

The Final Consumption Expenditure of Households in Korea

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? . Introduction

The Korean System of National Accounts has been compiled in accordance with 1993 SNA by the Bank of Korea (BOK). It has been compiled in a systematic and accurate way since 1957, when the BOK was designated as Korea's official institution for the compilation of national accounts. For the long periods over 50 years, the BOK has dedicated itself to development and advancement of the national accounts statistics. Korean system of national accounts transferred from 1968 SNA to 1993 SNA in 2004 at the time of the 9th rebasing from 1995 to 2000. Furthermore, additional implementation to 1993 SNA (e.g., introduction of chain-linking method, recognition of valuables as a separate item of gross capital formation, etc.) was carried out in March 2009 at the time of the 10th rebasing from 2000 to 2005. Also, the BOK intends to transfer to 2008 SNA in 2014 at the time of the 11th rebasing from 2005 to 2010.

In line with the circular flow of income, Korean National Accounts statistics are measured from three aspects; production, expenditure and distribution, which are broadly known as production approach, expenditure approach and income approach. GDP statistics by production and expenditure approaches are compiled quarterly, while GDP statistics by income approach are estimated only annually due to the insufficient source data.

? GDP by production is estimated by using various data sources including survey data from the Statistics Korea, the BOK's self survey data and administrative data from government agencies such as the National Tax Services (NTS). The output is compiled at the level of 399 basic commodity sectors, while the intermediate input is compiled at the level of 81 lower industry sectors in detail.

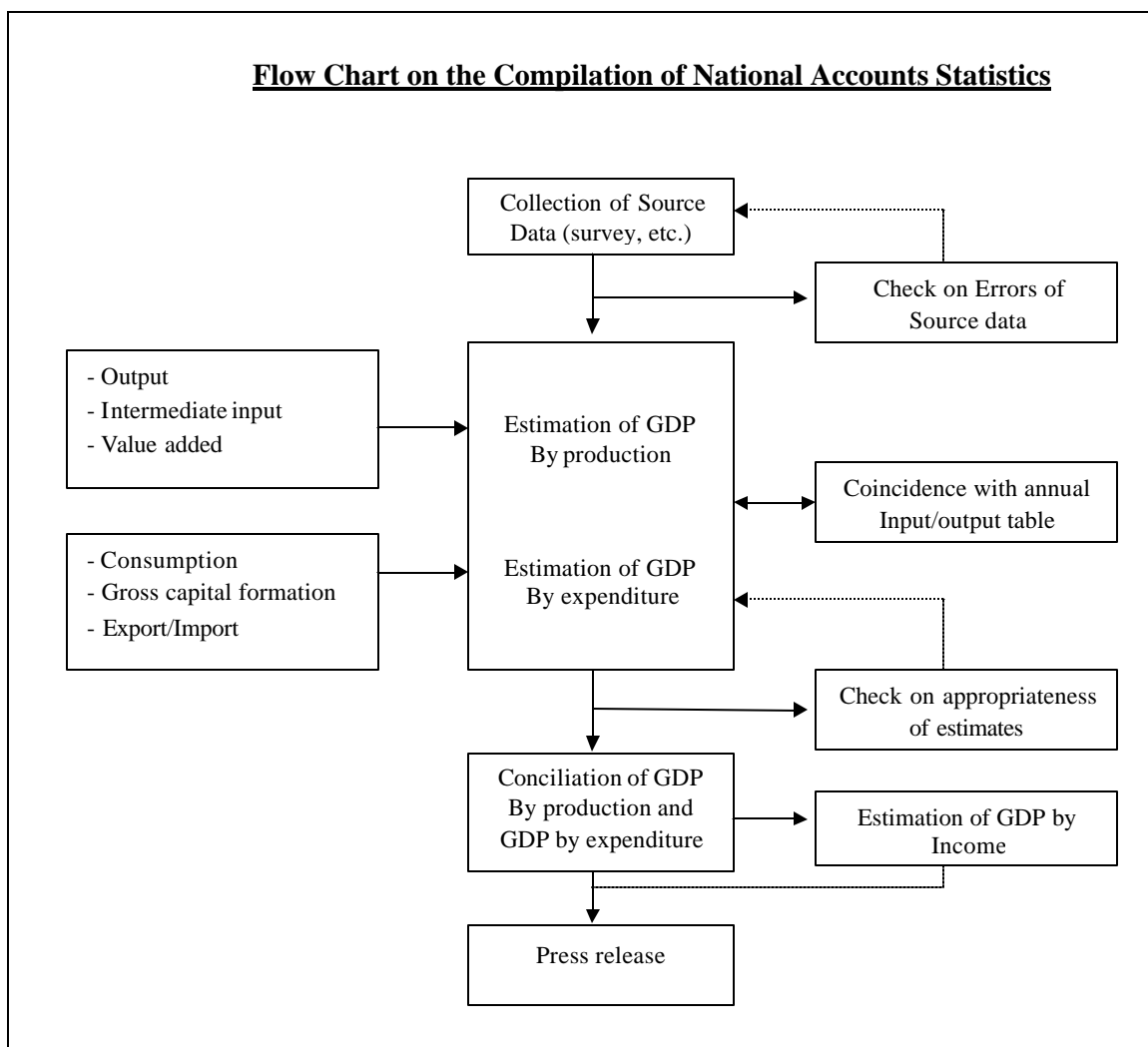
? GDP by expenditure is measured at the lowest level of each component using survey data from the Statistics Korea, corporate financial statement, administrative data, customs clearance statistics and BOP statistics, etc.

