposes of the above statistical surveys to grasp turnover by detailed service products are as follows.

### **(Survey on Selected Service Industries)**

The survey is designed to obtain a clear picture of service industries in Japan and to provide basic data for developing measure concerning the service industries.

### **(Survey of the Communications Industry)**

The purpose of this survey is to understand the state of industries involved with telecommunications, broadcasting, and cable television, and to provide basic data for the planning and promotion of various policies for government administration of communications.

### **(Current Survey of Selected Service Industries)**

The survey is designed to understand management trends, such as monthly sales, revenues and the like in selected service industries, and to provide basic data for judging economic trends. It also offers basic data for the promotion of policy concerning the industrial structure and policy concerning small and medium-sized companies, and for the healthy development of the service industry.

In this way, the main purpose of the statistical surveys to grasp turnover by detailed service products is to provide basic data for administrative policy planning. On this account, it may be said that the division grasping detailed turnover in each service industry is decided by necessity on each administrative policy.

## **3. Guidelines to develop service statistics in Japan**

The guidelines to develop service statistics in Japan is described in detail in another paper of this Voorburg meeting titled “Experiences and Future Directions in the Development of Service Sector Statistics in Japan” by the author. The points are as follows.

**(step1: 1985)**

In order to estimate SNA, it is necessary to measure the whole service sector consistently, and a wide and comprehensive statistical survey on service sector should be implemented. The survey focuses on common items of service sector.

Statistics by types of business should be developed preliminary on some of the important types of business which had weight in Japanese economy to an extent or had been developing rapidly. The statistics should contain specific survey items particular to the each individual type of business and the administrative purposes of it.

**(step2: 1995)**

Enhance the activity-based measurement of services in statistical survey on establishments and enterprises conducted by ministries and agencies concerned.

Dynamic statistics shall be steadily improved, taking into account the progress of improvement in wide and comprehensive statistics in service sector and service statistics by types of business.

**(step3: 2003)**

In order to help improve GDP statistics, the development of supply-side statistics for the services field (including public services field) shall be promoted.

In this way, as to development of service statistics in Japan, first of all we focused on development of a wide and comprehensive statistical survey on service sector. For this purpose, the Survey on Service Industries was created in 1989. The purpose of the statistical survey is as follows.

“To clarify the basic structure and activities throughout Japan of establishments engaged in service industries by kind of business and number of persons engaged in order to provide basic data for national and local policy planning.”

(The Survey on Service Industries is described in detail in another paper of this Voorburg meeting titled “Development of Statistics on Service Industries in Japan” by Koji Uesugi.)

**4. Methods of grasping turnover**

As to methods of grasping turnover, in the case of the Survey on Service Industries, each surveyed establishment is classified into the industry which the main activity (the activity of the largest turnover) of the establishment belongs to (referred as “the main industry of the establishment”). In this survey, as a basic result, the turnover of each industry is published. In this case, the whole turnover of the establishment is added to the turnover of the main industry

of the establishment.

Recently in line with business diversification, it became important to enhance the activity-based measurement of services, which was mentioned in the guideline of 1995, namely “New Strategies for Government Statistical Services for the Coming Decade”. In the activity-based survey, the activity other than the main activity of the establishment is added to the turnover of the industry that each activity of the establishment belongs to.

In the Survey on Service Industries, in addition to the above mentioned turnover by industry based on the main industry of the establishment, we also grasp the activity-based turnover including the activities other than the main activity of the establishment, through grasping the ratios of the turnover of activities other than the main activity of the establishment. The applied classification for the activities is “group” of JSIC (3digit) as to Service industries, and “Section” of JSIC (1 Digit) as to other industries.

On the other hand, in the Survey of Selected Service Industries, the turnover on the selected service activities is grasped in detail. In this survey, the detailed service turnover is broken down by category of business for administrative purposes (for example, in information service business, the turnover is broken down by information processing service, order-made software developing service, software product, assigned system management, database service, researches and others). However, the turnover actually can be seen as the equivalent of detailed turnover broken down by service products.

## **5. Utilization of detailed service turnover for the SNA and other purposes**

In compiling the Input-Output Tables, which constitutes the SNA, we use the above mentioned turnover of service activities as indispensable information. Actually we use the results of the Survey on Service Industries and the Survey of Selected Service Industries for the Input-Output Tables through converting the classification of the surveys into the one used in the Input-Output Tables.

