

# Korean System of National Accounts

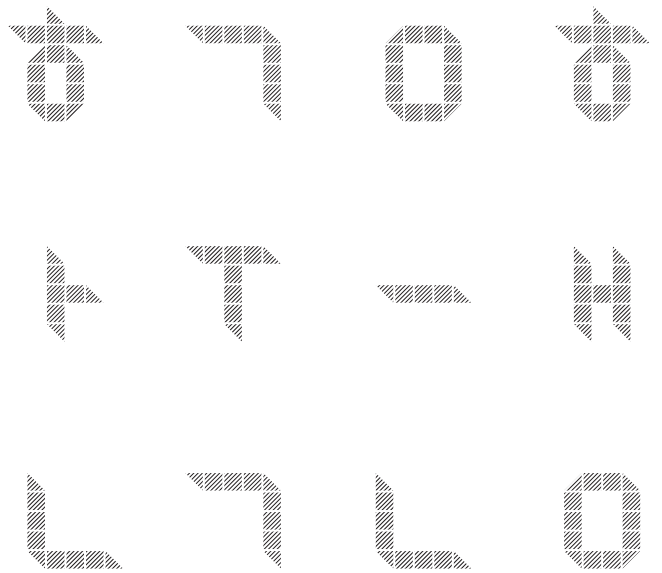
Concepts, Sources and Methods



2020



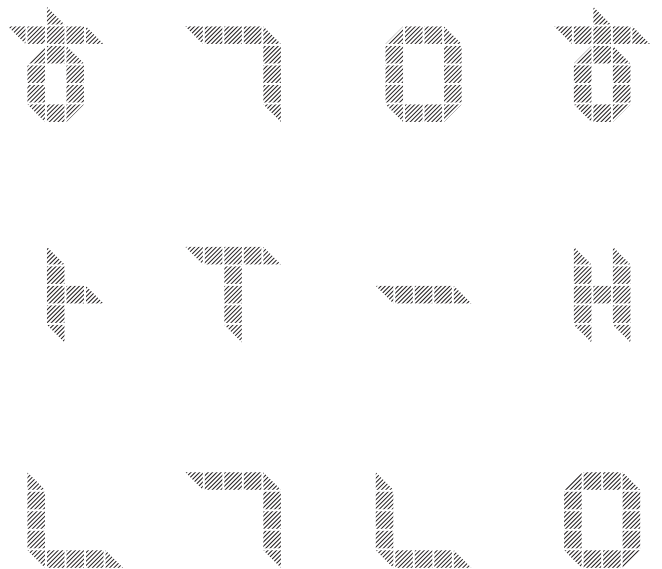




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## Preface

Bank of Korea (BOK) has been steadily compiling the Korean national accounts for nearly sixty years since the BOK's designation as the official agency for national income statistics compilation in 1957, in this process developing a high level of expertise. During the course of 12 comprehensive revisions, it has also done its utmost to implement new international standards, to adopt advanced techniques, and to enhance the quality of the national income statistics by improving the methodologies and expanding the data sources used.

BOK is at the same time committed to strengthening transparency in the procedures of national income statistics compilation, and to deepening users' understandings of them. For this purpose, this guide on Korea's national income statistics has been published in both Korean and English versions, and been revised on occasions of major changes in the methods and source data. This revised guide is focused on reflecting the latest changes in estimation methods and source data from the recent comprehensive revision, and implementing new international standards, while maintaining the basic framework of the previous version.

The BOK endeavored to explain the changes in its comprehensive revision in 2019 that updated the reference year from 2010 to 2015, as well as the additional implementation of new international standards after finalizing the implementation of 2008 SNA and the improvement of statistical methods. In particular, we expanded the provision of national income distribution statistics with the introduction of income ratios from various economic entities so that these statistics could be used to analyze the effects of any redistribution of income or social welfare policies. We also enhanced the usefulness of the statistics as analysis and research tools by strengthening the compatibility between public accounts and government financial accounts. In addition, we incorporated the digital sharing economy into our statistics, which has been growing rapidly recently.

We would like to express our appreciation to all those who have cooperated with us in compiling the Korean national accounts. We hope that this book will provide effective help to many users seeking to understand and utilize the national accounts. We promise moreover to strive for further development of the national accounts in the future, and hope for the great interest and sage advice of all those consulting with us on this work.

**PARK, YANG SU**

Director General  
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## Abbreviations and Acronyms

BLS	Bureau of Labor Statistics
CIF	Cost, Insurance and Freight
COFOG	Classification of the Functions of Government
COICOP	Classification of individual Consumption by Purpose
COPNI	Classification of the Purposes of Non-profit Institutions Serving Households
COPP	classification of outlays of producers by purpose
CPI	consumer price index
ECOS	Economic Statistics System
Eurostat	Statistical Office of the European Communities
FISIM	Financial Intermediation Services Indirectly Measured
FOB.	Free on Board
GDI	Gross Domestic Income
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GNDI	Gross National Disposable Income
GNI	Gross National Income
ICT	Information and Communication Technology
IMF	International Monetary Fund
I/O	Input-Output
KSIC	Korean Standard Industrial Classification
NDI	National Disposable Income
NI	National Income
NNI	Net National Income
NPISHs	Non-profit Institutions Serving Households
OECD	Organization for Economic Co-operation and Development
PPI	Producer Price Index
SA	Seasonal Adjustment
SAM	Social Accounting Matrix
SDR	Special Drawing Rights
SEEA	System of Environmental and Economic Accounts
SNA	System of National Accounts
UN	United Nations
VAT	Value Added Tax

# I. Introduction

- Chapter 1 Basic Concepts
- Chapter 2 History of National Accounts In Korea
- Chapter 3 Methodological Changes to the Measurement of Korean National Accounts due to Adoption of 2008 SNA



## Chapter 1: Basic Concepts

### 1. Concepts of National Income

1.1 Various economic statistics, such as those concerning the balance of payments, foreign exchange reserves, fiscal scale, and the production and sales of motor vehicles, can be used to measure the economic performance of a country or the living standards of its people. However, these indicators show only a part of the national economy. Accordingly, there are in reality many constraints in measuring the overall economic situation of an economy. What is needed, therefore, is an indicator that can comprehensively represent a country's economic performance or the living standards of its people. National income is generally regarded as the most effective benchmark indicator for this purpose.

1.2 National income refers to the total market value of goods and services newly produced by all economic units, including households, enterprises and the government within a country during a certain period of time (for example, a quarter or a year). It is commonly known by the term, gross domestic product (GDP).<sup>1)</sup>

1.3 Income, for its part, can be seen through its economic, tax-generating and social statistical aspects. For national accounts, however, income is defined as total (value added) production, excluding intermediate consumption from the output produced by each economic unit. In summary then:

$$\bullet \text{ Production (Value Added) = Output - Intermediate Consumption}$$

1) Gross national income (GNI) is another core indicator in national income statistics. GNI is not a concept of value added, but a concept of residents' income in comparison with GDP. GNI is equal to GDP plus net factor income from abroad.

## 2. National Accounts and National Income Statistics

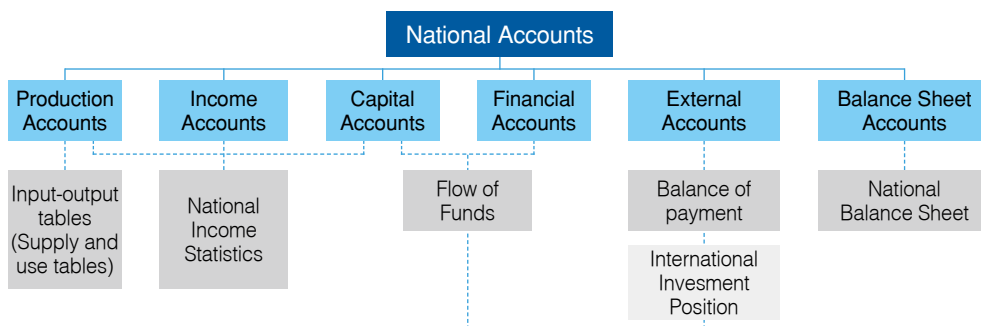
1.4 National income statistics are not the sole means for measuring the flow of a country's economy. The supply and demand of goods and services, and industry inputs and outputs, for example, can also be measured by input-output tables or supply and use tables. We can also refer to the flow of funds accounts, which show the circulation of funds between economic sectors; the balance of payments, which details external transactions with institutions worldwide; and the national balance sheet, which shows the status of assets and liabilities within a national economy at a given point of time. However, these statistics have been developed independently and differ in their respective methodologies and compilation standards. Consequently, a framework that tethers these statistics to one common standard is needed to grasp a national economy comprehensively and systematically.

1.5 Recognizing this necessity, the United Nations established an international standard, the System of National Accounts (SNA), which systematically links various statistics. The system links input-output tables (or supply and use tables) to the production account of national accounts; national income statistics to the production, income and capital accounts; flow of funds accounts to the capital and financial accounts; balance of payments to the external transactions account; and the national balance sheet to the balance sheet account.

1.6 In this way, the SNA systematically links five sets of statistics – national income statistics, input-output tables (or supply and use tables), the flow of funds accounts, the balance of payments, and the national balance sheet – and consistently records goods and services transactions and the flow of funds in the overall national economy using the same accounting method. As a result, the national accounts can be seen as a national economy's general financial statement, representing a snapshot of national economic activity and the status of a nation's assets and liabilities at a certain point in time.



Chart I -1-1

Breakdown of National Accounts by Five Sets of Statistics<sup>2)</sup>

### 3. Circular Flow of National Economy

1.7 A national economy grows by the reiterative processes of generating income through production activities, distributing and disposing the income generated, and financing and accumulating the capital necessary for income generation. This cycle is known as the circular flow of income.

1.8 First, in the course of generating income, production agents (mainly enterprises) combine machinery, buildings, production factors and raw materials to produce goods and services. When the produced goods and services are sold for the purpose of investment or consumption, the portion of the sales price exceeding total production cost is referred to as generated income.

1.9 Distribution of income refers to the process of distributing generated income to those who supply production factors (e.g. labor, land and capital, etc.). Compensation of employees<sup>3)</sup> is distributed to those households offering labor, the operating surplus<sup>4)</sup> to production agents themselves, and taxes on production and imports to the government.

2) The international investment position (IIP) is a statistical statement of stock at a certain point in time, showing the value and composition of financial assets and the liabilities of an economy's residents vis-à-vis its non-residents.

3) This includes wages and salaries payable in cash or in kind; social insurance contributions payable by employers, which include contributions to social security schemes; actual social contributions to other employment-related social insurance schemes; and imputed social contributions to other employment-related social insurance schemes.

4) This is a similar concept to operating profits on the corporate statement of profit and loss, but strictly speaking there are differences between the depreciation method and the inventory asset assessment method.

1.10 Income disposal occurs when economic units (i.e. households, enterprises<sup>5)</sup> and government) purchase the goods and services necessary for carrying out economic activities with earned income or save the remaining portion to be utilized as investment capital.

1.11 Production must be accompanied by investment in related facilities in order to enable the economic units to generate and distribute income continuously. The financing of capital means the source of funds for investment and the accumulation of capital emerge as investment in production facilities. For example, enterprises first appropriate capital for investment from their own internal reserves and then come to rely on loans from financial institutions and the issuance of stocks or corporate bonds to meet capital shortfalls as needed for the purchase of factory sites, buildings and machinery.

1.12 Putting the circular flow of a national economy into specific figures produces national income accounts, which reveal the circular flow of a national economy accurately, comprehensively and systematically.

---

5) The term "enterprise" may refer to a corporation, a quasi-corporation, a non-profit institution (NPI) or an unincorporated enterprise.

Table I -1-1

## Circular Flow of Income

Production and Generation of Income	Distribution of Income	Disposal of Income	
Gross output  (-) Intermediate consumption	Compensation of employees (households)	Compensation of employees	<ul style="list-style-type: none"> <li>Current taxes (government)</li> <li>Final consumption</li> <li>Savings (investment)</li> </ul>
	Operating surplus (enterprises)	Operating surplus	<ul style="list-style-type: none"> <li>Interest, dividends, rents (households)</li> <li>Current taxes (government)</li> <li>Savings (investment)</li> </ul>
	Consumption of fixed capital	Consumption of fixed capital	Internal accumulation (investment)
	Taxes on production and imports (government)	Taxes on production and imports	<ul style="list-style-type: none"> <li>Aid (households)</li> <li>Final consumption</li> <li>Savings (investment)</li> </ul>
Value added (income)	Value added (income)		

## Chapter 2: History of National Accounts in Korea

2.1 The history of national income statistics in Korea can be traced back to around the end of the colonial period. Before Liberation (the period from 1937 to 1945), the Ministry of Finance of the Government-General of Chosun (the colonial Japanese government) compiled rough estimates on income annually. Immediately after liberation (1945 to 1957), the Planning Office, the Ministry of Finance and the Bank of Chosun (the Bank of Korea from 1950) compiled national income statistics from the economy's production, distribution and expenditure sides, respectively.

2.2 The Economic Coordination Office of the UN, established to support post-war reconstruction work, also estimated national income independently to attain guidelines for its assistance policy. However, insufficient data sources and differing estimation methods resulted in widely divergent figures, a lack of consistency and confusion.

2.3 In August 1957, the Tax Advisory Team of the U.S. Treasury Department, led by Dr. James K. Hall, visited Korea and noted in a paper titled "Recommendation for Korean Gross National Product (GNP)" that the Korean government should avoid compiling national income statistics from various organizations due to the lack of consistent verification and rather recommended that the Bank of Korea be made solely responsible for compiling national income statistics. The Korean government adopted this recommendation, and the Bank of Korea became the official compiler of national income statistics in Korea.

2.4 In 1958, the Bank of Korea used the 1953 SNA as recommended by the UN to calculate the country's annual GNP and related expenditures at current and constant prices (base year: 1955). It also retroactively estimated the annual GNP from 1953 to 1957. The Bank of Korea built the foundation for Korean national income statistics in 1959 by adding a distribution-side national income series, a general government balance table and an external transactions table, among other calculations.

2.5 From the early 1960s, demand for quarterly statistics became acute since such statistics were an essential component of the government's economic development plans. The Bank of Korea thus began producing quarterly analyses together with retrospective estimates going back to 1960. Quarterly reports became institutionalized starting in 1968.

2.6 In 1986, the Bank of Korea began integrating national income statistics, flow of funds accounts and the balance of payments table, and in 1988 combined the production account that linked input-output tables with national income statistics.

2.7 In 1995, the Bank of Korea changed the key indicator of economic growth from the previous gross national product (GNP) to gross domestic product (GDP). From 1999, it introduced gross national income (GNI) and began to release quarterly nominal GDP and seasonally-adjusted statistics.

2.8 The Bank of Korea completed the shift to the 1993 SNA in 2004, adding the valuation of output by basic prices and new treatment of the financial intermediation services indirectly measured (FISIM) disposal method, expanding the scope of capital formation and fixed capital consumption, and adjusting the base year to 2000. Following its first announcement of “advance” quarterly estimates in 2005, the Bank of Korea in 2006 completed the work of converting the main indicator of quarterly economic growth from a year-on-year comparison based on previously collected data to a quarter-to-quarter comparison based on seasonally-adjusted time series data.

2.9 In 2009, in accordance with 1993 SNA recommendations, the method for the compilation of real GDP statistics was changed from the fixed-weighted method to the annual chain-linking method (reference year: 2005) to reflect more immediate changes in economic situations. Moreover, the estimation method for expenditure components was altered from the commodity-flow method, which was based on a production-approach measurement of national income, to the direct (expenditure component) estimation method.

2.10 In 2014, the Bank of Korea completed its comprehensive revision of the Korean national accounts, beginning with statistics from 1953. These comprehensive revisions included implementation of the 2008 SNA and updating the reference year from 2005 to 2010. The Bank of Korea, jointly with Statistics Korea, newly released the Korean national balance sheet at the same time. The national balance sheet allowed for the systematic integration of stock accounts, which record asset accumulation, and flow accounts for production and income. The Bank of Korea also adjusted discrepancies between quarterly GDP and annual GDP in a more systematic way by adopting an advanced benchmarking technique, numerically based, that minimizes revisions of quarterly growth rate of GDP and reduces step problems between years.

2.11 In 2019, the Bank of Korea strengthened the income account and the public sector account to meet statistical demand. The Bank of Korea also reflected the digital economy in the GDP figures, and updated the reference year from 2010 to 2015.

Table I -2-1 History of National Accounts in Korea

Year	Milestone
1937~45	Rough estimates of total production volumes by item were compiled annually by the financial bureau of the Government-General of Chosun.
1945~57	Various organizations, including the Planning Bureau, the Bank of Chosun and the Financial Bureau, developed national income estimates independently, resulting in confusing and dramatically disparate estimates.
1957	The Bank of Korea was designated the official compiler of national income and related statistics.
1958	"Gross Domestic Product by Industry" and "Expenditure on GDP" estimates compiled every year from 1953 to 1957 in accordance with the 1953 SNA as recommended by the UN.
1968	Compilation of quarterly national income statistics began.
1986	National accounts combined with national income statistics, flow of funds account and balance of payments in accordance with the 1968 SNA.
1988	Input-output tables and national income statistics connected to compile production accounts; national accounts completed through consolidating four of five national economic statistics with the exception of the national balance sheet.
1995	Main index for economic growth rate shifted from GNP to GDP.
1999	1993 SNA partially reflected by adopting GNI, and release calendar set in advance in accordance with the IMF's SDDS. In addition, quarterly nominal GDP and seasonally-adjusted statistics released for the first time.
2004	Primary 1993 SNA standards reflected, leading to complete adoption of the 1993 SNA systems.
2005	Advance estimates of quarterly GDP released for the first time.
2006	Primary quarterly GDP index shifted from year-on-year percentage change in original series to period-on-period percentage change based on seasonally-adjusted series.
2009	In accordance with 1993 SNA recommendations, the method for compilation of real GDP statistics is changed from a fixed-weighted method to the annual chain-linking method (reference year: 2005). The estimation method for expenditure components altered from commodity-flow method, which was based on national income measured by production approach, to direct (expenditure component) estimation.
2014	The Bank of Korea completes comprehensive revisions of the Korean National Accounts, beginning with statistics from 1953. These comprehensive revisions include implementation of the 2008 SNA and updating of the reference year from 2005 to 2010. The Bank of Korea, jointly with Statistics Korea, compiled and released the first results of the Korean national balance sheet for 2012.
2019	The Bank of Korea strengthened the income account and the public sector account to meet statistical demand. The Bank of Korea also reflected the digital economy in the GDP figures, and updated the reference year from 2010 to 2015.

## Chapter 3: Methodological Changes to the Measurement of Korean National Accounts due to Adoption of 2008 SNA

3.1 The SNA is the internationally agreed-upon standard for compilation of national account statistics. Since the first SNA was published by the UN in 1953, it has been revised three times (in 1968, 1993 and 2008). The 2008 SNA is an updated version of the 1993 SNA. Though the 2008 SNA maintains the basic framework of the 1993 SNA, it better reflects the needs of its users and changes in the economic atmosphere. For example, the 2008 SNA recommends new approaches for emerging economic phenomena such as globalization and the knowledge economy.

3.2 In 2010, the Bank of Korea established a comprehensive plan to implement the 2008 SNA by 2014. During this period, the bank collected new source data and conducted business surveys as necessary to ensure the successful implementation of the 2008 SNA, while analyzing specific estimation methods. As a result of these efforts, the comprehensive revision of the Korean national accounts was completed in 2014. These comprehensive revisions include implementation of the 2008 SNA and updating of the reference year from 2005 to 2010. With the implementation of the 2008 SNA, there were many conceptual changes to the Korean national accounts. The major methodological changes that impacted the Korean national accounts including GDP are summarized below.

3.3 With the introduction of the 2008 SNA, the asset boundary was extended to recognize expenditure on research and development (R&D) as an investment in R&D assets. This means that R&D expenditures that contribute to production for more than a year are no longer deducted from the output to measure the value added. R&D expenditures are categorized as intellectual property products in the gross fixed capital formation, which also includes computer software, database, and entertainment, literary and original artistic originals. Additionally, expenditure on large military weapons such as warships, ballistic missiles and tanks are also treated as assets. The 1993 SNA treated as gross fixed capital formation only those expenditures by the military on fixed assets of a kind that could be used for civilian purposes of



production. On the other hand, military weapons, and the vehicles and equipment whose sole purpose was to launch or deliver such weapons, were not treated as gross fixed capital formation but as intermediate consumption.

3.4 The 2008 SNA gives guidance to distinguish between legal ownership and economic ownership, and emphasizes the principle of ownership change in recording transactions in goods, services and financial assets. Under this principle, the imports and exports of goods sent abroad for processing are recorded based on economic ownership change principles, while merchanting margins are reclassified from the services category to the net exports of goods category. Previously, the imports and exports of goods sent abroad for processing were exempt from change of ownership principles. Regarding the measurement of transactions of enterprises participating in global production in the national accounts and balance of payments statistics, this “economic ownership” principle better reflects the reality.

3.5 The term “goods sent abroad for processing” refers to the situation in which a resident company, the principal, sends raw materials or semi-processed goods abroad for processing while retaining economic ownership of these goods. After processing, the goods may be sent back to the company, or to customers that are resident in the country. It is also possible that after processing, the goods do not return and are directly delivered to customers in the country where the processing takes place or are delivered to yet another country. Under the 1993 SNA, these sort of goods were treated as exports. However, the 2008 SNA recommends that imports and exports be recorded on a change of ownership basis. That is, the flows of goods between the country owning the goods and the country providing the processing services should not be recorded as imports and exports of goods. Instead the fee paid to the processing unit should be recorded as the import of processing services by the country owning the goods and as an export of processing services by the country providing such services.