? GDP by income is compiled only annually for nominal value by using diverse data sources, such as GDP estimates by production and expenditure, data from government and social security agencies, administrative data from the NTS, business analysis data and employment statistics.

The final GDP aggregates are determined as GDP by production activities. That's because source data of industry activities are more abundant and seemingly more reliable

than those of expenditure components. Consequently, a statistical discrepancy between GDP by production activities and GDP by expenditure components is shown explicitly on the side of GDP by expenditure components. However, most expenditure components, such as consumption and gross capital formation excluding investment on equipment, have been measured independently since 2009 through the direct estimation method using expenditure related source data instead of the commodity flow method.

The National Accounts statistics are classified by the compilation period into 4 categories; quarterly advance, quarterly preliminary, annual preliminary and annual final statistics. Therefore, the statistics are revised according to the above compilation periods and rebasing conducted every 5 years.



? . GDP by Expenditure Approach

The BOK has introduced new statistical techniques to deal with problems resulting from the Commodity Flow Method (CFM) using the I-O tables to estimate household final consumption expenditure, gross fixed capital formation and changes in inventories independently.

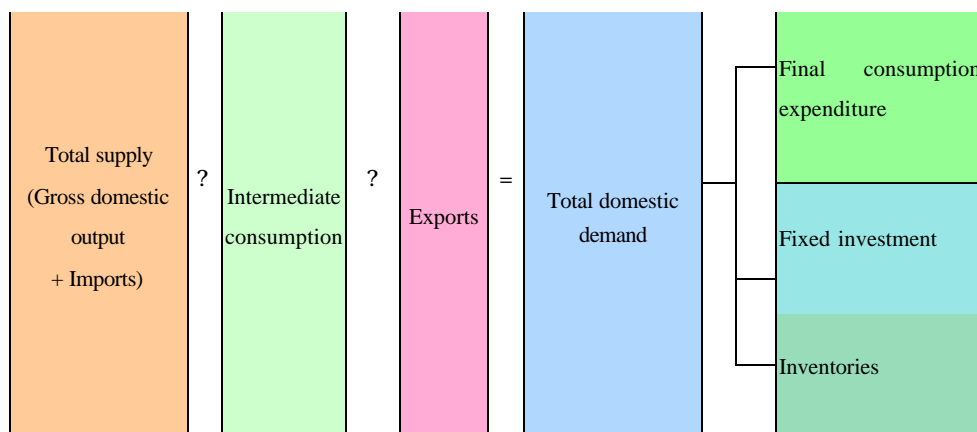
The conventional estimation methods mainly were based on using the structures of I-O tables. Therefore, the estimates for some expenditure components of GDP, especially the final consumption expenditure of household, gross fixed capital formation and changes in inventories, had not derived independently.

The new method employs both the supply-side statistics and the demand-side statistics to identify economic trends more accurately by properly coping with changing statistical environments and by incorporating much more statistical data. Also, introducing the new method would enhance the accuracy and the reliability of statistics, and would ensure the transparency and the objectivity of the estimation process recommended by IMF.