The data of turnover collected through the Survey of Selected Service Industries and the data gained from the Input-Output Tables are used for the weights of the Corporate Service Price Index, which is produced by the Bank of Japan.

In addition, the results of the Current Survey of Selected Service Industries are used to estimate quarterly GDP.

## **6. Future directions and conclusion**

In the “New Directions in the Development of Government Statistical Services” decided in June 2003, one of the basic directions for development of service statistics is as follows.

“In order to help improve GDP statistics, the development of supply-side statistics for the



service field (including public services field) shall be promoted.”

As a concrete measure for the direction, the “New Directions” decided to develop and strengthen the supply-side statistics focusing on the Surveys of Selected Service Industries, and the Current Survey of Selected Service Industries.

It is expected that the service statistics grasping detailed turnover will be developed based on this policy in future.

However, as to development of statistics, it is essential to consider the purpose of the statistics, that is, for what the results of the statistics are used. The grasp of detailed turnover in Japan has been developed on the selected service industries for the purpose of planning of administrative policies for the industries as mentioned above. For the development of concrete statistics to grasp detailed turnover by service products, it is indispensable to examine the concrete purposes for which the statistical surveys collect data.

## Appendix 1

### Current services data collection, turnover broken down by product in Japan

Class ISIC/NACE	Collection exists in your country			Type of survey		Frequency of the survey			Product classification used for data collection			The product breakdown: How many product groups are asked			
	No	Yes	Since year	Compulsory	Voluntary	Annual	Biennial	Other (please specify)	CPC	CPA	Other (please specify)	Few (2-4)	Some (5-9)	Detailed (10-15)	Very detailed (15+)
<b>Trade</b>								↳			↳				↳(100)
Wholesale		↳	1952	↳				↳			↳				↳( 91)
Retail		↳	1952	↳											
Automobile															
<b>(Transport and) Communication</b>															
Telecommunication		↳	1994		↳	↳							↳		
<b>Business services</b>															
Computer services		↳	1973	↳		↳					↳			↳( 10)	
Legal services															
Accounting/auditing															
Technical consultancy															
Advertising		↳	1973	↳				↳			↳			↳( 10)	
Business and management consultancy															
<b>Audio-visual services</b>															
Cinema		↳	1975	↳				↳			↳				↳( 20)
TV broadcasting		↳	1994		↳	↳						↳			
Video and DVD publishing															
<b>Other (pls. specify)</b>															
Broadcasting		↳	1994		↳	↳							↳		
Internet based services		↳	2002		↳	↳							↳		
Renting and leasing		↳	1973	↳		↳					↳			↳( 12)	

## Notes

Every five years for the full survey since 1997 (In addition, the simplified survey is conducted two years after the full survey.)

Every two years from 1952 to 1976

Every three years from 1976 to 1997

5-digit code, which is further subdivision of the Japanese Standard Industrial Classification 4-digit code, is used exclusively for this survey.

Major products produced by the targeted industry are selected.

Every three years since 2000 (Annual from 1973 to 2000)

Every three years since 2001

“Motion picture theatres” was surveyed in years 1975, 1976, 1980, 1991, 1994, 1997 and 2001.

“Motion picture and video production” and “Motion picture and video distribution” were surveyed in 1998 and 2001.

## Appendix 2

### Turnover in Communications Industry by Service

**Table 1 Telecommunications Industry**

items	FY1999 (N=467)		FY2000 (N=470)		increase/decrease
	amount(million yen)	ratio (%)	amount(million yen)	ratio (%)	
voice transmission	11,069,880	83.3	9,882,144	77.5	-5.8
data transmission	672,186	5.1	1,254,191	9.8	4.7
private network	1,100,447	8.3	1,167,726	9.2	0.9
telegraph	71,235	0.5	99,030	0.8	0.3
others	372,894	2.8	352,641	2.8	0.0
total	13,286,642	100.0	12,755,732	100.0	-
international	301,814	-	151,533	-	-

**Table 2 Broadcasting Industry**

items	FY1999 (N=368)		FY2000 (N=367)		increase/decrease
	amount(million yen)	ratio (%)	amount(million yen)	ratio (%)	
TV broadcasting	2,261,623	88.6	2,366,125	87.2	-1.4
radio broadcasting	234,829	9.2	245,912	9.1	-0.1
others	57,141	2.2	100,588	3.7	1.5
total	2,553,593	100.0	2,712,625	100.0	-