3.6 Merchanting is the activity of buying some commodities in a foreign country and selling them in a foreign country, without going through the merchant’s country.

Under the 1993 SNA the margins of the merchant were recorded as exports of services. However, they are now treated as net exports of goods. Thus, goods acquired by a merchant are entered as negative exports, whereas goods sold are recorded as positive exports. Merchant margins are classified separately from exports and imports of general goods and recorded as net exports.

3.7 The Bank of Korea newly compiled public sector accounts by integrating government and public corporation transactions and released the initial results in April 2014. Public sector accounts provide data for transactions concerning the public in GDP, and this account is compiled separately as a satellite account in accordance with the 2008 SNA. Meanwhile, fiscal indicators, including total revenue, total expenditure and net lending/borrowing of the public sector, are calculated in accordance with the 2008 SNA in order to make it possible to evaluate public expenditure outcomes and analyze fiscal soundness, which grew in importance after the European sovereign debt crisis. Furthermore the Bank of Korea has begun to compile supply and use tables, which provide a breakdown of supplies and usages by commodity type for each industry. Thus the linkage between I-O statistics and statistical data by industry including GDP was strengthened.

3.8 The method for calculating financial intermediation services indirectly measured (FISIM) was refined using the market interest rate as the reference rate according to the 2008 SNA recommendation. And in terms of estimating the output of insurance using the expectation approach, the periods of moving average were changed from 9 quarters to 20 quarters to reduce the volatility of insurance output.

# II. Overview of National Accounts System

Chapter 4 Introduction

Chapter 5 Composition of National Accounts

Chapter 6 Conceptual Elements of National Accounts

Chapter 7 Rules of Accounting and Valuation



## Chapter 4: Introduction

4.1 The System of National Accounts (SNA) as a guide or standard to compile national accounts was prepared under the auspices of the United Nations (UN), the European Commission (EC), the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF) and the World Bank (WB). It includes official economic statistics such as national income statistics, input-output tables, flow of funds, balance of payment, and the national balance sheet. For balance of payments, the “Balance of Payment and International Investment Position Manual (BPM)” prepared by the IMF is used, though its contents are almost identical to those of the SNA in terms of concept, recording method and coverage.

4.2 The SNA is a consistent and integrated statistical system comprised of internationally agreed concepts, definitions, classifications, and accounting methods and aimed at facilitating economic policies and analyses. Thus, the SNA is basically dependent on economic principles and business accounting systems, such as double-entry bookkeeping. Economic theories are preferable to business accounting principles since all transactions registered in each account comprise a consolidated system matched with corresponding items from another account.

4.3 The original 1953 SNA has been revised three times – in 1968, 1993, and 2008 – to reflect changes in the economic environment. Countries apply one of the four SNA versions, according to their economic situation. The Korean national account is currently compiled in accordance with the 2008 SNA.

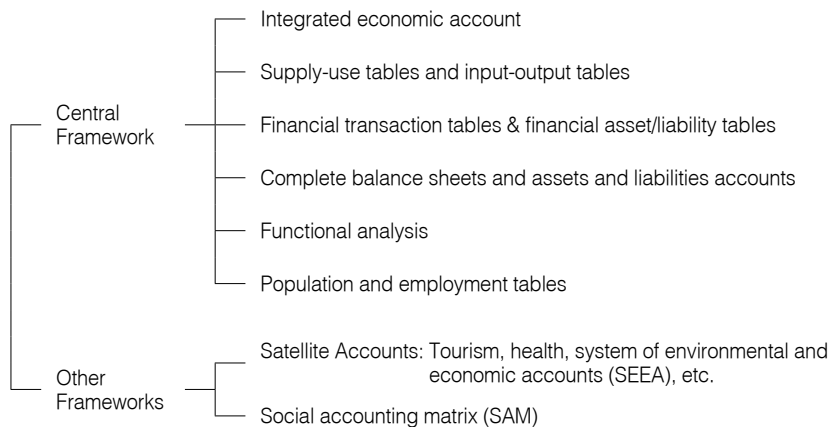
## Chapter 5: Composition of National Accounts

### 1. Composition of Accounts

5.1 The five national economic statistics included in national accounts are introduced briefly below. The system of accounts used in the 2008 SNA consists of a central framework and supplemental (other) framework. In addition, the central framework is composed of several sub-accounts which show production, income, consumption, accumulation, wealth and other fundamental economic phenomena. The other framework consists of satellite accounts and the social accounting matrix (SAM).

Table II -5-1

System of Accounts for the 2008 SNA

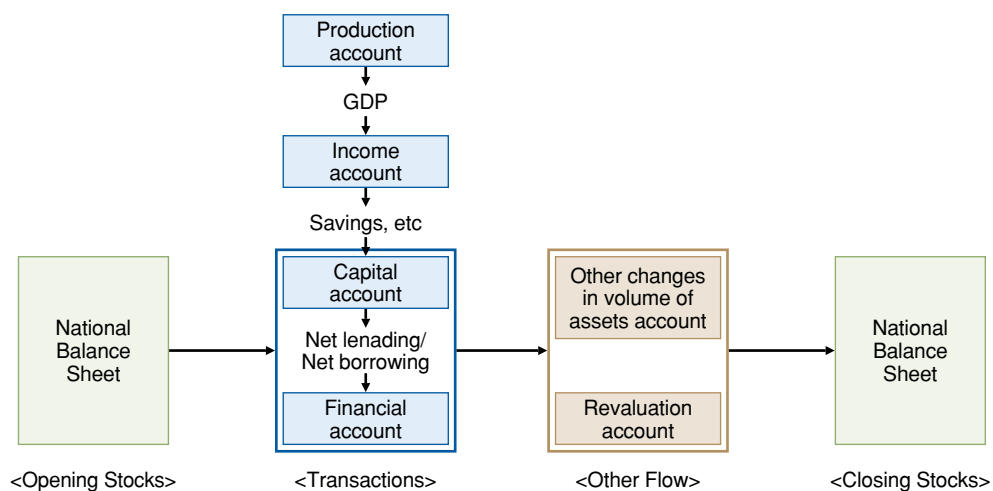


### 2. Structure of Integrated Economic Account

5.2 The integrated economic account is the principal part of the central framework and reveals the overall national economy by recording all transactions between each institutional sector, all assets and liabilities, and all changes among assets. It is comprised of the current account, accumulation account, national balance sheet and external transaction account.

## Structure of Integrated Economic Account

Current Account	Production account	
	Income account	<ul style="list-style-type: none"> <li>• Primary distribution of income account</li> </ul>
		<ul style="list-style-type: none"> <li>- Generation of primary income account</li> <li>- Allocation of primary income account</li> </ul>
		<ul style="list-style-type: none"> <li>• Secondary distribution of income account</li> </ul>
		<ul style="list-style-type: none"> <li>• Redistribution of income-in-kind account</li> <li>• Use of income account</li> </ul>
Accumulation Account	Capital account	
	Financial account	
	Other changes in asset account	<ul style="list-style-type: none"> <li>• Other changes in volume of asset account</li> <li>• Revaluation account</li> </ul>
National Balance Sheet	Opening balance sheet	
	Changes in balance sheet account	
	Closing balance sheet	
External Transaction Account	Current account	
	Accumulation account	
	Balance sheet	



## A. Current Account

5.3 The current account is divided into production and income accounts which show the production of goods and services and the generation, distribution, redistribution and disposal of income.

5.4 First, the production account records the results of production, such as gross output, intermediate consumption and value added. By summing all the value added by each institutional sector, gross domestic product can be calculated.

5.5 The income account is divided into primary and secondary distribution of income accounts and the use of income account. Moreover, the primary distribution of income account can be divided into generation of income account and allocation of primary income account. Consequently, the income account shows how income is generated and allocated or redistributed and how much disposable income each economic participant spends or saves.

## B. Accumulation Account

5.6 The accumulation account records assets and liabilities as a result of transactions or other activities within institutional sectors. It is composed of capital, financial, and other changes in asset accounts.

5.7 The capital account records capital formation and net savings carried over from the current account as the source of capital formation.

5.8 The financial account records the transactions of financial products between institutional sectors. Capital account net lending and the difference between financial assets and financial liabilities in the financial transaction account should be equal in theory, though it is very difficult to make them equal in practice.

5.9 Other changes in asset account are divided into “other changes in the volume



of asset account” and the “revaluation account.” “Other changes in the volume of asset account” is an account that records the changes of assets and liabilities caused by other factors besides typical transactions; the “revaluation account” records the changes caused by the changed price structure.

### C. National Balance Sheet

5.10 The national balance sheet consists of the opening balance sheet, changes in balance sheet account and closing balance sheet; it records the assets and liabilities of each institutional sector at the opening and closing accounting period. The closing balance sheet is derived by reflecting the changes from the opening balance sheet.

### D. External Transaction Account

5.11 The external transaction account records current transactions between residents and non-residents and assets and liabilities related to each transaction. It is composed of the current account, accumulation account and balance sheet, each of which has the exact framework of domestic accounts.

**Table II-5-3 Basic Structure of Integrated Economic Account**

[Current Account]	
Production account	
Uses	Sources
Intermediate consumption	Gross output
Value added	
Generation of income account	
Uses	Sources
Compensation of employees	Value added
Taxes on production and imports	
Subsidies(-)	
Operating surplus/mixed income	

## Allocation of primary income account

Uses	Sources
Paid property income	Operating surplus/mixed income
	Compensation of employees
	Taxes on production and imports
	Subsidies(-)
Balance of primary incomes	Received property income

## Secondary distribution of income account

Uses	Sources
Paid current transfers	Balanced primary income
Disposable income	Received current transfers

## Redistribution of income in kind

Uses	Sources
Paid social transfers in kind	Disposable income
Adjusted social transfers	Received social transfers in kind

## Use of disposable income account

Uses	Sources
Final consumption expenditure	Disposable income
Adjustment for changes in net equity of households in pension fund	Adjustment for changes in net equity of households in pension fund
Savings	

## [Accumulation Account]

## Capital account

Changes in assets	Changes in liabilities and net worth
Acquisitions less disposables of non-financial assets	Savings
Net lending	Capital transfers
	Changes in net worth due to saving and capital transfers

## Financial account

Changes in assets	Changes in liabilities and net worth
Net acquisition of financial assets	Net acquisition of financial liabilities

## Other changes in volume of asset account

Changes in assets	Changes in liabilities and net worth
Non-financial assets	Liabilities
Financial assets	Changes in net worth due to other changes in volume of assets

## Revaluation account

Changes in assets	Changes in liabilities and net worth
Nominal holding gains and losses	Nominal holding gains and losses
	Changes in net worth due to nominal holding gains and losses

## [National Balance Sheet]

## Opening balance sheet

Assets	Liabilities and net worth
Non-financial assets	Liabilities
Financial assets	Net worth

## Changes in balance sheet account

Assets	Liabilities and net worth
Changes in non-financial assets	Changes in liabilities
Changes in financial assets	Changes in net worth due to: <ul style="list-style-type: none"> <li>- Saving and capital transfers</li> <li>- Other changes in volume of assets</li> <li>- Nominal holding gains and losses</li> </ul>

## Closing balance sheet

Assets	Liabilities and net worth
Non-financial assets	Liabilities
Financial assets	Net worth

## Chapter 6: Conceptual Elements of National Accounts

6.1 National accounts consist of consolidated tables which systematically record in a designated method all transactions among many economic subjects in terms of production, distribution and expenditures.

6.2 National accounts are intended to provide useful data for analyzing overall national economic circulation for the purpose of policy development, research and international comparison. All transactions occurring in a national economy should be classified and integrated to match one of the purposes prescribed above. Moreover, all transactions should be defined and recorded in a consistent manner.

### 1. Classification of Economic Subject

#### A. Institutional Unit and Institutional Sector

6.3 Many economic subjects – e.g. retailers, housekeepers, enterprises, and government agencies, just to name a few – play diverse roles in a national economy. However, because it is impossible to compile national income statistics for each subject, they are grouped according to similar purposes or functions. The 2008 SNA correspondingly defines institutional units and institutional sectors to facilitate economic analysis.

6.4 An institutional unit is an economic entity capable in its own right of owning assets, incurring liabilities and engaging in economic activities and transactions with other entities. It takes largely one of two forms: as an individual entity or as a legal or social entity, such as a corporation or government agency. Social entities also have responsibilities or duties linked to their economic decisions, though they are limited. In the national account system domestic institutional units are classified by five sectors according to function, behavior and purpose. The rest-of-the-world falls into a separate non-resident sector.

## B. Classification by Institutional Sector

6.5 The five resident sectors consist of non-financial corporations, financial corporations, the general government, non-profit institutions serving households (NPISHs), and households.

6.6 Non-financial corporations provide the market with goods and non-financial services. Financial corporations include institutional units engaged in financial intermediation and financial ancillary activities. The general government produces non-market goods and services, and redistributes income and wealth among other institutional units. The NPISHs mainly produce non-market goods and services for households with funds voluntarily donated. Finally, households consist of one person or several persons and include non-corporate enterprises owned by households. The sector's main purpose is defined as supplying labor, being the final consumer of goods and services, and producing as enterprises.

Table II-6-1 Institutional Units and Sectors

Institutional Sector Institutional Unit	Non-financial corporation	Financial corporation	General government	Households	Non-profit institutions serving households
Corporations (including quasi-corporation enterprises)	Non-financial corporations (including quasi-corporation enterprises)	Financial corporations (including quasi-corporation enterprises)			
General government (including social security funds)			General government (including social security funds)		
Households				Households	
Non-profit institutions	Non-profit non-financial institutions engaged in market production	Non-profit financial institutions engaged in market production	Non-profit non-market institutions under the control and financial support of the government		Non-profit non-market institutions serving households

6.7 The total economy consists of all the institutional units that reside within the economic boundary of a nation. The economic boundary is primarily the nation's geographic boundary but is not limited to that. "Residency" is determined not just by nationality or legal criterion but by economic activity over a designated period (typically one year) within the same area. External transactions involve those between residents and non-residents and are recorded in the rest-of-the-world account. The rest-of-the-world functions as a separate institutional sector.

### ■ Non-financial Corporations

6.8 Non-financial corporations are enterprises that produce goods and non-financial services and are explicitly independent from their owners. Independence means that income, expenditures, and assets and liabilities are controlled and managed independently from the ownership. It includes all private and public incorporated enterprises serving non-financial activities, unincorporated enterprises or quasi-corporations that have complete accounting systems.

### ■ Financial Corporations

6.9 Financial corporations are corporations or quasi-corporations whose main activity is financial intermediation or financial ancillary service. Financial intermediation means the intermediation of cash shortage and surplus through a financial market. Financial ancillary service is an assistance activity that is closely related to and accelerates financial intermediation.

6.10 According to the 2008 SNA, financial corporations can be divided into nine subsectors according to their activities in the market and the liquidity of their liabilities. These are: the central bank; deposit-taking corporations except the central bank; money market funds (MMF); Non-MMF investment funds; other financial intermediaries except insurance corporations and pension funds; financial auxiliaries; captive financial institutions and money lenders; insurance corporations; and pension funds.

## ■ General Government

6.11 Government units are unique legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area. Their main function is to provide those public and social services which other units cannot supply sufficiently to the community and individual households for free or at a low cost. As the purpose of their economic activity is not for profit, they do not have operating surplus unlike other economic units. Moreover, as their outputs are not sold in the market, their production costs are financed mainly through tax revenue.

6.12 General government is divided into central government, local government and social security funds, such as the National Pension Fund. Public non-profit institutions like the Korea Development Institute (KDI), which is a research institute serving the government, are also classified within the general government sector.

## ■ Non-profit Institutions Serving Households (NPISHs)

6.13 NPISHs provide education, medical, religious and other social services for free or at prices below economically significant prices. Labor unions, consumer groups or charity organizations funded by voluntary donations are all included here. Non-profit institutions that have only one or no full-time employees are classified as households rather than as NPISH.

## ■ Households

6.14 A household is defined as a group of persons who share the same accommodations and some or all of their income and wealth, and who consume certain types of goods and services collectively (mainly housing and food). A household is the main subject of consumption expenditure activities related to production and disposal of goods and services. It can also be a producer of goods and services for sale or transaction in the market by owning and controlling

unincorporated enterprises. It sometimes produces goods and services for the inhabitants' own final use.

## ■ The Rest-of-the-World

6.15 The rest-of-the-world sector is composed of all institutions not residing in the country who have transactions or interests with residents there. Thus the external transaction account cannot in itself be considered a complete accounting system because it records only economic relationships between residents and non-residents. In addition, embassies, foreign military forces and international organizations are regarded as the rest-of-the-world, even though they are physically located in a national territory not their own.

## 2. Principal Transaction Items

### 2.1 Production Account

#### A. Gross Output

6.16 Output (or control total) means the sum of goods and services produced during a certain period, while figures for goods and services reflect the total sold in the market. Output can be classified into three categories: market output, non-market output, and output for one's own final use.

6.17 Market output is output that can be sold at economically significant prices in the market or output that is produced for commercial sale.

6.18 Non-market output is output supplied free or below economically significant prices by non-market producers like the government.

6.19 Output for one's own final use also entails no significant market transaction.



6.20 Output should be primarily valued on the basis of production time regardless of whether it is involved in market transactions. In the event that market prices for valuation do not exist, output is valued by the production or input costs.

6.21 As expenditure structure and the form of output differ according to production units, the definition of output also differs. For instance, if an electronics company in the manufacturing sector produces 10,000 TVs with a unit price of 500,000 Korean won, the company's output is 5 billion won. Whether or not the goods produced are sold is not considered; all output produced is tallied up. If 5,000 TVs among the 10,000 units subsequently sell and the remaining ones are warehoused, the volume of output does not change. Similarly, a farming household producing 10 bags of rice priced at 160,000 won per bag produces output of 1.6 million won even if family members consume all of the rice themselves.

6.22 As previously stated, with regard to goods with market prices for transactions, it is easy to calculate output by making use of production volume and unit prices. But the outputs of the wholesale and retail trade industry are difficult to quantify, and financial intermediation services provided by the finance sector require yet another separate definition for output.

6.23 More specifically, in the wholesale and retail industry, output is measured as the total value of the trade margins (wholesale and retail margins). The trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or disposed of.

6.24 In regard to the transport and storage industry, output is measured by the value of the amounts receivable for transporting goods or persons and for storing goods. In some sectors of the service industry, incomes such as fares and commissions receivable for providing services are calculated as output. For instance, income from lodging charges represents the output of hotels or inns; income from tuition fees represents the output of educational institutions; and income from fares represents the output of passenger transportation businesses such as buses and taxis.

6.25 However, in the case of the financial and insurance sectors, the question becomes how to value the charges from the sale of services. First, in the finance industry, output is calculated by adding up financial intermediation services indirectly measured (FISIM)<sup>6)</sup> to the sales charges receivable for actual services as a result of remittance, money collection, and currency exchange or card businesses. The output of the insurance industry is measured by insurance premiums, i.e., imputed sales are derived by deducting insurance claims payable and changes in reserves from premiums receivable and the capital gains from invested reserves.

6.26 Meanwhile, services supplied by government and non-profit institutions serving households (NPISHs) are not traded in the market, so it is difficult to calculate their value based on market prices. Accordingly, total input costs, which are measured as intermediate consumption incurred in producing the services plus value added, are regarded as their output. In respect to household services, the element input for service production is primarily labor, so the total remuneration (compensation of employees) payable by a corporation to its employees in return for work is regarded as the output.

## B. Intermediate Consumption

6.27 Intermediate consumption or intermediate input consists of the value of goods and services consumed as inputs during the process of production. It includes indirect costs for sales such as entertainment expenses, advertisement and publicity costs as well as material costs.

6.28 Intermediate consumption and final consumption expenditures are classified according to whether the goods or services enter the process of production or are consumed by households, which are the final consumption units. For example, in the case of a bar of soap or towel, if the employer purchases it and workers use it at a factory or office, it is treated as intermediate consumption. However, if it is taken by

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6) This means implicit profits stemming from financial intermediation services on deposits and loans, which is explained in Box III-9-2 in Chapter 9.

workers for use at home, it is treated as a final consumption expenditure.

6.29 The distinction between intermediate consumption and gross fixed capital formation depends on whether goods purchased by a producer are entirely used up in the course of production during the accounting period or generate profits after the accounting period. In particular, when expenditures on maintenance and repairs are undertaken with the objective of simply maintaining fixed assets in good working order, they are regarded as intermediate consumption. However, when they are undertaken with the objective of extending the service life of fixed assets or improving productivity significantly, they must be treated as gross fixed capital formation.

6.30 In the 2008 SNA, research and development is treated as gross capital formation except where it is clear that the activity does not entail any economic benefit for its owner, in which case it is treated as intermediate consumption. Expenditures on military equipment, including large military weapons systems, are treated as fixed capital formation. Expenditures on durable military goods such as bombs, torpedoes and spare parts are recorded as inventory until use, after which they are recorded as intermediate consumption.