The conventional method using the CFM is a method to estimate expenditure on GDP through tracing the process of commodity circulation. It is mainly used estimating the items troubled in shortage of demand-sided basic data such as facilities investment or inventories.

The conventional estimating process by CFM is introduced briefly below. Firstly, domestic gross output is calculated in production side. Then, total final demand is derived by adding imports and deducting intermediate consumption and exports. Finally, each expenditure item such as consumption expenditure or investment is calculated by multiplying the total final demand by the weight of each item stemmed from I/O table in base year.

The conventional estimating process by CFM





(weight on total domestic demand)

Along with the revision of the base year of the national accounts in 2005, the estimation method of GDP by expenditure has shifted from the supply-side approach focusing on the commodity flow method to direct approach independently using both the supply-side data and the demand-side data in 2009 (retroactively applied to the data of the year 2000 onwards).

Values of household consumption, facilities investment and changes in inventory for the base and current years are estimated through up-to-date methods. It means the total value and the value of each sector of household consumption and changes in inventory are determined in terms of expenditure regardless of the output estimated from the production side using CFM, based on relevant source data. To estimate facilities investment in general, the BOK maintained the conventional framework using CFM, however, the estimation unit is expanded to basic headings under 72 classifications to exclude intermediate goods such as machine parts.

Initially the BOK has estimated directly government final consumption expenditure, construction investment and exports and imports of goods and services using various source data.

? . Estimation Method of the Final Consumption Expenditure of Household

? Base year and annual(final) figures are directly estimated based on consumer expenditure data.

- Household final consumption expenditure is compiled according to Classification of Individual Consumption by Purpose (COICOP).

? Annual(preliminary) figures are calculated by the sum of quarterly (preliminary) figures. Quarterly (preliminary) figures are calculated by extrapolating alternative indicators with the year-on-year rates of change from the same period of the previous year.

- First, the nominal figures by item and the total are estimated, and then real figures are calculated using a deflation method.

? A deflator is mostly Consumer Price Index(CPI).

Overview of Source Data and Estimating Methods

Consumption expenditure by Korean resident households can take place either in Korea or the rest of the world. The consumption expenditure, which takes place in the rest of the world, is regarded as an import of services to Korea. Correspondingly, consumption expenditure in Korea by households resident in the rest of the world is regarded as a Korea's export of services in the national accounts. Thus, total final consumption expenditure in Korea by all households has to have imports of services added and exports deducted in order to arrive at Korean household final consumption expenditure for national accounts. Historically, Korean household expenditure data have been compiled by this route, starting with the so-called "domestic concept" and moving to the "national concept".

Therefore, the final consumption expenditure by Korean households is obtained by calculating final consumption expenditures in the domestic market and adding direct purchases abroad by resident households, and then finally deducting direct purchases in the domestic market by non-resident households.

For presentation purposes, Consumption expenditure of households is broken down according to COICOP. However, the underlying data series are assembled by a variety of methods and routes, depending on data sources used.

The principal data sources used are as follows:

The Census of Service Industry, Household Income & Expenditure Survey, the Wholesale and Retail Survey, the Service Industry Survey, the Transport Survey, Retail Sales

Statistics, the Service Industry Activity Index and Producers' Shipment Index, etc., are used as major source data.

- The Census of Service Industry covers all the establishments that are engaged in service sectors and is released every five years. It provides information on sales and ratios of selling places (consumer, export, producer, etc.) of over 160 specific sectors.
- The Service Industry Survey offers annual information on sales and operating profit of the service industry. It also provides information on sales and ratios of selling places (consumer, export, producer, etc.) of over 160 specific sectors.
- Household Income & Expenditure Survey is a monthly survey on the breakdown of income and expenditure of over 9,000 sample households nationwide excluding farmers' and fishermen's, and is released quarterly. It includes about 350 basic headings under 97 classes under 12 groups.
- The Wholesale and Retail Survey is similar to the Census of Service Industry in terms of categories, industrial classification, etc. except for the scope of survey.
- Retail Sales Statistics provides information on monthly sales of 13 groups of goods of the retail industry.
- The Service Industry Activity Index monthly offers information on value and volume indexes on sales-basis for the service industry.
- The Transport Survey annually offers information on revenues of land/water/air transports and services allied to transport activities.
- Producers' shipment index is compiled monthly based on shipment to grasp the trend of producers' sales.