**Table 3 Cable Television Industry**

items	FY1999 (N=204)		FY2000 (N=208)		increase/decrease
	amount(million yen)	ratio (%)	amount(million yen)	ratio (%)	
basic service	120,057	62.0	136,945	62.9	0.9
pay service	15,709	8.1	16,930	7.8	-0.3
retransmit for ZRI	23,411	12.1	29,905	13.7	1.6
others	34,496	17.8	33,982	15.6	-2.2
total	193,673	100.0	217,762	100.0	-

ZRI: zone where receiving interference of television broadcasting occurs

## **IX Outline of the Survey on Selected Service Statistics**

Industrial Statistics Office  
Ministry of Economy, Trade  
and Industry  
JAPAN

# Outline of the Survey on Selected Service Industries



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(Voorburg Group Meeting 7/10/2003)

Industrial Statistics Office  
Ministry of Economy, Trade  
and Industry (METI), Japan



# 1 . Purpose of the Survey

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- Clarifying the actual conditions of selected service industries in Japan
  - The Survey has been conducted every year since 1973.



## 2 . Legal Framework

---

- Designated statistical survey based on the Statistical Law (No. 18 of 1947)
  - Designated Statistic No. 113
- Regulations to conduct the Survey
  - Ministry of Economy, Trade and Industry Ordinances No. 67 of 1974 and No. 193 of 2001





## 3-1 . Scope of the Survey (Survey Objects)

---

Establishments or enterprises engaged in corporate or personal services, either as their main business or as sidelines.

(The Survey is conducted on an “activity” basis.)

- belong to the “Finance and Insurance” and “Services” categories in the Japan Standard Industrial Classification
- designated by the Minister of Economy, Trade and Industry



## 3-2 . Scope of the Survey (Geographical scope)

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Nationwide (2001 ~ )

Nationwide & Urban areas ( ~ 2000)

The geographical scope of the urban-intensive service industries\* was expanded to nationwide from urban areas only, in 2001.

\*Information services, renting & leasing, advertising, design and machinery design

# 4-1 . Industries Surveyed (2001 ~ )

	Year 2001, 2003,	Year 2002, 2004,	Year 2003, 2005,
Every year	<ul style="list-style-type: none"> <li>◆ Information services</li> <li>◆ Renting and leasing</li> </ul>	<ul style="list-style-type: none"> <li>◆ Information services</li> <li>◆ Renting and leasing</li> </ul>	<ul style="list-style-type: none"> <li>◆ Information services</li> <li>◆ Renting and leasing</li> </ul>
In three-year rotation	<p>Business support industries</p> <ul style="list-style-type: none"> <li>◆ Advertising</li> <li>◆ Engineering</li> <li>◆ Design</li> <li>◆ Machinery design</li> <li>◆ Displays</li> <li>◆ Environmental measurement and certification</li> <li>◆ Tests and analyses for supporting R&amp;D</li> <li>◆ Telemarketing</li> </ul>	<p>Leisure-related industries</p> <ul style="list-style-type: none"> <li>◆ Movie theaters</li> <li>◆ Golf courses</li> <li>◆ Bowling alleys</li> <li>◆ Tennis courts</li> <li>◆ Amusement parks and theme parks</li> <li>◆ Golf driving ranges</li> <li>◆ Theaters (incl. rental halls)</li> <li>◆ Movie production and distribution and video sales</li> </ul>	<p>Culture and lifestyle-related industries</p> <ul style="list-style-type: none"> <li>◆ Culture centers</li> <li>◆ Fitness clubs</li> <li>◆ Credit card services</li> <li>◆ Wedding ceremony halls</li> <li>◆ Foreign language schools</li> <li>◆ Funeral services</li> <li>◆ Beauty salons</li> </ul>



## 4-2 . Industries Surveyed (1973 ~ 2000)

---

- The Survey has covered 29 industries since its inception in 1973.
- Five to ten industries from the areas of ‘Business support,’ ‘Leisure-related’ and ‘Culture and lifestyle-related’ were selected every year.