### C. Value Added

6.31 Value added refers to the value of goods and services newly created by productive activity in any given period. It is obtained by deducting the value of intermediate consumption from the value of output. Namely, if an electronics company inputs 3 billion won in intermediate consumption, including costs for purchasing semiconductors and LCD panels, and advertisement and publicity costs associated with the sale of 10,000 TVs valued at 5 billion won, the value added created by the company becomes 2 billion won.

6.32 Value added consists of compensation of employees, operating surplus, consumption of fixed capital, taxes on production and imports, and subsidies (a deduction). Among these, consumption of fixed capital is used as a financial

source for capital accumulation, and the others are distributed as income for each institutional unit.

6.33 Value added is classified as gross value added when consumption of fixed capital is included and net value added when consumption of fixed capital is excluded.

## 2.2 Income Account

### A. Compensation of Employees

6.34 Compensation of employees is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. Compensation of employees has two main components: wages and salaries payable in cash or in kind; and social insurance contributions payable by employers, including contributions to social security schemes.

6.35 Payment in cash from employers equals total remuneration paid in the form of cash and includes the tips that employees receive from customers.

6.36 Payment in kind describes goods and services provided to employees by employers free or at discounted prices, and coverage is limited to those things that employees can dispose of at their discretion according to their own needs and desires. Goods and services needed at the workplace are excluded and listed as employer intermediate consumption during production.

6.37 The employer's payments toward retirement allowances are also treated as compensation for employees.

### B. Taxes and Subsidies on Production and Imports

6.38 Taxes and subsidies on production and imports are sub-divided into

those levied on goods or services produced and other taxes or subsidies levied on production processes, such as taxes payable on the machinery, buildings or other assets used for production. Other government taxes and subsidies not related to the production process are not included and should be treated as current transfers or capital transfers.

### **C. Operating Surplus/Mixed Income**

6.39 Operating surplus is the residual after deducting compensation for employees, fixed capital consumption, net taxes and subsidies for production from gross value added. It contains an enterprise's profit, net interest payment, and net rent payment. The products produced by government or NPISHs are not assessed at market prices but at production cost, so the corresponding value added of those products does not include operating surplus.

6.40 The SNA adopts the term “mixed income” as a new substitute for the operating surplus of unincorporated enterprises. This reflects the fact that the income of an unincorporated enterprise owned by a household includes compensation of employees and pure operating surplus. Namely, the owner of an unincorporated enterprise simultaneously plays the roles of entrepreneur and laborer.

### **D. Income of Quasi-corporations**

6.41 A quasi-corporation is an unincorporated enterprise that behaves like a separate corporation in the aspects of financing and operation with a complete income statement and balance sheet account.

6.42 The owner of a quasi-corporation can withdraw some or all of the income of the enterprise, and it is listed as property income in the income account in the same manner as corporate dividends.

## E. Property Income

6.43 Property income is income received by the owner of financial assets and/or natural resources in exchange for allowing another institutional unit to use such assets in a production process. Property income is interest or dividends in the case of financial assets and rent in the case of natural resources.

## F. Current Transfer

6.44 Current transfer is an income transaction (in cash and in kind) incurred without any rewards in return, and can be divided into voluntary transfer and compulsory transfer.

6.45 Compulsory transfer involves legal requirements or enforcements, such as current taxes, penalties, mandatory levies, etc. Voluntary transfer includes charitable donations, offerings to religious organizations, etc.

## G. Final Consumption Expenditure

6.46 Final consumption expenditure is an expenditure on goods and services for consumption subjects such as households, NPISHs and government.

6.47 Final consumption expenditures include the consumption of newly produced goods and services in the designated period, but some transactions cannot be included. Most notably, purchasing a house is not classified as final consumption expenditure but rather fixed capital formation, because the SNA treats a house as an object acquired for the service it provides not an object to be consumed. Moreover, crops or services which homeowners produce for their own final use are included as final consumption expenditures, even though they are not sold in the marketplace.

6.48 Final consumption expenditures by government and NPISHs, however, vary slightly from those of households. Because government and NPISHs are subjects

linked to production as well as consumption, their purchases of goods and services are regarded as intermediate consumption, not final consumption expenditures. Consequently, the final consumption expenditure for government and NPISHs is their own final use of goods and services produced by themselves. In other words, they input much higher costs than sales revenue in order to supply public and social services, and the differences between their actual input costs and sales revenues are recorded as their final consumption expenditures.

## H. Savings

6.49 Savings are the residuals after deducting current expenditures, e.g. current transfers or final consumption expenditures, from current income. They are used as funds for capital formation and connect income and capital accounts.

## 2.3 Capital and Financial Account

### A. Gross Fixed Capital Formation

6.50 Producers sometimes purchase machinery or build factories to maintain production ability or to enhance their competitiveness. These kinds of activities are usually planned out based on a long-term perspective. Capital goods are goods perennially used in the production process as mentioned above. The purchase of capital goods is called gross fixed capital formation (GFCF) or gross fixed investment.

6.51 In other words, gross fixed capital formation is the net acquisition of fixed assets during the accounting period. However, the purchase or disposal of non-produced fixed assets such as land is not included as GFCF.

6.52 When purchased by households, the same type of fixed asset is treated as a final consumption expenditure. For example, the purchase of a car for business purposes is recorded as GFCF, while the purchase of a car by a household for leisure activities is treated as a final consumption expenditure.

6.53 According to the 2008 SNA, expenditure on weapon systems,<sup>7)</sup> and the acquisition of intellectual property products including the results of research and development (R&D), mineral exploration and evaluation, computer software and entertainment, literary and artistic originals, are also regarded as GFCF.

## B. Changes in Inventories

6.54 Inventories are classified into materials and supplies, works-in-progress, and finished goods. Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period. Changes in inventories are similar to GFCF in terms of the sources of future earnings. But they are different in the aspect that GFCF generates earnings for many years, while the earnings generated by changes in inventories are realized immediately.

6.55 The production of high value capital goods such as ships, heavy machinery, buildings and other structures like dams and roads may take several months or years to complete. The output in the middle of construction from such production is usually measured on the construction basis and classified as GFCF during the accounting period. On the other hand, dwellings under construction are recorded as work-in-progress or finished goods inventories until ownership is transferred to the final users.

## C. Acquisitions Less Disposals of Valuables

6.56 Valuables are assets whose qualities do not degrade under ordinary conditions. They are purchased as a store of value rather than for use in production or consumption. Because the acquisition of valuables cannot easily be described as GFCF or intermediate consumption, the 2008 SNA recommends listing them as a

7) The 2008 SNA recommends that military weapons systems comprising vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc. be classified as fixed assets and that the classification of military weapons systems as fixed assets be based on the same criteria as for other fixed assets. Most single-use weapons, such as ammunition, missiles, rockets, bombs, etc., are treated as military inventories. However, some single-use items, such as certain types of ballistic missiles with a highly destructive capability, may provide an ongoing service of deterrence against aggressors and therefore meet the general criteria for classification as fixed assets.



sub-item of gross capital formation.

### **D. Consumption of Fixed Capital**

6.57 Consumption of fixed capital is the decline in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage during the accounting period.

6.58 Generally, institutional units using fixed assets in the production process reserve a part of the value added to purchase replacements for worn-out fixed assets.

6.59 Consumption of fixed capital that shows quality decline in the economic sense is not the same as depreciation listed on a financial statement to accelerate investment or obtain a tax exemption.

### **E. Capital Transfers**

6.60 Capital transfer is similar to current transfer in terms of being an outlay without reward, but differs in the sense that capital transfer entails the disposal or acquisition of assets.

6.61 Assisting with funding for investment or compensating for losses as the result of a disaster are examples of capital transfers. In addition, dues on capital, such as inheritance or gift taxes, are also classified as capital transfer.

### **F. Acquisition Less Disposals of Non-produced Non-financial Assets**

6.62 Non-produced non-financial assets consist of natural resources, contracts, leases and licenses, and goodwill and marketing assets, according to the SNA.

6.63 Natural resources include land, mineral and mineral resources, non-cultivated biological resources, water resources, and other natural resources. Land

consists of ground, including soil and any associated surface waters, over which ownership rights are enforced and from which economic benefits can be derived by their owners through holding or using such land.

6.64 Land transactions are treated as if they arise only between residents. The purchase of land by non-residents is regarded in the same way as if a nominal resident entity had bought the land. The transaction is recorded as if the current resident gives the land's valued equity to the non-resident, who is the actual owner of the land. Consequently, the purchase and sale of land do not appear within the measure of a national economy, while the difference between the purchase and sale, namely the net purchase, is recorded in the sectoral accounts.

6.65 The price of land is assessed as the net land price with the ownership transfer cost deducted since the transfer cost is treated as a produced service.

## **G. Financial Transactions**

6.66 Financial transactions comprise a record of all transactions that entail transfer of ownership, such as the acquisition and disposal of financial assets or the issuance and repayment of liabilities.

## **2.4 External Transactions Account**

### **A. Imports and Exports of Goods and Services**

6.67 Some goods and services domestically produced are exported to the rest-of-the-world. In addition, residents sometimes import goods and services produced in foreign countries to satisfy domestic demand. Imports and exports comprise all goods and services transactions in the external transaction account.

6.68 In addition, goods and services purchased by foreign tourists or embassy personnel within the national territory are treated as exports and vice versa.

## **B. Net Factor Income from the Rest-of-the-World**

6.69 Received factor income is income received in return for participating in economic activities abroad. Net factor income is derived by deducting the factor income paid to non-residents from the factor income residents received from activities in foreign countries.

6.70 Net factor income consists of standard income – compensation of employees, interest, dividends, etc. – obtained from economic activities with the rest-of-the-world.

## **C. Net Current Transfer from the Rest-of-the-World**

6.71 Net current transfer from the rest-of-the-world is income acquired in the absence of economic activity, e.g. overseas remittance from relatives abroad or financial aid from other countries.

## Chapter 7: Rules of Accounting and Valuation

7.1 All transactions tabulated as part of a national account should be designated, assessed and recorded in a consistent manner in order to make equivalent the value of income derived from production, distribution and expenditures.

### 1. Rules of Accounting

#### 1.1 Time of Recording

7.2 Generally, transactions arise throughout the entire designated period and the multi-step accounting process. Consequently, the time for recording and the standard criteria for assessment must be prescribed to ensure systematic recording of transactions.

7.3 According to the SNA, the time of recording of the acquisition of goods is the moment when the economic ownership<sup>8)</sup> of those goods changes hands. When change of ownership is not obvious, the moment of entering in the books of the transaction partners may be a good indication and, failing that, the moment when physical possession and control is acquired. These subsidiary rules apply in particular to internal transactions or when a change of ownership occurs under a financial lease or hire-purchase arrangement. Imports and exports of goods are recorded when change of ownership occurs. In the absence of sources specifying the date on which ownership changes, there is a strong presumption that the goods will cross the frontiers of the countries concerned either shortly before or soon after the change of ownership takes place. Trade statistics based on customs documents reflecting the physical movement of goods across the national or customs frontier are therefore often used to arrive at an approximation.

7.4 Services are recorded in the SNA when they are provided. Some services

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8) Regarding the determination of the timing of recording of transactions in goods, services and financial assets, the principle of change of ownership is basically applied. Economic ownership takes account of where the risks and rewards of ownership lie. A change in ownership from an economic point of view means that all risks, rewards, rights and responsibilities of ownership are transferred. The 2008 SNA gives guidance to distinguish between legal ownership and economic ownership, and recommends that assets be recorded on the balance sheets of the economic rather than the legal owner.

are special in the sense that they are characteristically supplied on a continuous basis. Examples are operating leasing, insurance and housing services (including those of owner-occupied dwellings). These services are recorded as being provided continuously over the entire period the contract lasts or the dwelling is available.

## 1.2 Rules of Accounting by Transaction Items

### A. Gross Output

7.5 Gross output is recorded at the time of production. Since services cannot exist in inventory form, the time of production is identical to the time the services are provided. In the case of wholesale and retail trade, their output is recorded at the time the goods are sold or ownership is transferred.

7.6 The SNA recommends assessing output at the basic price: the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable and plus any subsidy receivable by the producer as a consequence of its production or sale. Should the basic price be unobtainable, output can be assessed at the producer's price.

$$\begin{aligned} \bullet \text{ Basic Price} &= \text{Producer's Price} - \text{Taxes on products excluding invoiced VAT} \\ &\quad + \text{Subsidies on products} \end{aligned}$$

7.7 In addition, products not for sale but used for one's own final expenditure should be assessed at the basic market price at which the same product would be listed if sold commercially; a non-market product or product to which it is hard to affix a market price due to quality differences is assessed at production cost.

## B. Intermediate Consumption

7.8 Intermediate consumption should be assessed at the purchaser's price at the point that goods or services are inputted to production. The purchaser's price is the amount paid by the purchaser, excluding any VAT or similar tax deductible by the purchaser, in order to deliver a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser for delivery at the required time and place.

$$\bullet \text{ Purchaser's Price} = \text{Producer's Price} + \text{VAT not deductible by the producer} + \text{trade and transport margin}$$

## C. Final Consumption Expenditure

7.9 Final consumption expenditure is recorded at the time of purchase regardless of the delivery time for goods or services. In the case of an installment purchase or credit transaction, the expenditure is recorded when the goods are delivered to the purchaser because the purchaser, at that moment, assumes the actual rights and responsibilities of ownership even if not the legal rights and responsibilities.

7.10 Household final consumption expenditures on goods or services are assessed at the purchaser's price.

## D. Gross Fixed Capital Formation

7.11 GFCF is recorded at the time of acquisition of ownership. However, in the case of a contract of sales made in advance, the transfer of ownership may occur in stages as value is put in place. In this case, interim payments are often used to approximate the value of GFCF.

7.12 Fixed assets acquired through barter are valued at estimated purchaser

prices plus any costs of ownership transfer. In practice, neither taxes on products nor transportation costs may apply, in which case purchaser prices will not differ from the basic prices of products. Fixed assets produced for own gross fixed capital or assets transferred in kind are valued at their estimated basic prices, or by their costs of production when satisfactory estimates of their basic prices cannot be made.

## **E. Changes in Inventories**

7.13 All increases in inventories are recorded when the goods are produced or purchased, and decreases in inventories are recorded when the goods are disposed of as intermediate consumption or other forms.

7.14 The inventories purchased from other economic subjects are assessed at purchaser prices, while the inventories produced by the producers are assessed at basic prices. In addition, work-in-progress should be assessed by multiplying the estimated basic price of the finished goods by the proportionate level of completion, e.g. a 500,000 won TV that is 50% complete would have a recorded value of 250,000 won.

## **F. Exports and Imports of Goods and Services**

7.15 Exports and imports of goods are recorded when the legal ownership is transferred, as with standard domestic transactions. But in the case of goods imported by financial lease, goods-for-export transferred to a subsidiary overseas, and goods sent abroad for processing, it is assumed that ownership is transferred without change in ownership. But in the case of goods purchased from non-residents and sold to non-residents in the same accounting period outside the nation's economic territory, the transfer of ownership is not recorded.

7.16 Goods exported are assessed at the freight on board (FOB) price which contains the price of goods and the transport delivery charges. Goods imported are also assessed at the same price, but in general the import price is recorded at the cost,

insurance and freight (CIF) price as determined by the importing country. Therefore, the CIF price must be adjusted to the FOB price by deducting the transportation fare and insurance fee.

7.17 Services exported and imported are assessed at the price agreed to between trading partners. In the case of insurance services, the value is assessed at the service fee included in the insurance premium.

## **G. Distributional Transaction**

7.18 Distributional transaction is recorded when claims arise. Most distributional transactions, such as compensation of employees, interest, rent, social contributions and benefits, are recorded at the time when obligation payables arise. In the case of tax, it is recorded when tax obligations arise. On the other hand, current tax on income is recorded at the moment of payment.

## **2. Transaction Valuation Method**

### **A. Market Prices and Factor Cost**

7.19 Output is assessed at market prices in national accounts because a nation's level of welfare can be correctly measured by assessing the amount of transactions conducted at market prices. The figures represent the marginal benefit to consumers and the marginal cost to producers. Also, the market price is easier to grasp than any other price.

7.20 But in special cases, such as non-pecuniary or non-commercial transactions, the following criteria apply:

- In the case of barter transactions, the basic price attached to the same commodity being sold commercially is applied.



- Products for own final use can be assessed at basic price when the commodity has a known market price. If there is no market price to apply, the production cost can serve as a reasonable measure of value.
- Goods and services produced and provided to other production processes as intermediate consumption or fixed asset formation in the same enterprise are recorded as an output and assessed at the basic price of the production's establishment.
- Even illegal transactions, if voluntarily made, are assessed at the comparable legal market prices.

7.21 For assessing national income, factor cost can be applied. Here, the factor cost is the sum of all payments to the production factor, e.g. labor and capital. National income at factor cost is calculated by deducting net taxes on production and imports from the national income at market prices.

$$\begin{aligned} \bullet \text{ National income at factor cost} &= \text{National income at market price} \\ &\quad - \text{Net taxes on production and imports} \end{aligned}$$

## B. Current Prices and Chained Reference Year Prices

7.22 National income statistics are largely divided into two sets: the nominal series assesses current-year prices and the real series assesses prices from a base year, using chained reference-year prices. In the case of nominal national income, changes in both volume and price during the object period are reflected in the statistics. Accordingly, if commodity prices rise even without an increase in volume, the size of nominal national income becomes greater to that extent. Consequently, real national income is more suitable for measuring actual changes in the volume of goods and services and related changes in the living standard of a nation since it removes the effect of price changes.

7.23 In measuring real national income, a fixed base-year price was generally used before the 1990s. But real national income measured by a fixed base-year price has a significant disadvantage in that it does not adequately reflect changes in relative prices and production structure over time. For that reason, the SNA introduced the chain-linking method,<sup>9)</sup> which uses a chain volume index for measuring real national income, to better reflect the economic reality.

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9) For a detailed explanation of the Korean case, refer to Chapter 18.

# III. Method and Data Sources

- Chapter 8 Introduction
- Chapter 9 Production Approach
- Chapter 10 Expenditure Approach
- Chapter 11 Income Approach



## Chapter 8: Introduction

### 1. Overview

8.1 Due to the complexity in terms of framework and concepts, national income statistics can be estimated using various methods. In general, they can be measured from three sides: production, income, and expenditures. Korea approaches national income estimation primarily from the production side, given the available means for compiling basic data. Korea also applies an expenditure approach independently to estimate expenditure components, and an income approach to estimate income account.

#### A. Production Approach

8.2 The production approach is a method to estimate one economy's value added from the production side. It is also called the net-output or value-added approach.

8.3 In this approach, the value of domestic gross production, namely gross output, is measured first by industry or commodity, and the net value of domestic gross production is calculated by deducting intermediate consumption, which is used in the production process, from gross output. This net value is the same as net output or value added.

#### B. Expenditure Approach

8.4 The expenditure approach is divided into a demand approach and supply approach as a means to estimate the expenditure component of GDP.

8.5 The demand approach produces estimates based on expenditure data from final consumers. Final consumption expenditures are generated by households and government; capital formations by enterprises and government; and exports and imports by the domestic and rest-of-the-world sectors. Data recorded in each provide

the basis for the demand approach.

8.6 The supply approach is based on supply data linked to final consumers. This approach includes the commodity-flow method or research-on-retail-trade method. The commodity-flow method estimates final demand by tracing the process of commodity flows from producers to final consumers.

8.7 While the best way to grasp final demand is to trace every transaction involving every entity, that is not realistic in practice. Indirect methods, such as the commodity-flow method are much more practical but lack accuracy. That is why Korea uses a supplementary method that relies on the specific characteristics of expenditure components.

### **C. Income Approach**

8.8 The income approach estimates national income from the side of income generation. It is usually used to estimate national income distribution. The income approach is subdivided into the income-paid-out approach and income-received approach, according to survey objectives.

8.9 The income-paid-out approach inspects data from enterprises that have paid out to cover production factor income. This method tallies sample or census data that lists the salaries, interest payments, and profits of related enterprises.

8.10 Conversely, the income-received approach uses data collected from employees and other income receivers.

## **2. Converting Nominal National Income into Real Value**

8.11 In converting nominal value into real value, three methods are used generally: the quantity-extrapolation method, the deflation method, and the double-deflation method. They are applied separately or together depending on the situation

with basic data and estimation methods.

8.12 Firstly, the quantity-extrapolation method expands real value by using quantity indexes. In this method, real values for the current year are obtained by multiplying relevant quantity indexes or indicators by real values from the previous year or reference year. This method is used when technical structure and quality rarely change.

8.13 Secondly, the deflation method divides nominal values by relevant price indices, such as producer price index (PPI), consumer price index (CPI), export price index (EPI) or import price index (IPI), depending on component characteristics.

8.14 Lastly, the double-deflation method is commonly used to estimate real value added by industry. In this method, real output and real intermediate consumption are obtained by dividing nominal output and nominal intermediate consumption by relevant price indices, respectively. Consequently, real value added is calculated by deducting real intermediate consumption from real output. This method's merit comes from the way it reflects changes in technical structure and quality that appear over time. Hence, it is useful for enhancing the accuracy of real value added in a given year. However, this method cannot be applied to all industries due to basic data constraints.

## Chapter 9: Production Approach

### 1. Production Approach Outline

9.1 Production national income is derived from the production account explained in Chapter 4. Gross output, intermediate consumption, value added and other production account components are estimated by industry or economic activity. The Korean System of National Accounts (KSNA) classifies economic activity by 15 industries, according to the type of goods and services produced. Table III-9-1 shows the classification of economic activities.