The choice of data source for any given type of expenditure is generally determined by the perceived comprehensiveness and reliability of that source. Thus, in very broad terms, expenditure on goods is measured predominantly from business information such as 'the Census of Service Industry', 'the Wholesale and Retail Survey', 'the Service Industry Survey', 'the Transport Survey', 'Retail Sales Statistics', 'the Service Industry Activity Index', 'Producers' Shipment Index' while expenditure on services is measured predominantly from inquires to households such as 'Household Income & Expenditure Survey'. In most cases, goods are traded openly and their sales are relatively easy to monitor, distinguishing private from business purchasers. It is not always same for services. Business providers frequently find it difficult to identify whether they are supplying services to

households or business users. Some household services, e.g. babysitting, are frequently provided on an “informal” basis by individuals who might not be registered as business and thus not be captured by business inquires. Household surveys are more likely to record expenditure on these services, as long as their provision is legal.

Major Source Data Related to Household Final Consumption Expenditure

Title	Organization	Cycle	Date of release	Survey method	Major information
<i>Census of Service Industry</i>	Statistics Korea	Every 5 year	Mar of the two years after reference date	Face-to-face interview (investigator's entry)	Sales by sub-classes, the sales ratio to consumers, etc. for the service industry(excluding transportation sector)
<i>Wholesale and Retail Survey</i>	?	Annual	Dec of the following year	?	Sales by industry of the wholesale and retail sectors for non-base year
<i>Service Industry Survey</i>	?	?	?	?	Sales of service industry for non-base year
<i>Transport Survey</i>	?	?	Aug of the following year	?	Sales of the transportation industry
<i>Household Income and Expenditure Survey</i>	?	Monthly	Quarterly (10th day of the second following month)	Housekeeping book (respondent's entry)	Volume, structure and trend of income & expenditure of households
<i>Retail Sales Statistics</i>	?	?	Monthly (following month-end)	Face-to-face interview (investigator's entry)	Trend of retail sales in terms of business type and group of goods
<i>Service Industry Activity Index</i>	?	?	?	?	Value and volume indexes on sales-basis for the service industry
<i>Shipment for domestic market</i>	?	?	?	?	Producers' sales activities and trend of shipment of the mining and manufacturing industry by item.

Estimation Method in Reference year

The total expenditure and the expenditures by item in the domestic market are estimated using ‘the Census of Service Industry’ and other various source data. To calculate expenditures at the purchaser's prices, sales taxes must be added to sales amount in ‘the Census of Service Industry’.

The total expenditure of goods in the domestic market is estimated first based on sales by industry (sub-classes of industry) using ratios of selling to household consumer of over 160 specific sectors in 'the Census of Service Industry' and then is disaggregated for expenditures by item using 'Household Income & Expenditure Survey' and other sources. Therefore it is estimated above 130 detailed items.

? Expenditures on vehicles, grain and fuels are separately estimated based on source data relative to each of them.

? Motor vehicles, motor vehicle fuels and lubricants: Sales of motor vehicles and retail sales of automotive fuel to general consumers(except private business owner) in 'the Census of Service Industry'.

? Grain, tobacco, electricity·gas·water supply, heat energy: separately estimated using relative source data

The expenditures on services by item are estimated based on 'the Census of Service Industry', 'Household Income & Expenditure Survey', etc. it is estimated above 80 detailed items.

? Transport, restaurants, hotels: Sales of the relevant industry on 'the Census of Service Industry' × private consumption ratios from I/O table

? Repair and hire of cleaning·recreational services: Sales of the relevant industry on 'the Census of Service Industry'

? Health service: Sales of human health activities on the Census of Service Industry' - benefits in health insurance from NHIC(National Health Insurance Corporation)

? Rentals for housing, financial services, insurance: Output and household consumption expenditures are estimated using the Population and Housing Census and financial institutions' financial statements.

? Education service

- Public education: Annual tuition fees at a school level for each person (*Statistical Yearbook on Education*) × the number of students

- Private education: Sales of private educational institutes on the Census of Service Industry' + private lesson tuitions (average monthly expenditure on 'Household Income & Expenditure Survey' × the number of households)

? Communication service: Average monthly expenditure on 'the Household Income & Expenditure Survey' × the number of households

? Lottery, casino, horse racing, cinema, TV subscription fees: Separately estimated using relevant data

Direct Purchases Abroad by Resident Households and Direct Purchases in the Domestic Market by Non-resident Households are compiled based on the estimates of the external transaction account. We estimates those data by reclassifying "Balance of Payments statistics(e.g. travel services and credit card usage)".