# 4-3 . Industries Surveyed (1973 ~ 2000)

	<b>Business support industry</b>	<b>Leisure-related industry</b>	<b>Culture &amp; lifestyle-related industry</b>
Every year	<ul style="list-style-type: none"> <li>◆ Information services</li> <li>◆ Renting and leasing</li> <li>◆ Advertising</li> </ul>		
Ad hoc	<ul style="list-style-type: none"> <li>◆ Engineering</li> <li>◆ Design</li> <li>◆ Environmental measurement and certification</li> <li>◆ Displays</li> <li>◆ Machinery design</li> <li>◆ Tests and analyses for supporting R&amp;D</li> <li>◆ Telemarketing</li> <li>◆ Consulting</li> <li>◆ Trading stamps</li> <li>◆ Copying</li> </ul>	<ul style="list-style-type: none"> <li>◆ Movie theaters</li> <li>◆ Golf courses</li> <li>◆ Tennis courts (incl. tennis practice areas)</li> <li>◆ Bowling alleys</li> <li>◆ Amusement parks and theme parks</li> <li>◆ Golf driving ranges</li> <li>◆ Theaters (incl. rental halls)</li> <li>◆ Movie production and distribution and video sales</li> <li>◆ Rental bicycles</li> <li>◆ Resort clubs</li> </ul>	<ul style="list-style-type: none"> <li>◆ Credit card services</li> <li>◆ Funeral services</li> <li>◆ Fitness clubs</li> <li>◆ Culture centers</li> <li>◆ Wedding ceremony halls</li> <li>◆ Foreign language schools</li> </ul>



## 5-1 . Survey Items

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A separate survey form is prepared for each industry, with slightly different survey items according to the type of service activities.



## 5-2 . Survey Items (Main Survey Items)

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- Legal status and amount of paid-up capital or investment
- Main/branch classification of establishments
- Annual sales, annual contract amount
- Annual sales by business category and by contract partner
- Number of members, membership fee, enrollment fee  
(for membership-based services)
- Number of users or attendance, usage fee or admission fee  
(for personal services)
- Operating costs and acquisition costs of tangible fixed assets



## 6 . Survey Method (Route)

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Ministry of Economy, Trade and Industry

Prefectural Governments

Enumerators

(appointed by prefectural governors)

Survey respondents

(self-calculation method)





## 7 . Date of the Survey

---

- Effective date of the survey:  
November 1
- Reporting period:  
one year from November 1



## 8-1 . Measurement of Annual Sales

---

- **Annual sales (Total amount)**

JPY.
------

- **Amount of the relevant business**

JPY.
------

=Portion of derived from the relevant business

- **Breakdown of by operation**

- **Breakdown of by business category**

- **Breakdown of by contract partner**

(Composition ratio)		
---------------------	--	--

		100%
--	--	------

# 8-2 . Measurement of Annual Sales

## - *Information Services*

### Breakdown by Operation

Information service	Operations other than information service					Total
	Manufacturing	Wholesale, retail, eating & drinking	Finance & insurance	Other service operations	Other operations	
%	%	%	%	%	%	100%

# 8-3 . Measurement of Annual Sales

## - *Information Services*

### Breakdown by Business Category

Information processing service	Custom-made software development service	Software products			Assigned system management
		Business packages	Game software	Basic software for computers, etc.	
%	%	%	%	%	%

Database services		Research	Others	Total of information services
Through the Internet	Others			
%	%	%	%	100%

# 8-4 . Measurement of Annual Sales

## - *Information Services*

### Breakdown by Contract Partner

Manufacturing	Wholesale, retail, eating & drinking	Construction and real estate	Finance and insurance	Transportation and communications	Electricity, gas, heat & water supply
%	%	%	%	%	%

Other services	Public services	Other services in information service	Others	Total of information services
%	%	%	%	100%

# 8-5 . Measurement of Annual Sales

## - *Renting and Leasing*

### Breakdown by Operation

Renting and leasing operations	Operations other than renting and leasing					Total
	Manufacturing	Wholesale, retail, eating & drinking	Finance & insurance	Other service operations	Other operations	
%	%	%	%	%	%	100%

# 8-6 . Measurement of Annual Sales

## - *Renting and Leasing*

### Breakdown by Business Category

	Industrial machinery & equipment	Machine tools	Civil engineering & construction machinery	Medical equipment
Lease Contract amount	%	%	%	%
Rental Sales amount	%	%	%	%

Transportation equipment		Commercial machinery & facilities	Service machinery & facilities	Computers & related equipment
Automobiles	Others			
%	%	%	%	%
%	%	%	%	%

Telecommunication equipment	Office equipment	Others	Total of renting & leasing
%	%	%	100%
%	%	%	100%