9.2 The sum of value added of all industries (gross value added (GVA)) is not exactly identical to GDP, because the value added of each industry is assessed at basic prices. GDP at market prices is calculated by adding taxes less subsidies on products to GVA.

9.3 This chapter introduces the definition and coverage, estimation method, and data sources of each industry.

Table III-9-1 Classifications of Economic Activities (15 industries)

<ul style="list-style-type: none"> <li>• Agriculture, Forestry and Fishing</li> <li>• Mining and Quarrying</li> <li>• Manufacturing</li> <li>• Electricity, Gas and Water Supply</li> <li>• Construction</li> <li>• Wholesale and Retail Trade, Accommodation and Food Services</li> <li>• Transportation</li> <li>• Finance and Insurance</li> </ul>	<ul style="list-style-type: none"> <li>• Real Estate</li> <li>• Information and Communication</li> <li>• Business Activities</li> <li>• Public Administration, Defense and Other Government Services</li> <li>• Education</li> <li>• Human Health and Social Work</li> <li>• Culture and Other Service</li> </ul>
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### 2. Agriculture, Forestry and Fishing

#### 2.1. Definition and Coverage

9.4 Agriculture, forestry and fishing in the national accounts includes cultivation



and livestock businesses, forestry, fishing and related services (see Table III -9-2).

9.5 The cultivation includes the following activities:

- The growing of various crop products, such as cereal grains (rice, barley, corn), fruit, crops used for oils and fats, vegetables, floricultural crops and textile crops, etc.;
- The cultivation of trees other than those registered under the forestry business;
- The production of non-forest related saplings and seeds; and
- The growing of mushrooms and bean sprouts.

9.6 The livestock business includes the following activities:

- The expansion of the number of livestock by growth, multiplication and breeding; and
- The production of raw cow or sheep milk and eggs.

9.7 Forestry covers the following sub-divided activities:

- The production of saplings for timber-planting and the planting and cultivating of trees in forests (forest management);
- The production of lumber and fuel materials through felling forest trees (felling);
- The gathering of edible wild plants, mushrooms and seeds (gathering forestry products); and
- The gathering of green manure and compost; forest feed; and firewood and charcoal; and hunting activities(gathering forestry products)

9.8 Fishing industry includes:

- Marine fishing through which marine animals and plants from ocean and

freshwater sources are captured and gathered; and

- Fish farming through which marine animals and plants are raised in artificial environments.

Table III-9-2 Coverage of Agriculture, Forestry and Fishing

Classification	Coverage
Cultivation	Grains, vegetables, fruits, horticultural products, seed crops and other crops
Livestock	Dairy and beef cattle, pig breeding, poultry, other livestock
Forestry	Forest management, felling, gathering forestry products
Fishing	Ocean fishing, inland water fishing, ocean cultures, inland water cultures

## 2.2. Estimation Method in Reference Year

### A. Cultivation

#### ■ Output

9.9 Cultivation output in a given reference year is primarily estimated by using survey data from the “Agricultural, Food and Rural Affairs Statistical Yearbook” published by the Ministry of Agriculture, Food and Rural Affairs. Forestry Statistical Yearbook and supplemental statistics for other products are also used.

#### ■ Intermediate Consumption

9.10 Cultivation intermediate consumption for a given reference year is calculated by deducting value added from output.

#### ■ Value Added

9.11 Cultivation value added in a given reference year is calculated by using factor income data such as labor costs and rent from income data of crops and livestock, and input structure survey for Input-Output table of benchmark year.

## B. Livestock Business

### ■ Output

9.12 The method for estimating livestock business output in a given reference year is to multiply production of each livestock by the unit price. Livestock production is divided into the net increase in the number of livestock and the number of slaughtered livestock. Total livestock business output is obtained by summing these two parts using regional livestock prices and slaughter unit prices, respectively. The main sources of data for estimating livestock business output are the livestock survey report from Statistics Korea, monthly slaughter statistics from the Animal and Plant Quarantine Agency, and regional price statistics from the National Agricultural Cooperative Federation.

### ■ Intermediate Consumption

9.13 Livestock business intermediate consumption in a given reference year is calculated by deducting value added from output.

### ■ Value Added

9.14 Value added for the livestock business is similar to the cultivation; using factor income data such as labor costs and rent from income data of crops and livestock, and input structure survey for Input-Output table of benchmark year.

## C. Forestry and Fishing

### ■ Output

9.15 Forestry business output is primarily estimated by using output data contained in the Korea Forest Service's Statistical Yearbook of Forestry, and the Ministry of Agriculture, Food and Rural Affairs specialty crops production results.

In particular, the yearbook includes net gross growing stock. This net gross growing stock is appropriated for entry under work in progress in the expenditure account.

Fishing business output is obtained by multiplying production quantity by unit price. Data on production and price by species of fish are based on data compiled by Statistics Korea.

### ■ Intermediate Consumption

9.16 Forestry and Fishing business intermediate consumption is calculated by deducting value added from output.

### ■ Value Added

9.17 Value added for forestry is estimated by using factor income data, such as labor costs and rent from income data from forestry business entities, and by using the input structure survey for the input-output table of the benchmark year.

The fishing business's value added is also estimated by using factor income data and the input structure survey for the input-output table of the benchmark year.

## 2.3. Estimation Method for the Current Year

### A. Nominal Value

9.18 The methodologies for estimating output and value added in the current year for agriculture, forestry and fishing businesses are the same as those used for reference year output.

### B. Real Value

9.19 The estimation method for calculating real output in the agriculture, forestry and fishing industries is to divide the nominal output by the unit price or price index of each product.

Real intermediate consumption is estimated by the sum of each intermediate consumption that is divided by its respective deflator. Real value added is calculated by deducting real intermediate consumption from real output, which is called the double deflation method.

## 2.4. Data Sources

9.20 The data sources used to estimate the value added of agriculture, forestry and fishing in reference and current years are nearly identical. Table III-9-3 shows specific data sources.

**Table III-9-3** Agriculture, Forestry and Fishing Data Sources

Reference Material	Institution Responsible	Major Contents
Agricultural, Food and Rural Affairs Statistics Yearbook	Ministry of Agriculture, Food and Rural Affairs	Production quantity, production amount
Materials in fertilizer sales	National Agricultural Cooperative Federation	Fertilizer sales price, fertilizer sales quantity
Fresh ginseng	Korea Ginseng Corporation	Quantity of ginseng, amount of ginseng purchased, etc.
Specialty crops production results	Ministry of Agriculture, Food and Rural Affairs	Production quantity
Floriculture crops production results	Ministry of Agriculture, Food and Rural Affairs	Production quantity
Farm and Fishery Household Economy Survey Report	Statistics Korea	Value added component, intermediate consumption data
Crop production statistics	Statistics Korea	Cultivation area, production quantity
Agricultural Chemicals Yearbook	Korea Crop Protection Association	Shipment quantity, amount of agricultural chemicals
National Agricultural Cooperative Federation Monthly Bulletin	National Agricultural Cooperative Federation	Farming household sales price index Farming household purchase price index Regional livestock prices
Livestock statistics	Statistics Korea	Net increase in number of livestock by age
Other livestock statistics, including duck eggs and honey	Statistics Korea	Number of other livestock by species
Monthly slaughter statistics	Animal and Plant Quarantine Agency	Total number of slaughtered livestock
Milk production results	Korea Dairy Committee	Production quantity
General deer farm sales price, deer antler production quantity and price	Korea Deer Breeders Association	Average price; deer antler production quantity by kind of deer, sex and age

Survey of production cost of livestock goods	Statistics Korea	Production expenses
Hunting production quantity	Ministry of Environment	Production quantity
Statistical Yearbook of Forestry	Korea Forest Service	Production quantity, Production price
Extent of afforestation	Korea Forest Service	Afforestation area, afforestation amount
Fishery production survey	Statistics Korea	Production quantity and production amount by industry, kind of fish
Balance sheets on services related to agriculture, forestry and fishing	National Agricultural Cooperative Federation; National Federation of Fisheries Cooperatives; Korea Agricultural & Rural Infrastructure Corporation	Compensation of employees, operating expenses, etc.
National Tax Statistics	National Tax Service	External turnover by industry
Producer Price Index	Bank of Korea	Price index by item
Consumer Price Index	Statistics Korea	Price index by item

### 3. Mining and Quarrying

#### 3.1. Definition and Coverage

9.21 Mining and quarrying refer to the industrial activities of digging, extracting and abstracting solid, liquid and gaseous naturally occurring minerals, both organic and inorganic, from below the ground and from the surface of the earth. The mining and quarrying industry is sub-divided as follows:

- The digging, agglomerating and disposing of coal (coal mining);
- The extraction of crude petroleum and natural gas;
- The exploitation of such metal ore as iron and non-iron ore (metallic mining); and
- The quarrying of stone, sand, gravel and other non-metal ores (mining of non-metal ores).

#### A. Coal, Crude Petroleum and Natural Gas Mining

9.22 Coal mining is largely divided into the activity of digging, agglomerating and

disposing of such coals as anthracite coal, bituminous coal, brown coal and peat, and the industrial activities of improving the quality of coal and spalling, pulverizing and selecting coal for the purpose of commercial sales. Korean coal mining consists of:

- Anthracite coal mining; and
- Bituminous coal mining.

9.23 Crude petroleum and natural gas mining refer to the industrial activity of extracting crude petroleum and natural gas. Korea started commercial crude petroleum and natural gas production in July 2004 at an offshore well in the Donghae Gas Field in waters off the southeast coast, near Ulsan.

## **B. Metal Ore Mining**

9.24 Metal ore mining refers to the industrial activity of digging metallic ores containing ferrous and non-ferrous metals like:

- Iron ores and copper ores; and
- Lead and zinc ores.

## **C. Non-Metallic Mineral Mining**

9.25 Non-metallic minerals exclude coal, crude petroleum, natural gas, and metallic ores. Korea's non-metallic minerals are listed below:

- Sand and gravel;
- Rubble;
- Limestone;
- Minerals for raw materials for ceramics; and
- Raw salt.

Table III-9-4

Coverage of Mining and Quarrying

Classification	Coverage
Coal, crude petroleum and natural gas mining	Anthracite coal, bituminous coal, crude petroleum, natural gas
Metal Ore Mining	Iron, copper, lead, zinc, and other non-ferrous ores
Non-Metallic Mineral Mining	Sand, gravel, rubble, and other construction stone; limestone; raw materials for ceramics; raw salt; other non-metallic mineral mining

9.26 This classification is in accordance with the Korean Standard Industrial Classification (KSIC). Classification of coal briquettes was changed from the mining and quarrying to the manufacturing industry in the ninth revision of the KSIC in February 2008. When raw materials are purchased, the pulverizing and grinding of non-metallic minerals are also classified as the manufacturing industry.

9.27 The collection, cleaning and supply of tap water or industrial water are classified as the water supply industry. Mining and ground-leveling are included in the construction industry. Probing minerals and conducting geological surveys are considered part of the business services industry when contracts are involved.

### 3.2. Estimation Method in the Reference Year

#### ■ Output

9.28 Mining and quarrying output estimates in the reference year are calculated by multiplying output by unit price per product. The quantities and unit prices per product are derived from the Mineral Commodities Supply & Demand Statistics put out by the Korea Institute of Geoscience and Mineral Resources, from the Sand and Gravel Supply & Demand Statistics by the Ministry of Land, Infrastructure and Transport, and from the Economic Census by Statistics Korea.



### ■ Intermediate Consumption

9.29 Reference year estimates of intermediate consumption for the mining and quarrying industry are calculated by multiplying output by the intermediate consumption ratio derived from input-output tables.

### ■ Value Added

9.30 Reference year estimates of value added for the mining and quarrying industry are obtained by deducting value added from output. Value added components, such as compensation to employees, consumption of fixed capital, and any operating surplus, are distributed based on the input-output tables and on data about the capital stock of fixed assets.

## 3.3. Estimation Method in the Current Year

### A. Nominal Value

#### ■ Output

9.31 Output is drawn from the Mineral Commodities Supply & Demand, the Sand and Gravel Supply & Demand Statistics and the Annual Report on Mining and Manufacturing Survey.

#### ■ Intermediate Consumption

9.32 Estimates of nominal intermediate consumption for the mining and quarrying industry are obtained by deducting the nominal value added from nominal output.

## ■ Value Added

9.33 Nominal estimates of value added for this industry are calculated by multiplying the nominal outputs by the nominal value added ratio. Nominal value added ratio is obtained by applying the rates of change of the value added ratio to the reference year ratio. The rates of change for the value added ratio are derived from the Financial Statements Analysis and the Annual Report on the Mining and Manufacturing Survey. And value added components such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using input-output tables and the capital stock of fixed assets data.

## B. Real Value

### ■ Output

9.34 Real output estimates for the mining and quarrying industry are obtained by multiplying the reference year unit price by the annual output derived from the Mineral Commodities Supply & Demand Statistics and the Sand and Gravel Supply & Demand Statistics.

### ■ Intermediate Consumption

9.35 Real intermediate consumption estimates for the mining and quarrying industry are obtained by deflating nominal intermediate consumption with the intermediate consumption deflators derived from PPIs and IPIs.

### ■ Value Added

9.36 Real value added estimates for this industry are obtained by using the double deflation method. In other words, real value added estimates are calculated by deducting real intermediate consumption estimates from real output estimates.

### 3.4. Data Sources

9.37 Data sources used in the reference year and the current year are listed in Table III-9-5.

Table III-9-5 Mining and Quarrying Data Sources

Reference Material	Institution in Charge	Major Contents
Economic Census, Annual Report on Mining and Manufacturing Survey	Statistics Korea	Production amount by item, major production cost
Input-Output Tables Supply and Use Tables	Bank of Korea	Value added ratio of the reference year
Mineral Commodities Supply & Demand Statistics	Korea Institute of Geoscience and Mineral Resources	Production quantity by item
Producer Price Index	Bank of Korea	Output deflator, intermediate consumption deflator
Imports Price Index	Bank of Korea	Intermediate consumption deflator
Exports Price Index	Bank of Korea	Output deflator
Coal production quantity	Korea Coal Corporation	Anthracite coal production quantity
Sand and Gravel Supply & Demand Statistics	Ministry of Land, Infrastructure and Transport	Sand and gravel production quantity
Raw salt production quantity	Korea Salt Manufacture Association	Raw salt production quantity

## 4. Manufacturing

### 4.1. Definition and Coverage

9.38 Manufacturing is defined as industrial activity, primarily the physical or chemical transformation of raw materials, substances, or components into new products with different characteristics. According to product type and characteristics, manufacturing can be divided into 13 industries:

- ① food, beverages and tobacco; ② textiles and leather; ③ wood, paper, printing and reproduction; ④ petroleum, coal products; ⑤ chemicals and chemical products; ⑥ non-metallic mineral products; ⑦ basic metal, products; ⑧ fabricated metal products; ⑨ Computer, electronic and optical products; ⑩ electrical equipment; ⑪ machinery

and equipment; ⑫ transport equipment; ⑬ other manufacturing and repair services of industrial equipment.

Table III-9-6 Coverage of Manufacturing

Classification		Coverage
Food, beverages and tobacco	Food	Meat and processed meat products, dairy, processed seafood products, canned or cured fruits and vegetables, polished rice, polished barley, flour and cereal preparations, sugar, baked goods, confectionery products, noodles, animal and marine fats and oils, processed edible refined oils, etc.
	Beverages	Alcoholic beverages, soft drinks; ice, etc.
	Tobacco	Dried leaf tobacco, various tobacco products, etc.
Textiles and leather	Textile and clothing products	Natural and chemical fiber yarn, thread and other fiber yarn, natural and chemical fiber fabrics, other fiber fabrics, knitted fabrics, fiber bleaching and dyeing, knitted apparel, textile apparel, other accessories, etc.
	Leather products	Leather, fur, bags and handbags, leather footwear, etc.
Wood, paper, printing and reproduction	Wood and wooden products	Lumber, plywood, reconstituted and pressed wood, wooden products for construction, wooden containers, etc.
	Pulp and paper	Pulp; newsprint, printing paper, other raw paper and cardboard, corrugated paper and solid fiber boxes; paper containers, office paper, sanitary paper products, etc.
	Printing and reproduction	Printing, publishing and reproduction of recorded media, etc.
Petroleum, coal products	Petroleum and coal products	Coal briquettes, naphtha, fuel oil, coal products, lubricants, etc.
Chemicals and chemical products	Basic chemicals	Organic and inorganic basic chemicals, mineral pigments, dyes, etc.
	Synthetic resins and synthetic rubbers	Synthetic resins, synthetic rubber, etc.
	Chemical fibers	Regenerated fiber, synthetic fiber, etc.
	Medicaments	Medicaments
	Fertilizer and pesticides	Nitrogen compounds, chemical fertilizer, agricultural chemicals, etc.
	Other chemical products	Paints, ink, coating agents, cosmetics, detergents, polish, etc.
	Plastic products	Plastic primary products, industrial and household plastic products, etc.
	Rubber products	Tires, tubes, industrial rubber products, etc.

Non-metallic mineral products	Glass and glass products	Sheet glass and primary glass products, industrial glass products, etc.
	Other non-metallic mineral products	Pottery products for home and industry, clay products for construction, cement, ready-mixed concrete, concrete products, lime, gypsum and plaster products, cut stone and stone products, asbestos and mineral wool products, abrasives, asphalt, etc.
Basic metal, products	Primary iron and steel products	Pig iron, steel ingots and semi-finished products, hot-rolled steel plates and sheets, cold-rolled steel plates and sheets, coated steel plates, steel pipe and tubes, iron and steel foundries, etc.
	Non-ferrous metal ingots and primary Non-ferrous metal products	Copper ingots, aluminum ingots, zinc ingots, gold and silver ingots, other non-ferrous metal ingots, primary copper products, primary aluminum products, etc.
	Metal foundries	Steel and non-ferrous metal foundries
Fabricated metal products	Fabricated metal products	Metal products for construction and structure, metal tanks and reservoir equipment, fabricated wire products, metal cans, barrels and drums, hand tools; household metallic products, fastening metal products, screws, etc.
Computer, electronic and optical products	Semiconductors	Discrete device, integrated circuits (IC), etc.
	Electronic signal equipment	Flat digital displays (LCD, OLED, etc.), etc.
	Other electronic components	Electron tubes, electric resistors, electric condenser, magnetic coils, transformer amplifiers, printed circuit boards, etc.
	Computer and peripheral equipment	Computers, peripheral equipment, etc.
	Telecommunication, video, and audio equipment	wire communication equipment, wireless communication equipment, broadcasting equipment, TVs, electric household video and audio equipment, etc.
	Precision instruments	Medical instruments, industrial automatic adjusting and regulating instruments, measuring and analytical instruments, cinematograph and optical instruments, watches and clocks, etc.
Electrical equipment	Electrical equipment	Motors and generators, capacitors, rectifiers, and electric transmission and distribution equipment, batteries, electric wires and cables, refrigerators and freezers, washing machines, electric fans, heating and cooking equipment, household electric heat equipment, etc.
Machinery and equipment	General-purpose machinery and equipment	Engines and turbines, pumps and compressors, conveyers and conveying equipment, air-conditioning equipment and industrial refrigeration equipment, filtering or purifying machinery for liquid and gases, valves, bearings, boilers, etc.
	Special-purpose machinery and equipment	Metal-cutting type machine tools, metal-forming machine tools, metal-working machinery such as molds and industrial patterns, agricultural machinery, construction and mining machinery, food processing machinery, textile machinery, etc.

Transport equipment	Motor vehicles	Motor vehicles, motor vehicles with special equipment, motor vehicle engines and parts, trailers and containers, etc.
	Ships and boats	Steel-bound ship, ship repairing, ship parts, etc.
	Other transport equipment	Rolling stock, aircraft, motorcycles, bicycles, etc.
Other manufacturing and repair services of industrial equipment	Other manufacturing	Wood furniture, metal furniture, toys and games, sporting and athletic goods, musical instruments, stationery, jewelry and plated ware, decorations, etc.
	Manufacturing services and repair services of industrial equipment	Manufacturing services, maintenance and repair services of industrial machinery and equipment

9.39 According to the KSIC, an industry that directly processes base materials produced by itself can be classified as a manufacturing industry if it can be divided and recognized as a separate business body. Otherwise, it is classified as part of the agriculture, forestry and fishing industry, depending on what base material it processes.

9.40 Other examples include the assembly of purchased machinery components classified under the construction industry, including assembly of components for bridges, water tanks, storage and warehouse facilities, rail lines and overpasses, elevators and escalators, piping, sprinkler fire extinguishing systems, central heating systems, ventilation and air conditioners, lighting, and electric wiring. In addition, the assembly and installation of standardized products or structure components at a construction site can be classified as part of the construction industry. When a manufacturing, wholesale or retail business has been contracted to assemble or install machinery and equipment as part of a sale, the work is classified as manufacturing, wholesale or retail trade industry, depending on the main activity.

## 4.2. Estimation Method in the Reference Year

### ■ Output

9.41 Output is drawn from the gross output listed in the Economic Census and import/export figures in Balance of Payments. Other products which are not included

in the Census are estimated by using output and price indices obtained from trade associations.

#### ■ Intermediate Consumption

9.42 Intermediate consumption is calculated in the reference year by using input-output tables.

#### ■ Value Added

9.43 Value added is obtained in the reference year by subtracting intermediate consumption from output. Components of value added such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using input-output tables and capital stock of fixed assets data.