Estimation Method in Current year

The current year's nominal value estimation method for the final consumption expenditures in the domestic market is primarily the same as the reference year's method. However, instead of 'The Census of Services Industry', it uses the 'Whole and Retail Trade Survey', 'the Service Industry Survey', 'the Service Industry Activity Index', etc.

The real value is estimated by dividing above the 200 kinds of nominal value that are made under the COICOP classification system into related deflators such as the CPI. These nominal and real values are added up by COICOP code and then the final consumption expenditure of households by purpose and by type are obtained.

Direct Purchases Abroad by Resident Households and Direct Purchases in the Domestic Market by Non-resident Households are compiled based on external transaction account estimates. As for deflators, the exchange -rate adjusted consumer price index of major travel countries is used for Direct Purchases Abroad by Resident Households, and the domestic consumer price index is used for Direct Purchases in the Domestic Market by Non-resident Households.

Quarterly (Preliminary) estimate

In order to compile quarterly GDP by expenditure, we have introduced a new estimation method that uses monthly- or quarterly-based both supply-side and demand-side statistics, such as 'Retail Sales Statistics', 'Service Industry Active Index', 'Shipment for domestic market', 'Household Income and Expenditure Survey'. The new approach is summarized as follows:

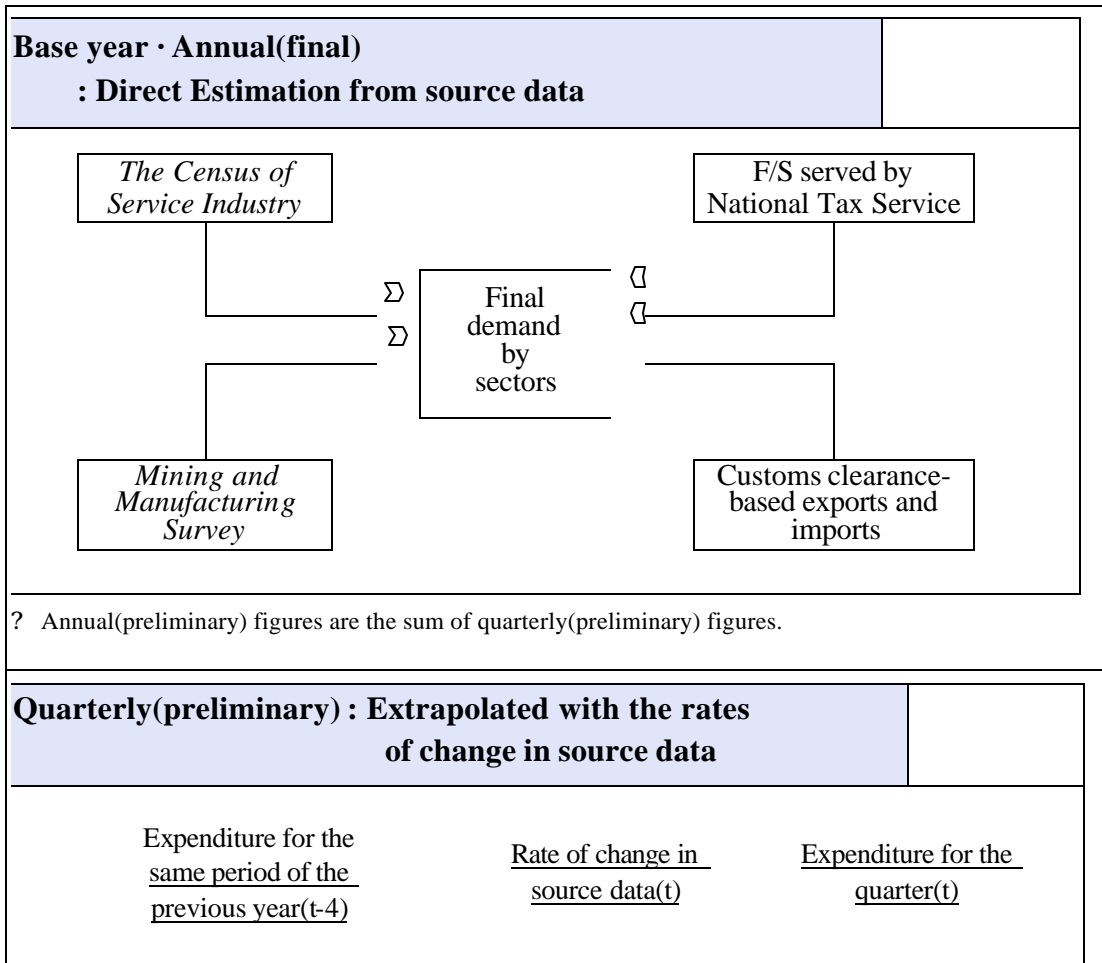
We calculate quarterly values of the final consumption expenditures of household in domestic market. We make a series of about 200 COICOP classifications paying attentions to quarterly pattern of monthly- or quarterly-based data.