# 8-7 . Measurement of Annual Sales

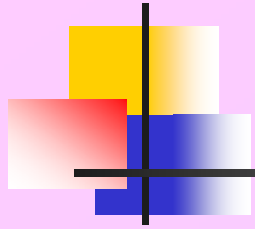
## - *Renting and Leasing*

### Breakdown by Contract Partner

	Manufacturing	Wholesale, retail, eating & drinking	Construction and real estate	Finance and insurance	Transportation and communications
Lease Contract amount	%	%	%	%	%
Rental Sales amount	%	%	%	%	%

	Electricity, gas, heat & water supply	Other services	Public services	Other services in renting & leasing	Others	Total of renting & leasing
	%	%	%	%	%	100%
	%	%	%	%	%	100%





Thank you for your attention

## **Experiences and Future Directions in the Development of Service Sector Statistics in Japan**

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### **Summary**

This paper describes our experiences and future directions in the development of service sector statistics in Japan. On the development of service sector statistics, vital recommendations were released in three reports, i.e. “Strategies for Government Statistical Services for the Coming Decade”(1985), “New Strategies for Government Statistical Services for the Coming Decade”(1995) and “New Directions in the Development of Government Statistical Services” (2003). This paper introduces main recommendations in these reports and their implementations. This paper also refers to future directions in the development of service sector statistics in Japan. The views expressed herein are those of the author, and are not necessarily those of the Statistics Bureau or any other Japanese government authorities.

### **1. Situations before “Strategies for Government Statistical Services for the Coming Decade” (1985)**

#### **(1) Situations of the development of service sector statistics then (1985)**

The situations of the development of service sector statistics in Japan before “Strategies for Government Statistical Services for the Coming Decade” (submitted by the Statistics Council in 1985) were as follows;

- Statistical surveys which cover service sector comprehensively and measure its activities including service production (supply) had not been developed.
- The number of establishments, enterprises and employees was measured through existing censuses such as the Establishment and Enterprise Census and the Census of Commerce, while its fluctuation had not been grasped well.
- Statistical surveys by type of business supplied the information required for administrative policies, however, it was only on specific fields and did not cover the

whole service sector. And the existing statistical information lacked the consistency based on the concept of basic common items, or the mutual relevancy. Thus it had been pointed out the difficulty in grasping the situation of the whole service sector, as well difficulty in utilizing for comparison and analysis.

## **2. “Strategies for Government Statistical Services for the Coming Decade” (submitted by the Statistics Council in 1985)**

### **(1) The needs of developing service sector statistics**

- Rising of the weight of service sector in national economy
- Problems of present statistical surveys on service sector
  - Lack of consistency
  - New types of business had not been grasped well
  - Classification for compilation, time series comparison and information about local areas was insufficient.

### **(2) The development of the system of service sector statistics**

- ) Statistics by type of business (detailed statistics on specific field)
  - It was necessary to strengthen statistical survey concerning the fields where sufficient statistics had not been developed, and to expand the coverage of development actively.
  - The statistics should contain specific survey items to the each individual type of business and the administrative purposes of it.
- ) Wide and comprehensive statistics
  - In order to estimate SNA, it was necessary to measure the whole service sector consistently, and the implementation of wide and comprehensive statistics survey was required.
  - The survey focused on common items of service sector, and mainly aimed at supplying the basic information on service sector, taking into account comparison with other types of business.
- ) Dynamic statistics
  - It was desirable to develop dynamic statistics on main types of business through sample surveys in order to measure the trend of service sector activities.
  - The survey focused on survey items about sales such as turnover of the types of business.

(As for the coverage of service sector statistics, we set the whole tertiary industries as

objective and especially focused on services in areas not covered by existing statistics yet, primarily “*Division L Services*” (see *NOTE* ).)

**(3) The concrete measures for the development of the service sector statistics**

(a) Statistics required to be developed early

Statistics by types of business should be developed preliminary on some of the important types of business which had weight in Japanese economy to an extent or had been developing rapidly. In developing the statistics, it was required to take into account enhancement of existing statistics or use of administrative records.

(b) Wide and comprehensive statistics should be conducted in “*Division L Services*” of service sector with basic common items of service sector.