### 4.3. Estimation Method in the Current Year

#### A. Nominal Value

##### ■ Output

9.44 Output is attained by using the gross output listed in the Annual Report on Mining and Manufacturing Survey and the import/export figures in the Balance of Payments. Small businesses with fewer than 10 employees are excluded from the report, so their contribution is estimated by using the small businesses ratio applied in the input-output tables. Other products that are not included in the Report on Mining and Manufacturing Survey (slaughtered livestock, poultry products, polished rice, cleaned barley, processed fish and frozen fish products, etc.) are estimated by using output and price indices obtained from trade associations.

## ■ Intermediate Consumption

9.45 Nominal intermediate consumption for the manufacturing industry is calculated by subtracting the nominal value added from the value of nominal output. Detailed nominal inputs by commodity are estimated by using reference intermediate consumption and price indices, such as PPIs and IPIs.

## ■ Value Added

9.46 Value added is attained by multiplying nominal output by the nominal value added ratio. Here, the nominal value added ratio is computed by applying year-on-year rates of change in the value added ratio calculated using the Financial Statement Analysis and the Annual Report on Mining and Manufacturing Survey.

9.47 Components of value added such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using input-output tables and capital stock of fixed assets data.

### Box III-9-1

#### Nominal Value Added Ratio Calculation Method

The nominal value added ratio is calculated by multiplying the value added ratio in the same period of the previous year by the rates of change in the value added ratio. The rates of change in the value added ratio are calculated by using the Financial Statement Analysis and the Annual Report on Mining and Manufacturing Survey.

- Nominal value added
  - = Nominal output × Nominal value added ratio
  - = Compensation of employees + Consumption of fixed capital + Operating surplus
  - + Net taxes on production (taxes on production - subsidies on production)
- Value added ratio = Value added ÷ Output



- Nominal value added ratio  
 = The value added ratio in the same period of the previous year  $\times$  [Value added ratio provided by the Financial Statement Analysis of the relevant quarter  $\div$  Value added ratio provided by the Financial Statement Analysis of the same period of the previous year]

The value added ratio provided by the Financial Statement Analysis is calculated by analyzing compensation of employees, consumption of fixed capital, operating surplus and output from major balance sheet items, and income and cost statements from the Financial Statement Analysis.

- Value added in the Financial Statement Analysis\*  
 = Operating surplus + Employment costs + Interest expenses + Tax and dues + Depreciation amortization

\* To coincide with the concept of value added in the national accounts, operating profits and write-offs of bad loans should be used instead of current profits to indicate operating surplus among value added in the Financial Statement Analysis.

As a reference, value added in the Annual Report on Mining and Manufacturing Survey is calculated by deducting major production costs, including raw material costs, from the production amount. Accordingly, to convert it into value added under the national accounts standard, indirect production costs, including costs for advertising and publicity, should also be deducted.

- Value added in the Annual Report on Mining and Manufacturing Survey\*\*  
 = Production amount - Major production costs (raw material costs, fuel costs, electricity charges, water expenses, outside order and processing costs, repair and maintenance costs)

\*\* To coincide with the concept of value added in the national accounts, indirect production costs, such as payments in kind, freight charges, premiums, advertisement and publicity costs, traveling expenses, transportation costs, communication costs, costs for supplies, and rents should be considered part of each establishment's production costs and excluded along with major production costs.

## B. Real Value

### ■ Output

9.48 The procedure for estimating real output consists of three stages. In the first stage, nominal estimates for output are divided into two parts: external (exports) and domestic demand (output minus exports). In the second stage, nominal exports and domestic demand are deflated using the export deflator and PPIs, respectively. In the final stage, output is obtained by adding up exports and domestic demand.

### ■ Intermediate Consumption

9.49 Real intermediate consumption is estimated by deflating nominal intermediate consumption by the intermediate consumption deflator using PPIs and import deflators.

### ■ Value Added

9.50 Real value added is obtained using the double deflation method: i.e. deducting real intermediate consumption from real output.

## 4.4. Data Sources

9.51 Data sources for estimates are as follows.

Table III-9-7

Manufacturing Data Sources

Reference Material	Institution in Charge	Major Contents
Economic Census, Annual Report on Mining and Manufacturing Survey	Statistics Korea	Production amount by item, major production cost
Balance of Payments	Bank of Korea	Export and import figures; export, import and output deflators.
Financial Statement Analysis	Bank of Korea	Value added ratio

Input-Output Tables Supply and Use Tables	Bank of Korea	Output of the reference year, value added ratio
Producer Price Index	Bank of Korea	Output deflator, intermediate consumption deflator
Statistical Yearbook of National Tax	National Tax Service	Production tax, subsidies
Local Government Tax Yearbook	Ministry of the Interior and Safety	Production tax, subsidies
Polished rice production quantity	Ministry of Agriculture, Food and Rural Affairs	Production quantity of polished rice and polished barley

## 4.5. Special Classifications for Manufacturing

### A. Information and Communication Industry Classifications

9.52 To report on its information and communication industry, Korea uses the same classification the OECD Science and Technology Committee uses to define the “information and communication technology industry.” Coverage of the information and communication industry is as follows.

Table III-9-8 Coverage of Information and Communication Industry Coverage

Classification	Coverage
Information and communication manufacturing	semiconductor devices, integrated circuits (IC), flat digital display (LCD, OLED, etc.), electron tubes, electric resistors, electric condenser, magnetic coils, transformer amplifiers, printed circuit boards, computer and peripheral parts, wire communication equipment, wireless communication equipment, broadcasting equipment, TVs, electric household audio equipment, etc.
Information and communication service	Software development and supply, broadcasting, wire and wireless broadcasting; computer-related service, information service, etc.

### B. Classification by Industrial Type

9.53 The manufacturing sector can also be classified according to the type of goods produced: i.e. primary materials, processing assembly, and living and other types. Primary materials refer to industries producing materials and parts, including metals and chemicals chiefly used as intermediate materials in the production process of the manufacturing industry. Processing assembly refers to the capital goods or

machinery industry in a broad sense, indicating a technology-intensive, energy-saving, high-tech industry. Living and other type industry means those producing economic materials directly related to consumption or goods in the final stage of all industrial production processes.

Table III-9-9 Classification of Manufacturing by Industrial Type

Classification	Coverage
Primary materials	Fiber yarn and fabrics; wood and wooden products; pulp and paper; petroleum, coal and chemicals; non-metallic mineral products, excluding petroleum and coal; metals, fabricated metal products
Processing assembly	Machinery equipment, electrical and electronic equipment
Living and other type	Food, beverages and tobacco; clothing and textile products; leather products; printing and reproduction; furniture and other manufacturing industries

## 5. Electricity, Gas and Water Supply

### 5.1. Definition and Coverage

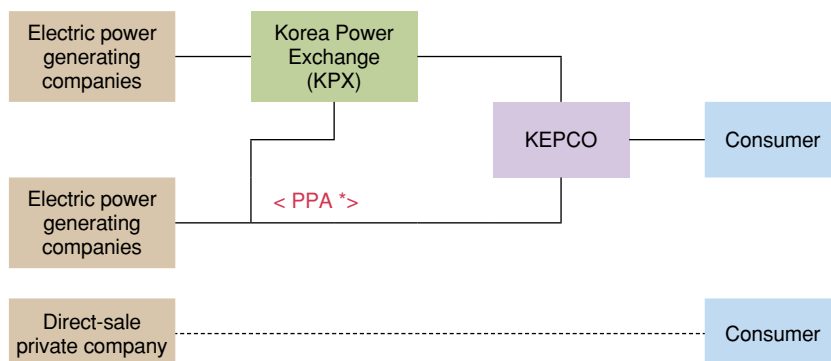
9.54 The electricity, gas and water supply industries are further classified into electricity, gas, steam & air conditioning supply, water supply, sewage & waste management, and remediation service industries (see Table III-9-10).

9.55 The electricity supply industry refers to the production of electric energy by thermal, nuclear, hydroelectric, wind, solar, tidal or other power-generation facilities to supply electricity to residential buildings, industries and to commercial facilities, and the transmission and sale of electricity.

9.56 Looking at the distribution channel of electric power shown in Chart III-9-1, electric power is mostly supplied by KEPCO, with a limited amount of direct sales from other companies. KEPCO sells electric power in one of two ways: either through the Korea Power Exchange (KPX), purchasing from one of six KEPCO subsidiaries that generate power and then selling it to the public, or by purchasing electric power from other self-generating companies and then selling it to the public.

Chart III-9-1

Distribution Channel of Electric Power



\* Power Purchase Agreement (PPA) refers to contracted electric power purchases between privatized power generation businesses and KEPCO.

9.57 The gas, steam and air conditioning supply industry refer to the manufacture of gas such as coal gas, water gas, producer gas or direct fuel gas supply through a pipeline, and heat, steam, hot and chilled water, and cool air distribution through pipeline for cooling, heating, power supply, or other activities.

9.58 This industry excludes the manufacture of compressed or liquefied gas (manufacturing), automobile gas stations (wholesale and retail), gas stations supplying gas to retailers (wholesale), and gas pipeline operations (transport), and includes distribution of phreatic water through a pipeline.

9.59 The water supply, sewage & waste management, and remediation service industries refer to the activities of intake, collection, purification and distribution of water to supply living, industrial and commercial water to users, the operation of sewage, wastewater treatment facilities and collection, transportation, storage, and treatment of human and animal waste, and the activities of collection, transmission, and management of industrial and household waste, materials recovery, and remediation.

Table III-9-10

## Coverage of Electricity, Gas and Water Supply

Classification	Coverage
Electricity supply	Electric power generation, transmission, distribution and sale
Gas, steam and air conditioning supply	Manufacture and supply of various gas, production and supply of heat, steam, hot and chilled water
water supply, sewage and waste management, remediation services	Intake, collection, purification and distribution of water, Collection, transmission, management, remediation, recovery of wastes

## 5.2. Estimation Method in Reference Year

### A. Electricity Supply

#### ■ Output

9.60 Electricity industry output in the reference year is estimated by combining direct and indirect sales of power produced by the Korea Electric Power Corporation (KEPCO) and private companies that produce and sell electricity, and then adding energy consumption for-own-use consumed by self-generating power companies. At this point, for-own-use energy consumption is estimated by multiplying the amount of electric power consumed by the average purchase unit price for KEPCO.

#### ■ Intermediate Consumption

9.61 Intermediate consumption for the electricity supply industries is calculated by deducting value added from output.

#### ■ Value Added

9.62 Value added for the electricity supply industries is estimated by using financial statement of KEPCO and its subsidiary companies which generate electricity, private companies running electric power stations, Korea Power Exchange(KPX), and input structure survey for Input-Output table of benchmark year.

## **B. Gas, steam and air conditioning supply**

### **■ Output**

9.63 Gas supply industry output consists of LNG and LPG sales. It is estimated by using data, such as Korea Gas Corporation (KOGAS) sales, and the margin of LNG sales and LPG sales by city gas companies. Transactions between KOGAS and city gas companies are deducted to prevent double counting of output because the amount of gas is identical and stays within the same industry.

9.64 Steam & air conditioning supply output is calculated by combining the steam and hot water sales of integrated energy providers, categorized by the integrated energy providers handbook.

### **■ Intermediate Consumption**

9.65 Intermediate consumption for the Gas, steam and air conditioning supply industries is calculated by deducting value added from output.

### **■ Value Added**

9.66 Value added for the gas, steam & air conditioning supply industry is estimated by using financial statements from KOGAS and city gas companies, economic census data, and responses from the input structure survey for the input-output table of the benchmark year.

## **C. Water supply, sewage and waste management, remediation services**

### **■ Output**

9.67 Water supply industry output in the water supply, sewage and waste management, remediation services industry is calculated by combining the water

sales of the Korea Water Resources Corporation (K-water) with those of provincial public corporations. , sewage and waste management, remediation services industry output is estimated by using the Service Industry Survey done by Statistics Korea. In the case of material recovery industry, output is estimated by deducting purchases of direct material from sales.

#### ■ Intermediate Consumption

9.68 Intermediate consumption for the water supply, sewage and waste management, remediation services industries is calculated by deducting value added from output.

#### ■ Value Added

9.69 Value added for the water supply, sewage & waste management, and remediation service industries generated by the government is estimated using a cost approach method, compiling each factor income component. The private part is estimated by using value added components from the economic census and input structure survey for the input-output table of the benchmark year.

### 5.3. Estimation Method in Current Year

#### A. Nominal Value

9.70 Current-year nominal output and value added for the electricity, gas, and water supply industries is compiled in the same manner as the reference-year estimation method, but using annual services industry survey and current year input structure instead of economic census and input structure survey of benchmark year.



## B. Real Value

### ■ Output

9.71 Current-year real output for the electricity, gas, and water supply industries is calculated by applying the rate of change in the sales amount to the previous year's output or deflating nominal value by the relevant deflator such as PPI or CPI.

### ■ Intermediate Consumption

9.72 The real value of intermediate consumption for the electricity, gas, and water supply industries is calculated by deflating nominal intermediate consumption with the PPI or CPI, etc. Moreover, the real value can be derived by using the compounded rate of change in quantity for each input item, or by applying the intermediate consumption ratio of the previous year.

### ■ Value Added

9.73 Current-year real value added for the electricity, gas, and water supply industries is calculated by using the double deflation method. That is to say, it is calculated by deducting real intermediate consumption from real output.

## 5.4. Data Sources

9.74 Annual estimates concerning the electricity, gas, and water supply industries are drawn from the relevant companies' balance sheet statistics that reflect their cost structures. In the case of water supply by provincial public corporations, data from the Ministry of Public Administration and Security is applied. Sewage and waste management, remediation services are based on the Service Industry Survey and the Wholesale and Retail Trade Survey conducted by Statistics Korea.

9.75 Reference and current year estimations for the electricity, gas, and water supply industries use the data sources listed in Table III-9-11.

Table III-9-11 Data Sources of Electricity, Gas, and Water Supply

Classification	Reference Material	Institution Responsible
Electricity supply	Financial statement	Korea Electric Power Corporation, Korea Power Exchange, etc.
	Electric power transaction Statement	Korea Power Exchange
	Electricity purchase statement	Korea Electric Power Corporation
	Monthly report on major electric power statistics	Korea Electric Power Corporation
	Unit value of import of nuclear Fuel	Korea Hydro and Nuclear Power
	Direct-sale results	Hanju, Yeochun NCC, Daegu Dyeing Industrial Center
	Commercial self-power generation results	Korea Power Exchange
Gas, steam and air conditioning supply	Financial statement	Korea Gas Corporation
	Gas sales results	City gas companies, Korea Gas Corporation
	Heat supply results	Integrated energy providers
	Integrated energy business materials	Korea Energy Agency
Water supply, sewage and waste anagement, remediation services	Water supply profit results	Provincial government offices, Korea Water Resources Corporation
	Financial statement	Korea Water Resources Corporation, Ministry of the Interior
	Service Industry Survey, Wholesale and Retail Trade Survey	Statistics Korea
	National Tax Statistics	National Tax Services

## 6. Construction

### 6.1. Definition and Coverage

9.76 The construction industry refers to industrial activities, carried out by general or professional builders on their own account or on a contract basis. Such activities include:

- The erecting or installing of various buildings (including temporary buildings and prefabricated buildings) and structures on construction sites;
- The enlarging, rebuilding, remodeling, repairing or dismantling of buildings and structures on construction sites; and
- The blasting, digging and ground-leveling required to develop construction sites, etc.

9.77 Construction is mainly divided into building construction, heavy and civil engineering and specialized construction.

9.78 Building construction is sub-divided into two categories:

- Residential building construction; and
- Non-residential building construction;

9.79 Heavy and civil engineering is sub-divided into two categories:

- Roads and railways construction; and
- Other civil engineering projects construction;

9.80 Specialized construction is sub-divided into five categories:

- Site preparation;
- Architecture related specialized construction;
- Building completion and finishing;
- Electrical and communication works; and
- Other specialized construction;

9.81 Construction is also divided into private and government construction depending on the entity placing the order.

## A. Building Construction

### ■ Residential Buildings

9.82 Residential buildings are divided into detached home construction and common home construction:

- Detached home construction includes single-family homes, multi-household homes, and official residences.
- Common home construction includes apartment houses, row houses, multiplex houses, and dormitories.

9.83 Construction of residential buildings includes not only new construction, enlargement, remodeling and rebuilding but also large-scale repairs<sup>10)</sup> that are related to capital expenditure.

### ■ Non-residential Buildings

9.84 Construction of non-residential buildings includes new construction, enlargement, remodeling, rebuilding and large-scale repairs that are related to capital expenditure. Non-residential buildings are classified into those for industrial use, commercial use, educational and social use, public use, agricultural and fisheries use, and others. Specifically:

- Industrial building construction includes factories and sites for manufacturing, processing and repairing.
- Commercial building construction includes neighborhood facilities, retail facilities, lodging facilities, leisure facilities, facilities for storage and the

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10) This refers to expenditures for construction to extend service lives or to increase property values.

treatment of dangerous materials, automobile-related facilities, and general business facilities.

- Educational and social building construction includes cultural and assembly facilities (e.g. performance halls, viewing places, assembly places, etc.), medical treatment facilities, education and research facilities (e.g. schools, vocational training institutes, educational institutes, research institutes, etc.), religious facilities, training institutions, cemetery-related facilities, sightseeing and resting facilities (e.g. outdoor concert halls, freeway rest stops, parks, amusement parks, etc.).
- Public building construction includes public business facilities, military facilities, and broadcasting and communication facilities, etc.
- Agriculture and fishery building construction includes animal and plant-related facilities (e.g. animal pens, greenhouses, slaughterhouses, etc.), etc.

“Others” includes warehousing facilities (e.g. cargo handling places, etc.), etc.

## B. Heavy and Civil Engineering

### ■ Roads and Railways Construction

9.85 Roads and railways construction is classified into road, railroad. The detailed classification is as follows:

- Road facilities construction includes new construction, and repairs and renovation and pavement work for roads, bridges, tunnels, crossroads, land bridges, elevated roads, and airfields and runways.
- Railroad facilities construction includes new construction, and repairs and renovations of railroads, bridges, tunnels and subways. However, railroad

and subway station buildings are included in non-residential building construction.

## ■ Other Civil Engineering Projects Construction

9.86 Other civil engineering projects construction includes harbor facilities, erosion control and river work, water supply and sewage facilities construction, city civil engineering, and agriculture and fishery engineering. Specifically:

Harbor facilities construction includes new construction, and repairs and renovations of route facilities such as breakwaters, and piers and lighthouses as well as port dredging work.

- Erosion control and river work includes the repair and reclamation of rivers, erosion control work, new construction, repairs and reconstruction of multi-purpose dams, bank construction, and disaster rehabilitation work.
- Environmental purification facilities construction includes terminal disposal sewage plants, wastewater treatment plants, incineration plants, atmosphere environmental measurement facilities, and purification facilities, etc.
- Industrial plants construction includes industrial manufacturing facilities and plants construction, and installation of oil and gas pipelines.

## C. Specialized Construction

### ■ Site Preparation

9.87 Site preparation includes agriculture and fishery engineering and city civil engineering. Specifically:

- Agriculture and fishery engineering includes farmland development work,

irrigation facilities construction, cultivation and reclamation, disaster rehabilitation work, fishing port and fish farming facilities construction, and the construction of farm roads.

- City civil engineering includes land development and land adjustment for roads, housing lots and factory sites, and new construction, repairs and renovations of parks and stadiums.

### ■ Architecture Related Specialized Construction

9.88 Architecture related specialized construction includes water supply and sewage facilities. Specifically:

- Water supply and sewage facilities construction includes new construction, repairs and reconstruction of water supply, sewage facilities, etc.

### ■ Building Completion and Finishing

9.89 Building completion and finishing includes building repairs. Specifically:

- Building repairs refer to expenditures for general maintenance and repair<sup>11)</sup> of residential buildings, non-residential buildings, and structures, including outsourced repairs and self-completed repairs. Heating, water, waterproofing, painting, and electrical work conducted for existing buildings and structures are included in construction repairs when the expenditure is made for profit or for current maintenance. However, such capital expenditures as large-scale repairs that extend service lives or increase property values are not dealt with under construction repairs but are rather included under building construction in the relevant sector.

11) This refers to upkeep and repair activities carried out regularly to ensure proper use and good condition for the duration of the service life period.

## ■ Electrical and Communication Works

9.90 Electrical and communication works includes power plant facilities and communication facilities. Specifically:

- Power plant facilities construction includes installation of facilities for power generation, transmission and distribution. However, the costs of purchasing equipment like power generators are excluded from the output.
- Communication facilities construction includes installation of communication equipment and cables, line work, and electricity source work.

## ■ Other Special Civil Engineering

9.91 Other special civil engineering encompasses construction for supply to the military as well as national defense civil engineering, engineering for cemetery-related facilities, and civil engineering work not included in other sectors.