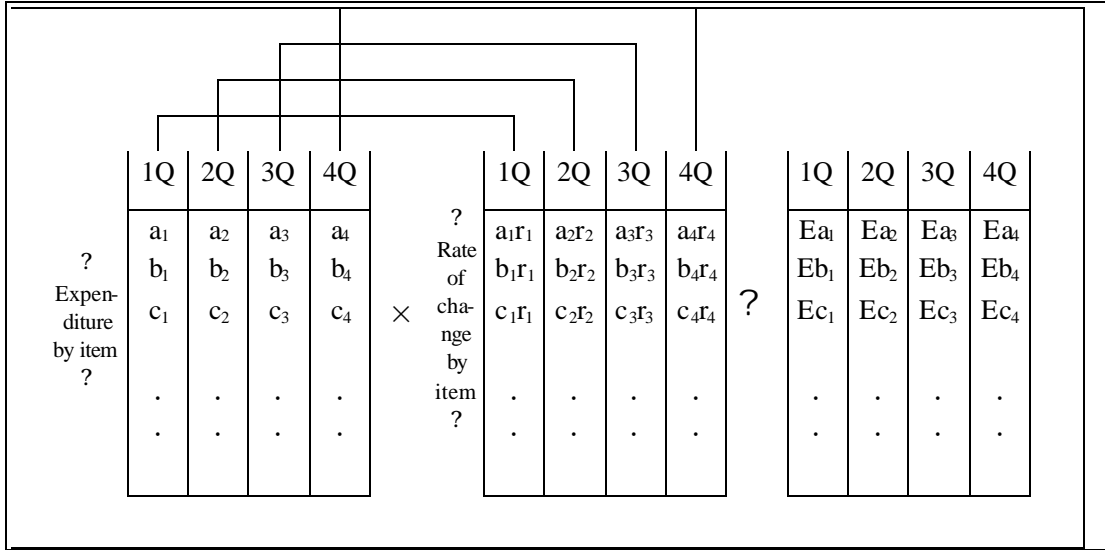
As for goods, we estimate that expenditures by 13 group* of goods are extrapolated using 'Retail Sales Statistics' and the expenditures by item are estimated based on 'Household Income & Expenditure Survey', 'shipment of domestic consumer goods' and other source data. If there is a difference between the two figures, estimated expenditures by item are adjusted proportionately to agree with the expenditures by 13 groups of goods. Since there is no detailed quarterly data on sales by item, expenditures by group of goods are estimated based on Retail Sales Statistics which have high reliability and then the expenditures by item are estimated based on the year-on-year rates of change in relevant source data.

- * Durable goods: automobiles, household appliances,
computer & telecommunication equipment, furniture
- Semi-durable goods: clothing, footwear & luggage, sports & entertainment goods
- Non-durable goods: food, pharmaceuticals, cosmetics, books & stationery, automotive fuel
- The others: other durable goods, other semi-durable goods, other non-durable goods

As for services, expenditures by item are estimated using 'Household Income & Expenditure Survey', 'Service Industry Activity Index' and other various relevant data and then higher aggregates are calculated by adding them up