(c) Statistics required to be developed from the standpoint of medium or long term

- Dynamic statistics
- Statistics on activity basis
- Demand-side statistics

**3. “New Strategies for Government Statistical Services for the Coming Decade” (submitted by the Statistics Council in 10 March 1995)**

**(1) The development of the service sector statistics after “Strategies for Government Statistical Services for the Coming Decade”**

- The Survey on Services Industries, which was a wide and comprehensive statistics in service sector was developed(1989).
- As for individual types of business, the coverage of the Survey of Selected, Service Industries was expanded(1990).
- The Statistical Survey on Service Industries Relating to Health and Welfare was developed(1990)
- As for dynamic statistics, the Current Survey on the Selected Service Industries was developed(1984).

**(2) Measures for improvement**

- Enhance the activity-based measurement of services in statistical survey on establishments and enterprises conducted by ministries and agencies concerned
- Add survey items such as about entrusting of management services and use of outside service to Survey on Services Industries and other existing surveys on individual industrial sectors, looking from the viewpoint of accurate measurement of soft- and service- oriented trends in business enterprise such as outsourcing.

- Improve supply-side measurements in the Survey of Selected Services in order to provide timely and accurate measurement of consumer services
- Ministries and agencies concerned shall improve the statistics gradually to measure activities of the diversifying information and communications sector through necessary coordination
- Dynamic statistics shall be steadily improved, taking into account the progress of improvement in wide and comprehensive statistics in service sector and service statistics by types of business

#### **4. “New Directions in the Development of Government Statistical Services” (the agreement of the Heads of the Statistical Departments of the Cabinet Office and ministries in June 2003)**

##### **(1) Development of statistics on services**

###### **< Background and current situation >**

- There are relatively many types of annual or periodic statistics, but as far as specific items (for example, gross output, etc) are concerned, some provide adequate coverage while others need refining, on the type of industry. Additionally, in monthly or quarterly statistics, few items have been measured, except in the Current Survey of Selected Industries (annual statistics are lacking in amount-based statistics in such items as eating and drinking places, hotels, machine repair shops, etc. Furthermore, in monthly supply-side statistics, there are some areas not covered, such as broadcasting, waste disposal business, real estate brokerage, and lessons).
- Each local government holds data on public services (water and sewage, waste disposal, etc) for use in their own work, but when they are tabulated on the national basis, they are presented as an annual unit and come out only at later date compared with other statistics.
- With regard to statistics for services, survey items related to the activity level (in amount-based and quantity-based items) are lacking in uniformity, thus often creating difficulty when making inter-industrial comparisons.
- Given the current situation characterized by the widespread emergence of service activities that arisen out of business diversification, it is important to measure economic activities in services on an activity basis(by type of activity). Statistical surveys that are implemented at present from these standpoints include the Survey on Services Industries and the Survey of Selected Services Industries. These surveys measure the percentage of sales from other business than those providing services aiming to measure the state of the services activities.

**< Basic directions >**

- In order to help improve GDP statistics, the development of supply-side statistics for the services field (including public services field) shall be promoted.
- With regard to the services field, under the collaboration of the Cabinet Office and ministries concerned, survey maps, which serve as a bird's-eye-view of the state of statistical development by industries and item of survey shall be prepared and, after the clarification of the fields that are yet to be developed, the systematic development of statistics shall be promoted.
- In line with business diversification, the measurement of services field shall be promoted as necessary.

**< Concrete measure >**

- The supply-side statistics focusing on the Survey of Selected Service Industries, and the Current Survey of Selected Service Industries shall be developed and strengthened.
- With regard to public services, the Cabinet Office and ministries concerned shall make an effort to release annual statistics earlier, and shall study the further development of statistics taking into account the state of progress in computer processing of their work.
- With regard to basic statistical surveys, the Cabinet Office and ministries concerned shall look into setting up common survey items (number of employees, sales and revenues, etc.).
- The MPHPT (Statistical Standards Department) shall prepare statistical maps concerning the services field.
- Responding to the expansion of economic activities in the services field in line with business diversification, each of the Cabinet Office and ministries shall strengthen their understanding of the services field. This involves understanding the state of sideline business in the services industries.

**(2) Deliberation on the creation of the Economic Census (provisional title)**

**< Basic directions >**

We will seek to compile statistics (under the provisional title of the “Economic Census”) that can measure the economic activities of all industrial fields comprehensively and at the same point in time.

**< Concrete measure >**

Regarding the Economic Census (provisional title), we will work towards bringing about this Census by compiling statistical surveys by 2009 that will ascertain, from an accounting angle,

the state of economic activities of, in principle, all establishments and enterprises in all industrial categories.