Table III-9-12 Coverage of Construction

Classification		Coverage
Building construction	Residential	Detached and common homes
	Non-residential	Industrial, commercial, educational & social, public, agriculture and fishery buildings, etc.
Heavy and civil engineering	Roads and railways construction	Road (including airport) and railroad
	Other civil engineering projects construction	Harbor facilities, Erosion control and river work, Environmental purification facilities, Industrial plant construction sewage facilities
Specialized construction	Site preparation	Agriculture and fishery engineering, City civil engineering,
	Architecture related specialized construction	Water supply and sewage facilities
	Building completion and finishing	Building repairs
	Electrical and communication works	Power plant facilities, Communication facilities



	Other specialized construction	Construction for supply to the military and national defense civil engineering, engineering for cemetery-related facilities, other facilities not included in other sectors
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Table III-9-13 Construction Industry Classification

Construction Type	Order Type
Building Construction	Private buildings
	Government buildings
Heavy and civil Engineering	Private civil engineering
	Government civil engineering
Specialized Construction	Private civil engineering
	Government civil engineering

## 6.2. Estimation Method in Reference Year

### ■ Output

#### Building Construction

9.92 Outputs for residential and non-residential building construction are estimated by using the value of Construction Put In Place as delineated in the Report on the Construction Survey. Government orders are estimated by using the Report on the Construction Survey and government budget spending data. The values of private orders are obtained by deducting government building construction from total output.

#### Heavy and Civil Engineering

9.93 Heavy and civil engineering output is estimated by using value of Construction Put In Place as delineated in the Report on the Construction Survey. Heavy and civil engineering ordered by the government is estimated by using the Report on the Construction Survey and government budget spending data, while that

ordered by the private sector is obtained by deducting government civil engineering from total output.

### **Specialized Construction**

9.94 Specialized construction (excluding building repairs) output is estimated by using value of Construction Put In Place as delineated in the Report on the Construction Survey. Specialized construction ordered by the government is estimated by using the Report on the Construction Survey and government budget spending data, while that ordered by the private sector is obtained by deducting government specialized construction from total output. Meanwhile, building repairs output is estimated by using value of Construction Put In Place as delineated in the Report on the Construction Survey and value of output of building repairs businesses as listed in the taxation data from National Tax Service.

### **■ Intermediate Consumption**

9.95 Intermediate consumption is estimated by multiplying output by the intermediate consumption ratio which is obtained through input-output tables, etc.

### **■ Value Added**

9.96 Value added is obtained by deducting intermediate consumption from output.

## **6.3. Estimation Method in Current Year**

### **A. Nominal Value**

#### **■ Output**

9.97 Building construction nominal output is estimated by using the value of

Construction Put In Place as delineated in the Report on the Construction Survey, which is the same as the reference year estimation. Building construction ordered by the government is estimated by using government budget spending data.

9.98 Heavy and civil engineering output is estimated by the value of Construction Put In Place as delineated in the Report on the Construction Survey. Heavy and civil engineering ordered by the government is estimated by using government budget spending data, and that ordered by the private sector is obtained by deducting the public sector figures obtained from the budget data from total output.

9.99 Specialized construction (excluding building repairs) output is estimated by using value of Construction Put In Place as delineated in the Report on the Construction Survey. Specialized construction ordered by the government is estimated by using the Report on the Construction Survey and government budget spending data, while that ordered by the private sector is obtained by deducting government specialized construction from total output. Meanwhile, building repairs output is estimated by using value of Construction Put In Place as delineated in the Report on the Construction Survey and value of output of building repairs businesses as listed in the taxation data from National Tax Service.

#### ■ Intermediate Consumption

9.100 Nominal intermediate consumption is obtained by deducting value added from output.

#### ■ Value Added

9.101 Nominal value added is estimated by multiplying output by the value-added ratio, which is obtained from the Report on the Construction Survey from Statistics Korea, the Financial Statement Analysis on Construction from the Construction Association of Korea (CAK), and the Financial Statement Analysis from the Bank of Korea, etc.

## B. Real Value

### ■ Output

9.102 Real output is estimated by deflating nominal output using the output deflator. The output deflator is obtained by calculating the weighted average between the intermediate consumption deflator and value added deflator, which are obtained through input-output tables, PPI, and the wage index.

### ■ Intermediate Consumption

9.103 Real intermediate consumption is estimated by deflating nominal intermediate consumption using the intermediate consumption deflator.

### ■ Value Added

9.104 Real value added is obtained by deducting real intermediate consumption from real output.

## 6.4. Data Sources

9.105 Data sources used for the estimation are as follows.

Table III-9-14

Data Sources of Construction

Reference Material	Institution Responsible	Main Contents
Report on the Construction Survey	Statistics Korea	Value of Construction Put In Place
Statistics on Building Permission and Commencement Works	Ministry of Land, Infrastructure and Transport	Building commencement works
Central and local government budget spending data	Ministry of Strategy and Finance Local government	Budget spending on construction
Annual Local Budget Statistics Report	Ministry of the Interior and Safety	Budget spending on construction

Settlement of Accounts of Public Corporation	Ministry of the Interior and Safety	List of settlement of accounts of public corporation
Data on construction results	Relevant institutions	Private construction expenditures
Financial Statement Analysis on Construction	Construction Association of Korea	Financial statements of construction firms
Financial Statement Analysis	Bank of Korea	Financial statement of construction firms
Survey on Wages & Working Hours at Establishments	Ministry of Employment and Labor	Wage statistics from the construction industry
Unit price of construction wage	Construction Association of Korea	Wage statistics from the construction industry
Producer Price Index	Bank of Korea	Price of intermediate consumption items

## 7. Wholesale and Retail Trade, Accommodation and Food Service activities

### 7.1. Definition and Coverage

#### A. Wholesale and Retail Trade

9.106 The wholesale and retail trade industry refers to the industrial activities of reselling new and used goods to consumers, enterprises, other wholesalers and retailers without any product transformation. Industries in wholesale and retail trade provide the following services: assorting, repackaging, label attachment, and product delivery.

9.107 The wholesale and commission trade industry includes the following professionals: wholesalers who possess ownership of products and sell the products to retailers; industrial suppliers who supply goods to industrial companies and groups; exporters, importers, and dealers of used goods; and commodity brokers who have no ownership of goods but sell or purchase goods as agents.

9.108 The retail trade industry includes the following activities: establishing display shops and selling goods to consumers; door-to-door home sales, delivery sales,

consumer cooperatives, mobile sales, and sales by communication media, hawkers and peddlers, and auctions.

9.109 However, should a company provide raw materials to another manufacturer for the manufacture of a product that will be returned and sold under the initiating company's responsibility, that transaction is classified as manufacturing, not wholesale or retail trade. This is because transformation of the product has occurred. A company that manufactures and sells specific goods for individuals, household consumption and the general public is also classified as manufacturing, not as part of the retail trade industry. The sale of food for immediate consumption is part of the food service sector. Supplying gas from a pipeline facility is classified as the manufacture of gas and distribution of gaseous fuel through a system of mains.

9.110 The wholesale and retail trade industry can also be classified into agricultural, forestry, livestock, fishery goods, mining products, and industrial goods according to the commodities traded.

Table III-9-15 Coverage of Wholesale and Retail Trade

Classification	Coverage
Wholesale trade and commission trade	Specialized-commodity wholesale trade, wholesale of non-specialized goods, wholesale on a fee or contract basis, etc.
Retail trade	Retail sale in non-specialized stores, specialized-commodity retail trade, retail sale of used goods, retail sale not in stores, etc.

## B. Accommodation and Food Service activities

9.111 The Accommodation industry provides lodging or short-term accommodation services for travelers, vacationers and others. The establishments in these industries can be divided into two sub-sectors: general accommodation and accommodation with cooking facilities, other accommodation.

9.112 General accommodation and accommodation with cooking facilities includes the provision of short-day lodging to individuals or membership owners by

charging fees at hotels, inns, condominiums, resorts, and juvenile camps.

9.113 Other accommodation comprises establishments primarily engaged in operating rooming and boarding houses, dormitories and other similar facilities. These establishments provide longer-term accommodations that may serve as a principal residence for the period of occupancy. These establishments may also provide meals, laundry and other related services.

Table III-9-16 Coverage of Accommodation

Classification	Coverage
General accommodation and accommodation with cooking facilities	Hotels, inns, condominiums, resorts, juvenile camps, other tourist accommodation, etc.
Other accommodation	Boarding and rooming houses, dormitories, campsites, and others

9.114 The food and beverage service activities provide meals, snacks, and beverages to customers for immediate consumption on and off the premises.

Table III-9-17 Coverage of Food and Beverage service activities

Classification	Coverage
Restaurants and mobile food service activities	Korean style restaurants, Chinese style restaurants, Japanese style restaurants, Western style restaurants, other Eastern and Western-style restaurants, cafeterias, catering and mobile food services, Confectionery stores (pizza, hamburger, sandwich and similar food restaurants)
Drinking places and non-alcoholic beverages places	General drinking establishments, dance clubs, other drinking establishments, etc.

## 7.2. Estimation Method in Reference Year

### ■ Output

9.115 The output of wholesale and retail trade refers to the total trade margin<sup>12)</sup> realized from goods that wholesalers and retailers purchase for the purpose of resale. The total trade margin is calculated by deducting purchase amount from sales amount.<sup>13)</sup> The trade margin includes not only trade conducted for ownership of goods, but also commissions received while performing brokerage activities without actual ownership of goods. Meanwhile, goods purchased for resale should be valued excluding any transport charges invoiced separately by the suppliers or paid to third parties by wholesalers or retailers; these transport services form part of the intermediate consumption of wholesalers or retailers.

9.116 In the national accounts, the margin, the output of wholesale and retail trade, is estimated by summing the trade margin of each commodity. The main data source is the Economic Census released by Statistics Korea. Output for the accommodation and food service activities is also measured based on the Economic Census.

### ■ Intermediate Consumption

9.117 Intermediate consumption is estimated by deducting value added from output.

12) According to the SNA, a trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.

13) The following are alternative formulas for trade margin:

$$\begin{aligned} \text{Trade margin} &= \text{Sales amount} - \text{Purchase amount} \\ &= \text{Sales} - \text{Cost of goods sold} \\ &= \text{Sales} - (\text{Beginning inventory} + \text{Current purchase amount} - \text{Ending inventory}) \\ &= \text{Sales} \times \text{Margin ratio} \\ &= \text{Sales} \times \text{Gross profit/Sales} \\ &= \text{Gross profit} \\ &= \text{Cost of goods sold} \times \text{Gross profit/Cost of goods sold} \\ &= \text{Cost of goods sold} \times \text{Markup ratio} \end{aligned}$$



## ■ Value Added

9.118 Value added is estimated by multiplying the output by the value added ratio. The components of value added such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using the Economic Census and input-output tables of the reference year.

## 7.3. Estimation Method in Current Year

### A. Current Value

9.119 Annual estimations of nominal output, intermediate consumption, and value added are the same as the reference year's estimation methods, and utilize the data from National Tax Service and the Report on the Service Industry Survey put out by Statistics Korea and.

### B. Real Value

#### ■ Output

9.120 In principle, real output is computed by dividing the current output by the appropriate deflators corresponding to each item.

9.121 Real output of wholesale and retail trade is obtained by deducting the real cost of goods sold from real sales. The value of real sales is estimated by dividing the current sales by the deflators of corresponding industries, using CPI, PPI, EPI, and the ratios of the selling place by industry. The value of real cost of goods sold is derived by dividing the current cost by appropriate deflators such as CPI, PPI, IPI, and the ratios of the purchasing place by industry.

9.122 CPI is used for the accommodation and food service activities.

## ■ Intermediate Consumption

9.123 Real intermediate consumption is estimated by deflating current intermediate consumption using the appropriate deflator, which is calculated based on input-output tables and PPI, etc.

## ■ Value Added

9.124 The double deflation method is used to estimate value added. Therefore, real value added is obtained by deducting real intermediate consumption from real output.

## 7.4. Data Sources

Table III-9-18 Wholesale and Retail Trade, Accommodation and Food Service activities  
Data Sources

Industry	Reference Material	Institution Responsible
Wholesale and retail trade	Economic Census	Statistics Korea
	Report on the Service Industry Survey Monthly Report on the Index of Services	Statistics Korea
	Financial Statements of Corporations and Individuals	National Tax Service
	Financial Statement Analysis	Bank of Korea
Accommodation and food service activities	Economic Census	Statistics Korea
	Report on the Service Industry Survey Monthly Report on the Index of Services	Statistics Korea
	Financial Statements of Corporations and Individuals	National Tax Service
	Financial Statement Analysis	Bank of Korea
	Annual Report on Hotel Industry	Korea Hotel Association

## 8. Transportation

### 8.1. Definition and Coverage

9.125 The transportation industry refers to industrial activities related to providing

passenger or freight transport, whether scheduled or not, by rail, road, water or air, and the associated production carried out in terminals; parking facilities; airfields; harbors; and cargo handling, storage, and operation of other related facilities. From the reference year 2015, the public postal activities included in the information and communication industry were transferred to the transportation industry.

9.126 The transportation industry includes the following subsectors:

Table III-9-19 Coverage of Transportation

Classification	Coverage
Land transport	Passenger transport by railways, including inter-urban, urban and suburban; freight transport on mainline rail networks as well as short-line freight railroads Passenger road transport, including scheduled bus services, charters, excursions and other occasional coach services, taxi operation, airport shuttles, etc.; All freight transport operations by road and transport via pipelines
Water transport	Transport of passengers and freight over inland, coastal waters and overseas
Air transport	Transport of passengers and freight by air or via space
Storage and support activities for transportation	Support activities related to land, water and air transport of passengers and freight; loading and unloading of freight irrespective of the mode of transport used for transportation; operation of storage and warehouse facilities for all types of goods; forwarding of freight, arranging or organizing of transport operations, activities of sea-freight forwarders and air-cargo agents, etc.
Postal and courier services	Door-to-door transport, local delivery and messenger services, public postal services

## 8.2. Estimation Method in Reference Year

### A. Rail Transport, Air Transport, and Supporting Air Transport Activities

#### ■ Output

9.127 Output for the reference year is measured based on the financial statements of railway corporations, airlines, and other related corporations.

### ■ Intermediate Consumption

9.128 Intermediate consumption of the reference year is obtained by subtracting value added from output.

### ■ Value Added

9.129 Value added is estimated by multiplying the output by the value added ratio. The components of value added such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using input-output tables of the reference year.

## B. Road Transport, Transport of Parcels, Water Transport, Storage and Support Activities

### ■ Output

9.130 The outputs of these industries in the reference year are mainly derived from the Economic Census released by Statistics Korea.

### ■ Intermediate Consumption

9.131 Intermediate consumption is estimated by deducting value added from output.

### ■ Value Added

9.132 Value added is estimated by multiplying the output by the value added ratio. The components of value added such as compensation of employees, consumption of fixed capital, and operating surplus are obtained using the Economic Census and report on the transportation survey from Statistics Korea and input-output tables of the reference year.

### 8.3. Estimation Method in Current Year

#### A. Current Value

9.133 The current values of output, intermediate consumption, and value added are estimated by using the same methods as those for the reference year.

#### B. Real Value

9.134 The real value of output is primarily computed by dividing current value by the appropriate deflators. Real intermediate consumption is calculated by deflating current intermediate consumption using the appropriate deflator estimated by using input-output tables and PPI, etc. Real value added is attained by the double deflation method. In other words, real value added estimates are calculated by deducting real intermediate consumption from real output.

### 8.4. Data Sources

Table III-9-20

Transportation Data Sources

Reference Material	Institution Responsible
Economic Census	Statistics Korea
Report on the Transportation Survey	Statistics Korea
Financial Statements of Corporations and Individuals	National Tax Service
Financial Statements of Railroad Corporations	Korea Railroad Corporation, Korea Rail Network Authority
Financial Statements of Subway Corporations	Subway corporations
Statistical Yearbook of Ministry of Land, Infrastructure and Transport	Ministry of Land, Infrastructure and Transport
Financial Statements of Airlines	Airline Corporations
Financial Statements of Korea Expressway Corporation	Korea Expressway Corporation
Financial Statements of Airport Corporations	Airport Corporations
Balance of Payments	Bank of Korea

## 9. Finance and Insurance

### 9.1. Definition and Coverage

9.135 The finance and insurance industry covers the industrial activities of financial institutions which are principally engaged in financial intermediation or in auxiliary financial activities closely related to financial intermediation. Financial intermediation may be defined as a productive activity in which financial institutions play a role to settle individual economic agents' fund shortages or surpluses by intermediating funds between lenders and borrowers through the financial market. "Auxiliary financial activities" refer to supplementary productive activities, which are not financial intermediation in themselves but help financial intermediation take place smoothly.<sup>14)</sup>

9.136 The finance and insurance industry can be grouped into the following sub-sectors:<sup>15)</sup>

- Central bank and depository institutions;
- Financial investment funds;
- Other financial institutions, excluding insurance corporations and pension funds;
- Life insurance corporations;
- Pension funds;
- Non-life insurance corporations; and
- Services auxiliary to finance and insurance.

14) Services auxiliary to financial intermediation may be carried out as secondary activities of financial intermediaries or be provided by specialist agencies or brokers. The latter are called services auxiliary to finance and insurance, and they form a sub-sector of the finance and insurance industry.

15) According to the 2008 SNA, finance and insurance are grouped in institutions as well as in their functions such as money market fund (MMF) and non-MMF, whereas finance and insurance were categorized only by institutions in the 1993 SNA.

## **A. Central Bank and Depository Institutions**

9.137 The central bank is the institution whose principal role is to issue currency, to manage reserve deposits of other depository institutions and government deposits, and to manage official foreign exchange reserves. Depository institutions are institutional units with liabilities in the forms of deposits or financial instruments. Depository institutions are sub-divided into general banks, special banks, domestic branches of foreign banks, mutual finance companies, the Korea Post Postal Savings Division, merchant banks, and mutual savings banks, etc.

## **B. Financial Investment Funds**

9.138 Financial investment funds are institutional units newly established according to the 2008 SNA. They include asset management corporations (own account), MMFs, non-MMFs, mutual funds and trust companies. The trust accounts, which were included in other sub-sectors (banks, securities firms, insurance companies), respectively, have been reclassified as Financial Investment Funds since the update of the reference year from 2010 to 2015.

## **C. Other Financial Institutions**

9.139 Other financial institutions are institutional units primarily engaged in financial intermediation, excluding the central bank, depository institutions, and life insurance and non-life insurance corporations. They raise funds on the financial markets, not in the form of deposits or close substitutes for deposits, but for the purpose of acquiring financial assets. Financial corporations classified under this heading include credit-specialized financial companies, the Korea Housing Finance Corporation (trust accounts), the Korea Securities Finance Corporation, pawnshops, private financing, etc.

## **D. Life Insurance Corporations**

9.140 Life insurance corporations are institutional units which offer life-related insurance. This sub-sector includes life insurance companies, the Korea Post Postal Insurance Division, and mutual life aid companies.

## **E. Pension Funds**

9.141 As the size of pension funds has been growing dramatically due to the population ageing, this sector has been newly established since the update of the reference year from 2010 to 2015. Pension Funds consist of retirement pension funds sold by relevant sub-sectors (banks, securities firms, insurance companies).

## **F. Non-life Insurance Corporations**

9.142 Non-life insurance corporations, which are similar to life insurance corporations, are institutional units providing insurance related to accidents or fires to individual institutional units or groups of units. This sub-sector includes non-life insurance companies, and non-life mutual aid companies.

## **G. Services Auxiliary to Finance and Insurance**

9.143 Services auxiliary to finance and insurance are institutional units which are, for the purpose of accelerating financial intermediation, engaged primarily in activities closely related to financial intermediation but which do not themselves perform an intermediation role. This sub-sector consists of corporations such as securities, investment advisories, financial supplementary service institutions, and insurance supplementary service institutions.



Table III-9-21

## Coverage of the Finance and Insurance Industry

Classification	Coverage
Central bank and depository institutions	Bank of Korea
	Depository banks (general banks, specialized banks, domestic branches of foreign banks, etc.)
	Mutual finance companies (National Agricultural Cooperative Federation, National Federation of Fisheries Cooperatives, National Forestry Cooperative Federation, etc.), Credit Unions, Korean Federation of Community Credit Cooperatives, Korea Post Postal Savings Division; merchant banks, mutual savings banks, etc.
Financial investment funds	Asset management corporations (own account), MMF, Non-MMF; Mutual Fund, trust companies etc.
Other financial Institutions	Credit-specialized companies (installment finance, credit cards; financial leasing, new technology project finance, etc.)
	Other intermediaries (Korea Housing Finance Corporation, Korea Securities Finance Corporation, pawnshops, etc.)
Life insurance companies	Life insurance companies
	Korea Post Postal Insurance Division
	Life insurance-related mutual aid from Nonghyup and Suhyup, Korea Teachers' Credit Union, Military Mutual Aid Association, etc.)
Pension Funds	Retirement pension funds of banks, securities firms, and insurance companies
Non-life insurance companies	Non-life insurance companies (including Seoul Guarantee Insurance)
	Non-life mutual aid from NACF (National Agricultural Cooperative Federation) and NFFC (National Federation of Fisheries Cooperatives), Korea Shipping Association Mutual Aid, Construction Guarantee, Korea Taxi Mutual Aid Association, National Bus Mutual Aid Association, etc.
Services auxiliary to finance and insurance	Securities institutions (securities firms, investment advisories, futures companies, Korea Exchange, KOSCOM (Korea Securities Computing Corporation), Korea Securities Depository, etc.)
	Insurance auxiliary service institutions (insurance agents and brokers, insurance appraisal companies, etc.)
	Financial auxiliary service institutions (Korea Financial Telecommunication & Clearings Institute, Korea Asset Management Corporation, Korea Deposit Insurance Corporation, money exchangers, etc.)