Framework for Estimation





Summary by Sector

	Base year, annual(final)	Quarterly(preliminary)
The final consumption expenditure of Household	<p>- Sales to consumers in the <i>Census of Service Industry</i> are considered as consumption.</p> <p>- Expenditures relating to education, communication, some of recreation and culture, rental for housing, financial services and insurance are compiled separately based on relevant source data.</p>	<p>- Goods: The expenditures by 13 groups of goods are extrapolated with <i>Retail Sales Statistics</i> and the expenditures by item are estimated based on <i>Household Income & Expenditure Survey, shipment for domestic market</i>, etc.</p> <p>If there is a difference between the two figures, the expenditures by item are adjusted to the expenditures by 13 groups of goods.</p> <p>- Service: Extrapolated with <i>Household Income & Expenditure survey</i>, the <i>Service Industry Activity Index</i>, and other relevant source data.</p>
Facilities investment	<p>- On basic headings under 72 classes of commodities, facilities investment is estimated from the commodity flow method (divided into domestically produced and imported sectors).</p>	<p>- Domestic investment : Extrapolated with the rate of change in domestic shipments of capital goods</p> <p>- Import investment : Extrapolated with the rate of change in imported capital goods based on customs clearance statistics.</p>

	Base year, annual(final)	Quarterly(preliminary)
Construction investment	- Calculating output of each construction activity using the value of construction completed and reflecting accompanying costs and changes in the value of construction inventory	- Extrapolating rates of change in the output of each construction activity with the value of construction completed (reflecting accompanying costs and changes in the value of construction inventory)
Changes in inventories	<p>- Changes in inventories are estimated by converting the balance in inventory (inventory at the end? inventory at the beginning) on the financial statement on a business accounting standards to correspond to the System of National Account</p> <p>- If there are source data on a basis of the volume, changes in inventories are estimated by multiplying the volume by price (agricultural and livestock products, crude oil, etc.).</p> <p>? Estimated on a quarterly basis</p>	<p>- Extrapolated with Producer Product Inventory Index (Mining and Manufacturing finished goods and work-in-progress), the trend of changes in value of inventory stocks according to the financial statements of corporations, etc.</p> <p>- If there are source data on a basis of the volume, changes in inventories are estimated by multiplying the volume by price of the respective quarter.</p>

<p>Exports and imports of goods and services</p>	<p>- Exports and imports of goods and services on the balance of payments × Weighted average market exchange rate of the quarter</p> <p>? Annual value of exports and imports of goods and services are estimated by summing quarterly estimates.</p>	<p>- Exports and imports of goods and services on BOP × Weighted average market exchange rate for the quarter</p> <p>? Estimated by the same method as that for the annual final</p>
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Comparison between Before and After Revision of GDE Estimation Method

Production Approach	New Approach									
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Domestic final demand</div>	Distribution ratios ? I / O ?	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Household consumption</div>								
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Facilities investment</div>								
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Changes in inventories</div>								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;"><u>Base year Annual final</u></th> <th style="width: 50%; text-align: center;"><u>Quarterly preliminary</u></th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top; padding: 5px;"> <i>Census of Service Industry, Household Income and Expenditure Survey, Wholesale and Retail-Transport Service Industry Survey</i> </td> <td style="vertical-align: top; padding: 5px;"> <i>Household Income and Expenditure Survey, Retail Sales Statistics, Service Industry Activity Index</i> </td> </tr> <tr> <td style="vertical-align: top; padding: 5px;"> <i>Mining and Manufacturing Survey, Customs clearance-based export and import amount</i> </td> <td style="vertical-align: top; padding: 5px;"> <i>Monthly Survey on Mining and Manufacturing, Customs clearance-based exports and imports</i> </td> </tr> <tr> <td style="vertical-align: top; padding: 5px;"> <i>Census of Service Industry, Mining and Manufacturing Survey, NTS annual local tax statistics report, Financial statements of corporations</i> </td> <td style="vertical-align: top; padding: 5px;"> <i>Financial statements of corporations, Producer Product Inventory Index, Petroleum supply and demand statistics</i> </td> </tr> </tbody> </table>	<u>Base year Annual final</u>	<u>Quarterly preliminary</u>	<i>Census of Service Industry, Household Income and Expenditure Survey, Wholesale and Retail-Transport Service Industry Survey</i>	<i>Household Income and Expenditure Survey, Retail Sales Statistics, Service Industry Activity Index</i>	<i>Mining and Manufacturing Survey, Customs clearance-based export and import amount</i>	<i>Monthly Survey on Mining and Manufacturing, Customs clearance-based exports and imports</i>	<i>Census of Service Industry, Mining and Manufacturing Survey, NTS annual local tax statistics report, Financial statements of corporations</i>	<i>Financial statements of corporations, Producer Product Inventory Index, Petroleum supply and demand statistics</i>
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