## **5. Conclusion**

The development of service sector statistics has been implemented as the following process. We need to repeat this process periodically, for the services field is developing rapidly.

### **< Process of the development of service sector statistics >**

- ) Grasp requirements for service sector statistics and present issues
- ) Set up the concrete plan for the development
- ) Develop and improve statistics to be required
- ) Evaluate improved statistics and set up new plan

## NOTE

### *Division L Services (the 9<sup>th</sup> revision of the Japan Standard Industrial Classification)*

This division is composed of the following major groups. Please note that the classification is based on the 9<sup>th</sup> revision of the Japan Standard Industrial Classification (JSIC), existing in 1985 when “Strategies for Government Statistical Services for the Coming Decade” was introduced, and it is not equal to the present JSIC (Rev.11).

- Goods rental and leasing
- Hotels, boarding houses and other lodging places
- Domestic services
- Laundry, beauty and bath services
- Miscellaneous personal services
- Motion pictures
- Amusement and performances, except motion pictures
- Radio and television broadcasting
- Automobile parking
- Automobile repair services
- Miscellaneous repair services
- Corporative associations, not elsewhere classified
- Information services, research and advertising
- Miscellaneous business services
- Professional services, not elsewhere classified
- Medical and other health services
- Public health services
- Waste treatment services
- Religion
- Educational service
- Social insurance and social welfare
- Research institutes of science
- Political, business and cultural organization
- Miscellaneous services
- Foreign governments and international agencies in Japan



## **XI Development of Statistics on Service Industries in Japan**

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### **1. Birth of the Survey on Service Industries**

As economic activities are moving towards services, the importance of the Tertiary Industrial Sector, especially that of service related industries is increasing. However, Japan's statistical system cannot be said to encompass this sector adequately.

An important effort to improve this situation was the implementation of the Survey on Service Industries in 1989 to obtain basic and general data on overall service industries.

More precisely, the Survey covered those establishments which belonged to the major group "L-Services" of the then Japan Standard Industrial Classification (10<sup>th</sup> Rev.), and aimed to clarify the basic structure and the actual status of business activities of Japan's service industries by investigating such basic items as number of persons engaged, gross value of all the sales and expenses, amount of investment on equipment, and so on, which are common to these industries.

The Survey is a large sample survey, which has been conducted every five years since then by the Statistics Bureau of Japan as a designated statistical survey under the Statistics Law.

### **2. Progress with the 2004 Survey on Service Industries**

The 2004 Survey, which will be the fourth round, is scheduled to be conducted in June next year. Several improvements are actively planned to implement in the coming Survey:

Firstly, as to the survey methodologies, for alleviating the burden on respondents and for efficient data collection, the Survey will be conducted along with the Establishment and Enterprise Census and the Census of Commerce, both of which are two large censuses on establishments. The survey items will have to be adjusted for this integrated data collection. (See the appendix for the questionnaire.)

Secondly, the coverage of the Survey has been vastly reviewed taking into consideration

the whole statistical system for the Tertiary Industrial Sector, as the major group “L-Services” has been reconstituted in the 2002 revision of the Japan Standard Industrial Classification.

This review has resulted in the addition of “Eating and Drinking Places”, “Real Estates”, etc. to the coverage of the Survey, and its share in the Tertiary Industrial Sector has increased greatly from about 30 % to about 45%, accordingly.

Moreover, taking account of the share of “Wholesale and Retail Stores” covered by the Census of Commerce, the total share will reach about 82 %. Therefore, the Survey and the Census of Commerce could be regarded to constitute jointly the “Fundamental Survey on the Tertiary Industrial Sector”.

### **3. Beyond the Restraint on the Survey on Service Industries to Reach an “Economic Census”**

As stated above, the Survey on Service Industries has been successively improved, and has been playing a vital role in the formulation of economic policies, the compilation of national accounts, and so on, by providing basic and general data on overall service industries.

However, as the activities of establishments and enterprises are diversified, and various service activities are provided by non-service industries, this framework of data collection would not be sufficient to develop statistics on the Tertiary Industrial Sector (the widest range of service industries) systematically, because the current Survey cannot be free from the restraint that it contacts only those establishments which are sampled as service establishments. A new general data collection scheme should be implemented to entirely cover the activities performed by all the industrial sectors.

In pursuit of a solution of this issue, statistical departments of the Government concerned have recently recognized the necessity for an “Economic Census” and have agreed to promote its implementation.