## 9.2. Estimation Method in Reference Year

### A. Central Bank and Depository Institutions

#### ■ Output

9.144 Output for the central bank is estimated using the sum-of-costs approach in which output is calculated by adding up ordinary expenses such as fees and charges, cost of issuing national currency, severance payments, and general administrative costs.

9.145 The output for depository institutions consists of financial intermediation services indirectly measured (FISIM) and actual services. FISIM are related to the function of connecting deposits with fund users so as to distribute funds effectively. FISIM are sub-divided into intermediation services on loans and intermediation services on deposits. The output of FISIM on loans is calculated by deducting outstanding loans multiplied by the reference rate from property income receivable. The output of FISIM on deposits is calculated by deducting property income payable from outstanding deposits multiplied by the reference rate. Property income receivable refers to interest receivable by financial intermediaries, gains on redemption of loans, etc. On the contrary, property income payable refers to interest payable, losses on redemption of loans, etc.

9.146 Actual services are financial services for which depository institutions impose explicit fees. Actual services are estimated by adding up commissions, guarantee fees, and securities lending fees, etc.

## Box III-9-2

## FISIM

Financial institutions such as banks primarily settle individual economic agents' fund shortages or surpluses by intermediating funds between lenders and borrowers through the financial markets. However, they do not charge service fees such as commissions to their customers. Interest charged on borrowers is higher than the interest given to lenders, and the difference between interest receivable and interest payable is recognized as imputed revenue.

Unlike actual services, financial intermediation services are hard to estimate directly. Thus they are collectively known as FISIM.

FISIM are currently calculated using the following formula:

$$\begin{aligned}\text{FISIM}_L &= L \times (L^r - r^*) = R_L - (L \times r^*) \\ \text{FISIM}_D &= D \times (r^* - D^r) = (D \times r^*) - R_D\end{aligned}$$

where,

$\text{FISIM}_L$ : FISIM on loans

$\text{FISIM}_D$ : FISIM on deposits

$L^r$ : interest rate of loans,  $D^r$ : interest rate of deposits

$R_L$ : the amount of interest receivable for loans (property income receivable)

$R_D$ : the amount of interest payable for deposits (property income payable)

$r^*$ : reference rate,  $L$ : the amount of loans,  $D$ : the amount of deposits

FISIM becomes the intermediate consumption or final consumption expenditure of economic agents. FISIM are distributed to each agent by using financial asset and liability statistics, loans to industries by commercial and specialized banks, and financial statement analysis, taxation data of the National Tax Service, etc.

## ■ Intermediate Consumption

9.147 Intermediate consumption for the central bank is estimated by deducting value added items such as compensation of employees and consumption of fixed capital from output.

9.148 Intermediate consumption of depository institutions is estimated by adding intermediate consumption items on the income statement such as commissions, rental charges, entertainment expenses, public relations expenses, etc.

## ■ Value Added

9.149 The value added of the central bank consists of compensation of employees, consumption of fixed capital, and other taxes on production less subsidies. Compensation of employees includes all labor costs such as wages and salaries, retirement benefits, and welfare benefits. Consumption of fixed capital is estimated by using capital stock of fixed assets data. The amount of other taxes on production less subsidies is allocated by government unit.

9.150 The value added for depository institutions is divided into compensation of employees, consumption of fixed capital, other taxes on production less subsidies, and operating surplus. Compensation of employees, consumption of fixed capital, and other taxes on production less subsidies are estimated by using the same method employed by the central bank. Operating surplus is calculated by subtracting compensation of employees, consumption of fixed capital, and other taxes on production less subsidies from the total amount of value added – i.e. the amount of output left after deducting intermediate consumption.

## B. Financial Investment funds

### ■ Output

9.151 The output for financial investment funds consists only of actual services estimated by using asset management, operating fees, commissions received on sales, and trust fees as indicated on the income statement.

### ■ Intermediate Consumption

9.152 Intermediate consumption of financial investment funds is estimated using the income statements; the same method used by for depository institutions.

### ■ Value Added

9.153 The value added for financial investment funds is also divided into compensation of employees, consumption of fixed capital, other taxes on production less subsidies, and operating surplus. Value added is determined in the same manner used for depository institutions.

## C. Other Financial Institutions

9.154 Similar to depository institutions, output for other financial institutions also consists of financial intermediation services and actual services. Output is calculated in the similar manner used for depository institutions while some services such as cash advance service and card loan service are regarded as FISIM. Intermediate consumption is also calculated using the same methods as depository.

## D. Life Insurance and Non-life Insurance

9.155 Life insurance and non-life insurance are estimated by deducting the sum

of net insurance claims payable<sup>16)</sup> and net increases in policy reserves<sup>17)</sup> from the sum of net premiums receivable<sup>18)</sup> and investment profits as indicated on the income statements of the relevant institutions.<sup>19)</sup> Meanwhile, intermediate consumption and value added are estimated using the same methods as those used for depository.

## E. Pension Funds

9.156 Output of pension funds consists of fees related to retirement pension funds, including trust fees of banks and securities firms and separate account commissions of insurance companies. Value added (or intermediate consumption) is estimated by multiplying the value added (or intermediate consumption) of each sub-sector selling the retirement pension funds by the sector's retirement pension output ratio to the total.

## F. Services Auxiliary to Finance and Insurance

9.157 Similar to depository institutions, the output of services auxiliary to finance and insurance is also composed of actual services and FISIM. FISIM are calculated by using interest receivable and interest payable, and the actual services are derived by adding up various commission incomes. Meanwhile, the output of insurance auxiliary service institutions consists of commission incomes.

9.158 Intermediate consumption and value added for services auxiliary to finance and insurance are calculated using the same methods as those used for depository institutions.

16) Net insurance claims payable = Direct claims paid - Refund of claims paid. In the case of non-life insurance, "Reinsurance Claims Recovered - Reinsurance Claims Paid" needs to be added.

17) Net increase in policy reserves = Provision for policy reserve - Reversal of policy reserve

18) Net premiums receivable = Direct premium written - (Cancellation refund - Refund of return premium) In the case of non-life insurance, "Assumed Reinsurance - Ceded Reinsurance Premium" needs to be added.

19) In the case of insurance, a situation may occur in which companies have to pay enormous amounts of insurance claims at once. According to the 1993 SNA in which output for non-life insurance is measured as insurance premiums less insurance claim payments, there could be a negative (-) output. For this reason, the 2008 SNA recommends that the formula for calculating output not be based on actual claims but be based on past experience and future expectations. Insurance companies base premiums on their own estimations of the likelihood of claims, and the term "adjusted claims" is used to describe the level of claims used in determining the value of output. In Korea, adjusted claims are calculated by using the 20-quarter moving average of the ratio between insurance claims payable and premiums receivable.

### 9.3. Estimation Method in Current Year

#### A. Nominal Value

9.159 The method for estimating nominal value for finance and insurance is the same as that used to calculate it in the reference year.

#### B. Real Value

##### ■ Central Bank and Depository Institutions

9.160 Output for the central bank and depository institutions is estimated as actual services and FISIM. Real actual services are estimated by deflating nominal actual services using a corresponding deflators. FISIM are estimated as follows: the growth rates of interest-bearing assets and liabilities deflated by the consumer price index are multiplied by the FISIM of the previous year. Real intermediate consumption is calculated by deflating nominal intermediate consumption. Real value added is estimated by the double deflation method which deducts real intermediate consumption from real output.

##### ■ Financial Investment Funds

9.161 Real output for financial investment funds is calculated by deflating nominal actual services. Real intermediate consumption and real output are calculated using the same methods as those used for depository institutions.

##### ■ Other Financial Institutions

9.162 Output of other financial Institutions consists of actual services and FISIM, and is estimated in the same manner used by for depository institutions. Intermediate consumption and value added are estimated using the same methods as those used for depository institutions.

## ■ Life Insurance, Pension Funds and Non-life Insurance

9.163 Value added at constant real prices for life insurance, pension funds and non-life insurance is estimated by deducting intermediate consumption from output. Real output and real intermediate consumption are calculated by deflating output and intermediate consumption at current prices, respectively.

## ■ Services Auxiliary to Finance and Insurance

9.164 Value added at constant real prices for services auxiliary to finance and insurance is estimated by deducting intermediate consumption from output. For securities companies, real FISIM is deflated using the same methods as depository institutions.

9.165 Real price actual services and intermediate consumption for financial auxiliaries are calculated by deflating current-price actual services and intermediate consumption, respectively.

## 9.4. Data Sources

Table III-9-22

Finance and Insurance Data Sources

Classification	Reference Material	Institution Responsible
Central Bank	Financial Statement	Bank of Korea
Depository institutions, other financial institutions, services auxiliary to finance and insurance	Financial Statement	Financial Supervisory Service and individual financial institutions
	Financial Assets and Liabilities Outstanding	Bank of Korea
Financial investment funds, life insurance, pension funds, non-life insurance	Financial Statement	Financial Supervisory Service and individual financial institutions
Deflator	Producer Price Index	Bank of Korea
	Consumer Price Index	Statistics Korea.



## 10. Real Estate

### 10.1. Definition and Coverage

9.166 The real estate industry covers housing services, leasing of non-residential buildings, development and subdividing of real estate, real estate-related services.

#### A. Housing Services

9.167 Housing services refer to providing dwellings for persons in need of residences. Housing services include not only actual rental services occurring when an owner leases the accommodation to tenants but also imputed rental services occurring when owners themselves reside in their dwellings.

9.168 The services of owner-occupied dwellings – imputed rental services – are included in production, whereas services for own final consumption are generally excluded from production.<sup>20)</sup> Imputed rental services are measured as the estimated rent that a tenant would have to pay for the same accommodation.

#### B. Renting of Non-residential Buildings

9.169 Renting of non-residential buildings refers to the industry concerned with leasing real estate for non-residential purposes such as shopping centers, warehouses, and offices.

#### C. Development and Subdividing of Real Estate

9.170 Development and subdividing of real estate refers to the activity of developing and selling real estate such as own-developed land and subcontract-based

20) This is because: ① the ratio of leased housing to total housing differs among countries and can even change sharply within a country over time. If services of owner-occupied dwellings are excluded from production, there is a possibility of distortion in international comparisons; ② some countries impose taxes on the imputed services of owner-occupied dwellings; and ③ a number of countries have long recognized the services of owner-occupied dwellings as production activity.

buildings. This activity includes reselling real estate without leasing.

## D. Real Estate-related Services

9.171 Real estate-related services refer to various services related to real estate, including brokerage, appraisal, and management. Real estate brokerage covers real estate intermediary and agent services in the course of leasing, purchasing, and selling real estate. Real estate appraisal involves the business of estimating and appraising real estate under commission or contract. Real estate management refers to the activity of managing others' real estate as an agent.

Table III-9-23 Coverage of Real Estate Industry

Classification		Coverage
Housing services		Actual rental services, imputed rental services
Renting of non-residential buildings		Leasing of buildings except residential buildings
Development and subdividing of real estate		Development and selling of real estate such as own-developed land and subcontract-based buildings
Real estate-related service	Real estate brokerage	Brokerage of real estate
	Real estate appraisal	Appraisal of real estate
	Real estate management	Management of real estate as an agent

## 10.2. Estimation Method in Reference Year

### A. Housing Services

9.172 Output for housing services in the reference year is the sum of actual rental services and imputed rental services as estimated in the Census. Actual rental services are estimated by adding up rental costs by region and by type of rental. Imputed rental services are derived from multiplying the corresponding number of households by the imputed rental cost which is the weighted average of rental costs by region and type of rental. Value added is obtained by multiplying output by the value added ratio calculated from input-output tables.

## **B. Renting of Non-residential Buildings**

9.173 Output for renting of non-residential buildings is obtained by adding up the rental costs of economic sectors estimated by using compiled commercial and individual returns released by the National Tax Service. Value added is obtained by multiplying output by the value added ratio calculated from input-output tables.

## **C. Development and Subdividing of Real Estate**

9.174 Output for development and subdividing of real estate is calculated by adding up the land-development profits of the Korea Land and Housing Corporation and the building subdivision fees of related enterprises. Value added for the real estate development industry is obtained by multiplying output by the value added ratio calculated from input-output tables.

## **D. Real Estate-related Services**

9.175 Outputs for the real estate brokerage and real estate management industries are estimated using compiled commercial and individual returns released by the National Tax Service. Value added is obtained by multiplying output by the value added ratio calculated from input-output tables.

9.176 Output, intermediate consumption, and value added for the real estate appraisal industry are calculated using data gathered by the Korea Appraisal Board and the Korea Association of Property Appraisers.

## **10.3. Estimation Method in Current Year**

### **A. Nominal Value**

9.177 Output at current prices for housing services is estimated by applying the rent index of the consumer price index and the total space of residential buildings

derived from the statistics on completion and demolition of residential buildings from the Ministry of Land, Infrastructure and Transport.

9.178 Output for renting of non-residential buildings is calculated by using the statistics on completion and demolition of non-residential buildings, and the vacancy rate from the Korea Appraisal Board.

9.179 Output for development and subdividing of real estate and real estate-related services is estimated by the same method as that used in the reference year.

## **B. Real Value**

9.180 Output at real prices for housing services is estimated from the total space of residential buildings in the current year and the rental cost in the reference year. Value added is estimated by deducting the real-price intermediate consumption derived from input-output tables from the output.

9.181 Output at real prices for renting of non-residential buildings, development and subdividing of real estate and real estate-related services is estimated by deflating output at current prices. Value added is estimated by deducting the real-price intermediate consumption derived from input-output tables from the output.

## 10.4. Data Sources

Table III-9-24 Data Sources of Real Estate

Classification	Reference Material	Institution Responsible
Housing services	Census	Statistics Korea
	Input-output tables	Bank of Korea
	Number of households	Ministry of the Interior and Safety, Local Government
	Statistics on building completion and demolition	Ministry of Land, Infrastructure and Transport
Renting of non-residential buildings	Income Statement	National Tax Service
	Input-output tables	Bank of Korea
Development and subdividing of real estate	Input-output tables	Bank of Korea
	Financial Statement	Korea Land and Housing Corporation, etc.
	Economic Census	Statistics Korea
	Service Industry Survey	Statistics Korea
	Compiled commercial and individual returns	National Tax Service
Real estate-related services	Compiled commercial and individual returns	National Tax Service
	Economic Census	Statistics Korea
	Service Industry Survey	Statistics Korea
	Input-output tables	Bank of Korea
	Financial statement	Korea Appraisal Board, etc.
Deflators	Producer price index	Bank of Korea
	Consumer price index	Statistics Korea

## 11. Information and Communication

### 11.1. Definition and Coverage

9.182 Information and communication industry is divided into communications, and publishing, broadcasting, motion picture, and information services. Communication services are sub-classified into: ① wired telecommunications such as wired telephone for home and business entities, high-speed internet services ②

wireless and satellite telecommunications including the mobile phone services; and ③ other telecommunications activities referring to the provision of various value added services based on telecommunications networks.

9.183 Publishing, broadcasting, motion picture, and information services are sub-classified into: ① publishing: newspapers, books, software, etc.; ② broadcasting: ground radio wave TV, radio, program provider, IPTV, system operator, etc.; ③ motion picture: movies, advertisement, television program production and distribution activities, theater operation, audio producing, etc.; ④ information: providing information through the portal site, etc.; ⑤ computer programming, system integration and management : IT system management and support service, hosting service, etc.

9.184 Table III-9-25 shows the detailed classification of information and communication industry.

Table III-9-25 Coverage of Information and Communication

Classification			Coverage
Communication	Wired telecommunications		Wired telephone for home and business entities, high-speed internet services
	Wireless and satellite telecommunications		Mobile phone, wireless high-speed internet services
	Other telecommunications		Mobile virtual network operator(MVNO), Electronic payment services
Publishing, broadcasting, motion picture, information	Publishing	Newspaper	Daily and non-daily newspapers
		Book, periodicals and other prints	Textbooks and other teaching materials, magazines and periodical
		Software development and supply	Books, periodicals, dictionaries and encyclopedias, atlases, maps, etc.
	Broadcasting	Ground radio wave	TV, radio
		Cable, satellite, and others	Program Provider, IPTV, system Operator
	Motion picture	Video, audio production and distribution	Movies, advertisements, TV program, records
		Movie and video projection	Theater

	Information services	Portal and other information intermediary services
	Computer programming, system integration and management	IT system management and support, hosting services

## 11.2. Estimation Method in Reference Year

### A. Communication

#### ■ Output

9.185 Output of the communication industry in the reference year is calculated based on the Information and Communication Technology Survey conducted by the Korea Association for ICT Promotion, and the financial statements of mobile telecommunication corporations. Internet management and support services categorized as value added network services are included in the IT system integration and support services category, not in the other telecommunication categories.

#### ■ Intermediate Consumption

9.186 Reference year intermediate consumption is calculated by deducting value added from output.

#### ■ Value Added

9.187 The value added of communication industry is estimated by using factor income data of KAIT and input structure survey for Input-Output table of benchmark year.

## **B. Publishing, Broadcasting, Motion pictures, and information services**

### **■ Output**

9.188 Reference year output for publishing, broadcasting, motion pictures, and information services is obtained based on the Service Industry Survey, Economic Census, Broadcasting Industry Survey, and ICT Industry Survey.

### **■ Intermediate Consumption**

9.189 Reference year intermediate consumption is calculated by deducting value added from output.

### **■ Value Added**

9.190 Publishing, broadcasting, motion pictures, and information services value added in a given reference year is estimated by compiling data from the Economic Census, ICT Industry Survey, National Tax Statistics, and input structure survey for Input-Output table of benchmark year.

## **11.3. Estimation Method in Current Year**

### **A. Nominal Value**

9.191 The estimation methods for the nominal value of output, intermediate consumption, and value added for information and communication services are mostly identical to the methods used to obtain comparable figures for the reference year, but using annual Services Industry Survey and current year input structure instead of economic census and input structure survey of benchmark year.



## B. Real Value

9.192 The real value of output is obtained primarily by deflating nominal output by the relevant price indicators. The real value of intermediate consumption is obtained by deflating detailed items of nominal intermediate consumption by the relevant price indices. The real value of value added is obtained by applying the double-deflation methods.

### 11.4. Data Sources

9.193 The data sources used to estimate the value added of information and communication in reference and current years are nearly identical. Table III-9-26 shows specific data sources.

**Table III-9-26** Information and Communication Data Sources

Reference Material	Institution Responsible
Financial statements of telecommunications companies	KT, SKT, LG U+ , etc.
Information and Communication Technology Survey	Ministry of Science, ICT and Future Planning, Korea Association for ICT Promotion, Korea Electronics Association
National Tax Statistics	National Tax Service
Service Industry Survey	Statistics Korea
Financial Statement Analysis	Bank of Korea
Advertising Yearbook	Cheil Communications, Inc.
Total sales and number of audiences of movie cinemas	Korean Film Council
Wired and wireless telecommunications subscriber statistics	Ministry of Science, ICT and Future Planning
Content Industry Statistics	Korea Creative Content Agency
Employment and labor statistics of Korea	Ministry of Employment and Labor
Broadcasting Industry Survey	Korea Information Society Development Institute
Official Digital Announcement	Financial Supervisory Service

## 12. Business Activities

### 12.1. Definition and Coverage

9.194 Business activity services support manufacturing and other industries in their efforts to improve management and strengthen competitiveness. Firms engaged in business activities are constantly growing industries in the service- and knowledge-based economy.

9.195 Business activities cover:

- Professional, scientific and technical services(business related professional services, research and development, architectural and scientific and technical services); and
- Business support services(business facilities management and landscape services, renting of equipment and goods, activities of employment placement agencies and provision of human resources, other business support services).

#### A. Business related professional Services

9.196 Business-related professional services fall under three main categories: legal and accounting services, market surveys & management consulting services, and advertising.

Legal and accounting services include:

- Legal representation;
- Patent attorney representation;
- Legal document services;
- Administrative document preparation for clients;
- Process serving;
- Tax affairs;

- Accounting; and
- Registration.

Market surveys and management consulting services include:

- Market and public opinion surveys (surveys on consumer behavior, product popularity, potential markets, etc.); and
- Business and management consulting (consultation on general management, strategic planning, human resource management, etc.), etc.

9.197 The advertising industry refers to businesses contracted to produce and carry advertisements. These include advertising agencies, technical developers of advertisements (graphic artists, photographers), and purchasers and sellers of media time and space for advertising. The advertising industry can be classified into three areas:

- Advertising in the four traditional media channels (television, radio, newspapers, and magazines);
- Outdoor and sales promotions (SP) advertising; and
- New media advertising (cable television, Internet and PC communication).

## **B. Research and Development**

9.198 Research institutions are divided according to sectors, and include the following:

- National research institutions;
- Research institutions connected with non-profit organizations; and
- Private research institutions connected to businesses.

9.199 When companies whose primary purpose is to strengthen their own business operations, this is classified as the activity of a private research institution connected to business. Such research includes:

- That for improving production of goods and manufacturing; and
- That for delineating the merits of improved product design (testing, inspection, analysis, design and manufacturing of prototypes, etc.).

9.200 Research institutions are also divided according to their research contents, as follows:

- Research and experimental development on natural science and engineering (physics, chemistry, biology, agriculture, etc.); and
- Research and experimental development on social sciences and humanities, etc.

### C. Architectural and Scientific and Technical Services

9.201 Architectural and scientific and technical services include architectural services, engineering-related services, and scientific and technical services.