It is cited that active efforts should be made towards the implementation by 2009 of an Economic Census that will investigate accounting aspects of economic activities by enumerating all the establishments of all the economic sectors, in principle. Once this initiative is realized, it is certain that Japan’s statistics on service industries will be obtained for very detailed breakdowns, for example, by industry and region.

Discussions will start this autumn regarding the implementation of this Economic Census. Whether or not, the 2004 framework of integrated data collection, in which the Survey on Service Industries and the other two censuses will be jointly conducted like a single data collection operation, will provide a good plot type. It would be realistic that based on the experiences gained in this operation, discussions should be held on the enlargement in terms of industries to cover, items to investigate, and so on.

Whether the ambition of the development of statistics on service industries, which the Survey on Service Industries has been pursuing these 15 years, is realized or not depends on the realization of this Economic Census, which will adopt the DNAs of the Survey.

Designated Statistics No.2
Designated Statistics No.27
Designated Statistics No.117

**2004 Establishment and Enterprise Census Questionnaire**  
**2004 census of Commerce Questionnaire**  
**2004 Survey on Service Industries Questionnaire**

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1 June 2004

City ward, town or village code	Enumeration district number	Establishment number	*

· Ministry of public Management, Home Affairs, Post and Telecommunications  
 · Ministry of Economy, Trade and

· Please answer the questions frankly, since the information you give on the questionnaire will be used only for compiling statistics.  
 · Please refer to the material "How to fill the form" as was distributed separately.

If your establishment name and/or address have already been printed in the form, please check and confirm if they are correctly printed and correct, if necessary.

Name of respondent and Telephone Number	
Name	Telephone number
( Extension )	

**A For all establishments**

<b>1 Name of establishment and Telephone number</b> Put commonly known name, if any, within the	Legal Name	Telephone number									
	(Commonly known trade name)										
<b>2 Address of Establishment</b> Fill your complete address including the name and floor of the building where your office is in.	〒 [ ] - [ ] ( Building; Floor; )										
<b>3 Legal organization</b>	1 Individual proprietorship	2 Joint stock company	3 Limited company	4 Limited / unlimited liability partnership	5 Mutual insurance company	6 Foreign company (Having overseas head office)	7 Corporation excluding company (Non-profit organization, schools, aggregate corp. credit association, etc.)	8 Unincorporated organization (Group of political supporters, council, etc.)			
<b>4 Whether head or branch office</b>	1 Single Unit ( With no other head/branch offices )		2 Head Office ( Which has branch office(s) in other place(s) )			3 Branch Office ( Which is under the supervision )					
<b>5 Opening year</b>	1 1954 before	2 1955 ~ 1964	3 1965 ~ 1974	4 1975 ~ 1984	5 1985 ~ 1994	6 1995 ~ 1999	7 2000	8 2001	9 2002	10 2003	11 2004
<b>6 Number of persons engaged</b> In the case of an individual proprietorship, if a family member works under payment contract, the family member is regarded as a  Regular employees refer to the employed without stipulation of duration or over one month, or the employed over 18 days each in April and May.	Individual Proprietor (Managing owner)	Unpaid family workers	Salaried directors	Regular employees		Temporarily employed workers (Those workers other than regular employees)	Total numbers of though	Dispatched or subcontracted employees within total numbers of though	Dispatched or subcontracted employees without total number of though		
				Those who are generally called regular employees or staff.	Those other than Part time workers or temporary staff						
	Men	persons	persons	persons	persons	persons	persons	persons	persons	persons	
Women	persons	persons	persons	persons	persons	persons	persons	persons	persons		
<b>7 Kind of business</b> Please refer to the material "How to fill the form". If more than one category is applicable, state the main one. Your main line of business is defined as the largest turn-over category that you have achieved over the year.	(1) State the main line of business that this establishment is engaged in.			This column must be left blank		(2) About the business of (1), state the production, merchandizes or line of business in the sequence of the largest turn-over item or sales. <b>Go to B only if the establishment mainly engaged in wholesale/ retail trade</b>					

This face related with Stock company, Limited company, Limited/unlimited liability partnership or Mutual insurance company when the establishment is either the the head office or the single unit.

<b>8 Company</b>	( Single Unit or Head office only )	( Head office only )		Leave this column blank
	(1) Amount of capital or investment	(2) total number of regular employment of the company	(3) Kind of main business activities of the company	
	10 thousand yen	persons		

Please do read

Leave this column blank