Architectural services include:

- Architectural design;
- Construction engineering;
- Measuring and blueprints; and
- City planning and landscaping.

Engineering-related services include:

- Mechanical design; and
- Electrical and electronic engineering.

Scientific and technical services include:

- Inspection and analysis of material components; and
- Geological surveys and exploration, etc.

## D. Business Support Services

9.202 Business support services cover:

- business facilities management and landscape services;
- Renting of equipment and goods;
- Activities of employment placement agencies and provision of human resources; and
- Other business support services.

The category of business facilities management and landscape services covers:

- Disinfection and insect extermination services (extermination of vermin in buildings, sanitation and disinfection of restrooms, etc.);
- General cleaning of structures; and
- Cleaning of industrial facilities (washing of industrial facilities, water and sewage pipes, ships and industrial equipment, etc.).

Renting of equipment and goods includes:

- Renting of transport equipment;
- Renting of personal and household goods; and
- Renting of industrial machinery and equipment.

Other business support services include:

- Exhibition and event agency;
- Packaging and energy replenishment (trademark application, clothing packaging, gas injection, etc.);
- Security and guard services;
- Security systems service activities;
- Document preparation services; and
- Call center activities and telemarketing services, etc.

## 12.2. Estimation Method in Reference Year

9.203 There is little difference in the estimation methods among the sub-sections in the business services sectors except for data sources.

### ■ Output

9.204 Estimations of output for business services in the reference year are based on the Economic Census from Statistics Korea, data from the National Tax Service, and other complete enumeration data.

### ■ Intermediate Consumption

9.205 Intermediate consumption for this industry group is calculated by using input-output tables.

### ■ Value Added

9.206 Value added for this industry group is obtained by deducting intermediate consumption from output.

## 12.3. Estimation Method in Current Year

### A. Nominal Value

#### ■ Output

9.207 The nominal values of output for the business services sector are estimated based on the Service Industry Survey from Statistics Korea, the financial statements of corporations and individuals compiled by the National Tax Service, and other data sources.

### ■ Intermediate Consumption

9.208 The nominal values of intermediate consumption for this industry group are obtained by deducting current price value added from current price output.

### ■ Value Added

9.209 The nominal values of value added for this industry group are calculated by multiplying output by the value added ratio. The value added ratio is derived from the Service Industry Survey and from the financial statements of corporations and individuals.

## B. Real Value

### ■ Output

9.210 Real estimates of output for the business service sector are obtained by dividing the nominal value of output by deflators using PPI or CPI.

### ■ Intermediate Consumption

9.211 The real values of intermediate consumption are obtained by deflating detailed items of nominal intermediate consumption.

### ■ Value Added

9.212 Real estimates of value added for this industry group are obtained by using the double-deflation method. In other words, real estimates of value added are calculated by deducting real estimates of intermediate consumption from real estimates of output.

## 12.4. Data Sources

9.213 There is little difference in the methods and data sources used to make reference year and current year estimations for business services. The Service Industry Survey and data from the National Tax Service are commonly used in most of the sub-sections under business services. Other data sources are listed in the table below.

Table III-9-27 Data Sources of Business Activities

Sub-sections	Reference Materials	Institutions Responsible
Research and development	Survey of Research and Development in Korea	Ministry of Science and ICT, Korea Institute of S&T Evaluation and Planning
Legal and accounting services	Number of litigation cases	Supreme Court of Korea
	Intellectual Property Statistics	Korea Intellectual Property Office
Market surveys and Management consulting services	Survey of business activities	Statistics Korea
Advertising	Advertising Yearbook	Cheil Worldwide, Inc.
	Korea Advertising Expenditure	Korea Broadcast Advertising Corporation

## 13. Public Administration, Defense & Other Government Services

9.214 In the national accounts, the general government engages in the following activities and provides related services to all society or individual households for free or at economically meaningless prices: public administration, national defense, and maintenance of public order; and provision of education, health care, social welfare, research and development, cultural, and other social services. The Bank of Korea computes public administration and defense service statistics as detailed items within the general government service sector. Other government services are not released separately within the government service sector but rather integrated into each service produced by the industry.



Table III-9-28

## Sub-sections of Government Services

Estimation Method	Sub-sections
The sum-of-costs approach (Output = Intermediate consumption + Value added)	Public Administration and Defense (Central Government)
	Public Administration and Defense (Local Government)
	Education Services (Public)
	Health Services (Public)
	Social Welfare Services (Public)
	Social Insurance Services (Public)
	Cultural Services (Public)
	Financial and Insurance Services (Public)
	Research and Development (Public)
	Wastewater Treatment (Public)
	Waste Disposal (Public)
Market Output Approach (Output - Intermediate consumption = Value added)	Water Services
	Railroad Transportation Services
	Postal Services
	Financial Services
	Insurance Services

### 13.1. Definition and Coverage

9.215 The general government, as an entity carrying out economic activities, is an institution providing public services that cannot be produced economically or conveniently by other market-oriented institutions. It also manages the country and implements social and economic policies.

9.216 The general government sector is regarded as consuming most of its own output, i.e. goods and services produced by the government itself, and sells some part of those services to the private sector at economically insignificant prices. Hence, the general government sector conventionally has no operating surplus. Accordingly, the output of the general government is estimated using total costs imputed (the sum-of-costs approach). The Bank of Korea decided in 2008 to coincide the expanded and reorganized general government coverage of the 2008 SNA with the Government

Finance Statistics (GFS). Hence, several sub-sections of government services are estimated using market output.

9.217 In Korea, the general government sector is sub-divided into administrative government (central and local), social security funds, and non-profit institutions (NPIs) controlled by government. Administrative government engages in public administration, national defense, and the maintenance of public order, health care, education, culture and entertainment, and other social services. It also supports economic growth and improvement in social welfare and technology and is divided into the central and local government.

9.218 The central government can be sub-divided into general accounts, special accounts, and funds managed by central administrative departments. By using the revised coverage, the Foreign Exchange Stabilization Fund and financial funds as well as government enterprise special accounts such as grain, procurement, postal savings and insurance, and postal programs special accounts are newly included under the central government

9.219 Local government is sub-classified into general local-government accounts (i.e. those of the self-administrating special metropolitan city (Seoul) and five other metropolitan cities, provinces, small cities, counties, and city wards), other special accounts controlled by local administrative departments, local government enterprise special accounts, funds, and special accounts for local educational offices and their expenses

9.220 Social security funds consist of institutional units which generally involve compulsory contributions that are controlled by the government for the purpose of offering social security benefits to members of the community. They are separately organized institutional units that finance funds from the government or the private sector. Social security funds include the institutions operating social security funds and the funds themselves.

9.221 NPIs controlled by government refer to institutional units offering services to households or enterprises for free or at economically insignificant prices, or those providing research and analysis on public administration services for the government. Major policy decisions of the institutions, including fund financing and control and personnel affairs, are made mainly or entirely by the government. The coverage of NPIs controlled by government has also been broadened to include central institutions that are under the umbrella of the central government and subject to the Act on the Management of Public Institutions (AMPI), and local institutions which have a less than 50% sales/production cost ratio and are subject to the Local Public Enterprises Act (LPEA).

9.222 The general government as an institutional sector includes small-sized government corporations supplying goods and services to the government or the private sector. For instance, operation of munitions factories, toll roads, and restaurants in public buildings fall under this category. But in the Korean national accounts, at present, coverage of the general government as a producer is the same as that of the general government as an institutional sector due to limits in obtaining basic statistical materials.

## 13.2. Estimation Method in Reference Year

### A. Central Government

#### ■ Output

9.223 Output for the central government in the reference year is calculated simply by combining value added and intermediate consumption from expenditure data by account, jurisdiction, and detailed items as obtained from the Ministry of Strategy and Finance (MOSF) based on the sum-of-costs approach method. For other activities using the market output approach, output is calculated from the sales of goods and services.

## ■ Intermediate Consumption

9.224 Intermediate consumption for the central government is obtained by combining general operating expenses, travel expenses, management expenses, and other goods and services expenses<sup>21)</sup> from among the fiscal execution results detailed per item by the MOSF.

## ■ Value Added

9.225 Value added for the central government is measured as the sum of compensation of employees, consumption of fixed capital, and other taxes on production. Compensation of employees is measured by summing labor costs, retirement benefits, welfare benefits, and awards from among fiscal execution results by detailed item provided by the MOSF. The consumption of fixed capital is compiled by the National Balance Sheet Team, according to the perpetual inventory method (PIM). In the 2008 SNA, fixed capital itself should be something that is produced. Depreciation or qualitative degradation of non-produced assets (e.g. land, minerals, and other underground resources) do not constitute consumption of fixed capital. So the cost of land purchase is exempted from consumption of fixed capital. Other taxes on production are estimated by summing up automobile and other taxes as indicated in the fiscal execution results of the MOSF. For other activities using the market-output approach, value added is calculated by subtracting intermediate consumption from output.

21) The government account classifies account items in accordance with their characteristics. Items are classified by code numbers, such as the 100s (personnel expenses), 200s (goods and service expenses), 300s (current transfers), 400s (capital expenditures), etc. The performance amount of each item is broken down under the relevant account code in the national accounts. In general, the items in the 100s (personnel expenses) of the government are treated as "compensation of employees" in the national accounts, and the items in the 200s (goods and service expenses) are treated as "intermediate consumption."

## **B. Local Government (General Accounts, Other Special Accounts)**

### **■ Output**

9.226 Local government output is also estimated by the sum-of-costs approach method, using the budget summary and fiscal execution results of local administrative departments. For activities using the market-output approach such as those carried out by the water service special account and subway public corporations, output is calculated by using the sales of goods and services.

### **■ Intermediate Consumption**

9.227 Intermediate consumption is measured by summing expenditures for items such as ordinary operational costs, travel costs, allowances paid to expedite work processes, etc.

### **■ Value Added**

9.228 Local government value added is measured as the sum of compensation of employees, consumption of fixed capital, and other taxes on production – the same method employed for comparable central government figures. For the water service special account and subway public corporations which use the market-output approach, value added is calculated by subtracting intermediate consumption from output.

## **C. Local Government (Education Special Account)**

9.229 The output for education special account is obtained by combining compensation of employees, consumption of fixed capital, other taxes on production and intermediate consumption using the fiscal execution results of 17 local educational offices.

## D. Social Security Funds and NPIs Controlled by Government

9.230 The estimation methods of output, intermediate consumption, and value added for social security funds and NPIs controlled by government in the reference year are basically the same as those for the central government. The data sources are the settlement of accounts of each institution, which are shared with the MOSF.

### 13.3. Estimation Method in Current Year

#### A. Nominal Value

9.231 The estimation methods of output, intermediate consumption, and value added at current prices in the current year are the same as those in the reference year.

#### B. Real Value

##### ■ Central Government

##### ■ Output

9.232 Constant price estimates of central government output are found by combining constant price intermediate consumption and constant price value added. For activities using the market-output approach such as the postal deposit service, constant price output is calculated by dividing the nominal output by deflators such as PPI for the relevant industry.

##### ■ Intermediate Consumption

9.233 Constant price estimates of intermediate consumption for the central government are calculated by dividing current price intermediate consumption by intermediate consumption deflators such as PPI or CPI or output deflators by relevant industry.

## ■ Value Added

9.234 Constant price estimates of value added are attained by combining compensation of employees, consumption of fixed capital, and other taxes on production at constant prices.

9.235 Compensation of employees at constant prices is calculated using the number of public sector employees and the number of national defense personnel, etc.<sup>22)</sup>

9.236 Constant price consumption of fixed capital is compiled by the National Balance Sheet Team using the internationally accepted PIM. Constant price estimates of other taxes on production are derived by dividing nominal other taxes on production by an intermediate consumption deflator. For activities using the market-output approach such as postal deposit and postal services, constant price value added is calculated by subtracting constant price intermediate consumption from constant price output.

## ■ Local Government

9.237 The estimation methods of output, intermediate consumption, and value added at constant prices for the local government are nearly the same as those used to derive comparable figures for the central government.

## ■ Social Security Funds and NPIs Controlled by Government

9.238 The estimation methods of output, intermediate consumption, and value added at constant prices for social security funds and NPIs controlled by government are nearly the same as those used to derive comparable figures for the central government.

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22) The number of public sector employees is estimated from the number of personnel enrolled in public-sector social security schemes.

### 13.4. Data Sources

9.239 The budget summaries and expenditures of central and local governments, social security schemes, and NPIs controlled by government are used for measuring general government preliminary estimates in the current year. Estimation of final general government value in the reference and current year is based on the Settlement Report of Expenditure Accounts. Detailed data sources are listed in the table below.

Table III-9-29 Public Administration, Defense, and Other Government Service Data Sources

Reference Material	Institution Responsible	Major Contents
National Budget (Central Government Budget)	Ministry of Strategy and Finance	Summary of central government budget
Central Government Budget	Each agency	Budget by detailed item
Fund Management Plan and Attached Papers	Ministry of Strategy and Finance	Fund statuses and management plan details
Settlement Report of Revenue and Expenditure Accounts	Ministry of Strategy and Finance	Settlement of general and special accounts by agency and reasons for changes
Financial Statement for National Debts	Ministry of Strategy and Finance	Borrowed funds, national bonds and acts to which liabilities are borne, debt guarantee certificates
Financial Statement for Changes in Total Amount of State Property	Ministry of Strategy and Finance	Changes and present holdings by account, type and management office
Reserve fund statements	Ministry of Strategy and Finance	Statements by detailed items and accounts
Report on the Settlement of Funds	Ministry of Strategy and Finance	Summary of settlements and settlement documents
Local government budget outlines	Ministry of the Interior	Financial status and total budgets of local government bodies
Local government budgets	Provinces, counties (gun), cities, wards (gu)	Detailed local government budgets
Financial Yearbook of Local Government	Ministry of the Interior	Budgets and settlements by account and local government body
Local government settlement reports	Provinces and cities	Detailed settlements of local government bodies
Annual Local Tax Statistics Report	Ministry of the Interior	Tax assessments and collection data by type of tax and local government body
Statistical Yearbook of National Tax	National Tax Service	By-item tax concepts and tax assessment and collection status



Statistical Yearbook of Education	Korean Educational Development Institute	Settlement report of revenue and expenditures for school-supporting associations
Expenditure of the central government	Ministry of Strategy and Finance	Execution results by account, agency and detailed item
Accumulated local government expenditures	Ministry of the Interior	Budget and expenditures by agency and item
Accumulated educational expenditures	Relevant educational offices	Budgets and expenditures by item
Number of national defense personnel	Ministry of National Defense	National defense average working strength
Summary of government personnel numbers	Ministry of the Interior	Number of central and local government personnel
Number of personnel in social security schemes	Health Insurance Review Agency, National Health Insurance Service, National Pension Service	Number of personnel in social security schemes
Present number of personnel at central, local (including educational) government and social security funds	National Health Insurance Service	Number of personnel at central, local (including educational) government and social security funds subscribing to health insurance

## 14. Education Services

### 14.1. Definition and Coverage

9.240 Education services refer to the industry providing educational services that enable people to acquire knowledge, technology, and skills. The sector is split into three main divisions:

- Primary educational institutions (including preschools);
- Secondary and advanced educational institutions; and
- Other educational institutions (vocational and technology education institutions, adult education institutions, etc.).

9.241 Education services can also be sub-divided according to the type of supplier as follows:

- National educational institutions;
- Private non-profit educational institutions (non-profit institutions serving households); and
- Private for-profit educational institutions (education service industry).

### **A. National Educational Institutions**

9.242 National educational institutions cover regular educational institutions and other educational institutions belonging to the general government sector.

### **B. Private Non-profit Educational Organizations**

9.243 Private non-profit educational organizations cover the service activities of private educational institutions whose objectives are not to achieve profit. They include:

- Primary educational institutions (including preschools); and
- Middle schools, high schools, and universities.

### **C. Private For-profit Educational Organizations (Education Service Industry)**

9.244 Private for-profit educational institutions cover the service activities of various training schools founded with the objective of achieving profits. They include:

- Professional training institutions (technology, art, business, etc.);
- General training institutions (art and physical fitness institutes, college entrance exam preparatory institutions, foreign language academies, etc.);
- Various kinds of consignment training institutions (financial training institutes, etc.); and
- Individual and group private lessons, home tutoring, and private lessons by phone or Internet, etc., which are carried out in the absence of a clear place of business.

## 14.2. Estimation Method in Reference Year

9.245 There is little difference in the estimation methods among the sub-sections in the education services industry apart from the sources of data.

### ■ Output

9.246 Estimations of output for education services in the reference year are based on data from the National Tax Service, the Economic Census from Statistics Korea, the Annual Report of Educational Statistics, and others.

### ■ Intermediate Consumption

9.247 Estimates of intermediate consumption for this industry group are calculated by using input-output tables.

### ■ Value Added

9.248 Estimates of value added for this industry group are obtained by deducting intermediate consumption from output.

## 14.3. Estimation Method in Current Year

### A. Nominal Value

#### ■ Output

9.249 The nominal values of output for the education services sector are derived from data sources such as the Service Industry Survey from Statistics Korea, total sales data from the National Tax Service, the Annual Report of Educational Statistics, and so on.

### ■ Intermediate Consumption

9.250 The nominal values of intermediate consumption for this industry group are obtained by deducting value added from output.

### ■ Value Added

9.251 The nominal values of value added for this industry group are calculated by multiplying output by the value added ratio. The value added ratio is derived from the Service Industry Survey and from the financial statements of corporations and individuals.

## B. Real Value

### ■ Output

9.252 The real values of output for the education services sector are obtained by dividing the nominal value of output by deflators using PPI or CPI.

### ■ Intermediate Consumption

9.253 The real values of intermediate consumption are obtained by deflating detailed items of nominal intermediate consumption.

### ■ Value Added

9.254 Real estimates of value added for this industry group are obtained by using the double-deflation method. In other words, real estimates of value added are calculated by deducting real estimates of intermediate consumption from real estimates of output.

## 14.4. Data Sources

9.255 There is little difference in the data sources between reference year and annual estimations for education services. The Service Industry Survey, and data from the National Tax Service and the Annual Report of Educational Statistics are commonly used in most education service sub-sections. Other data sources are outlined in the table below.

Table III-9-30 Education Data Sources

Sub-sections	Reference Material	Institutions Responsible
Private non-profit educational organizations	Numbers of teachers and staff	Korea Teachers Pension
	Corporate and school expenses accounting data for private universities	Korea Advancing Schools Foundation
	Job competency development training status	Ministry of Employment and Labor
Private for-profit educational organizations (education service industry)	Private Education Expenditure Survey	Statistics Korea

## 15. Human Health and Social Work Services

### 15.1. Definition and Coverage

9.256 Human health and social work services are divided into two sections:

- Medical and health care services; and
- Social work activities.

9.257 Medical and health care services cover the following:

- Activities to prevent and cure various diseases to preserve the health of human beings; and
- Sales of medical supplies based on prescriptions.

9.258 Social work activities cover work carried out to protect the most vulnerable, such as children, the elderly, women, and people with disabilities.

#### **A. Medical and health care services (National Institutions)**

9.259 Medical and health care services (national institutions) cover the medical and health activities of the Ministry of Health and Welfare (MOHW), provincial governments, national institutional hospitals, military hospitals, and public health centers.

#### **B. Medical and health care services (Non-profit Organizations)**

9.260 Medical and health care services (non-profit organizations) include the activities of privately-established general hospitals and clinics, and health institutions.

#### **C. Medical and health care services (For-profit Industry)**

9.261 Medical and health care services (for-profit industry) category includes privately-established general hospitals and clinics, dental hospitals and clinics, Oriental medicine hospitals and clinics, maternity hospitals, pathology research institutions, and other medical practices, as well as the sales of prescription medicine.

#### **D. Social Work Activities (National Institutions)**

9.262 The social work activities (national institutions) category includes the social welfare activities of the MOHW and provincial governments to protect the most vulnerable in our society, such as children, the elderly, people with disabilities, women, and the homeless. It also covers the activities of social security funds such as the National Pension Fund.

## E. Social Work Activities (Non-profit Organizations)

9.263 Social work activities (non-profit organizations) cover the activities of privately-established non-profit accommodations and non-accommodations providing welfare facilities. They also include social welfare groups offering various social work services to protect vulnerable groups, such as children, the elderly, people with disabilities, women, and the homeless.

### 15.2. Estimation Method in Reference Year

9.264 There is little difference in the estimation methods among the sub-sections in the human health and social work services sectors apart from data sources.

#### ■ Output

9.265 Output estimates for human health and social work services in the reference year are based on data from the National Tax Service, the Economic Census from Statistics Korea, and other complete enumeration data from the Health Insurance Review and Assessment Service and the Health and Welfare Statistical Year Book.

#### ■ Intermediate Consumption

9.266 Estimates of intermediate consumption for this industry group are calculated by using input-output tables.

#### ■ Value Added

9.267 Estimates of value added for this industry group are obtained by deducting intermediate consumption from output.

### 15.3. Estimation Method in Current Year

#### A. Nominal Value

##### ■ Output

9.268 The nominal values of output for the human health and social work services sector are obtained from such data sources as the Service Industry Survey, the total sales data from the National Tax Service, and other complete enumeration data from the Health Insurance Review and Assessment Service and the Health and Welfare Statistical Year Book.

##### ■ Intermediate Consumption

9.269 The nominal values of intermediate consumption for this industry group are obtained by deducting value added from output.

##### ■ Value Added

9.270 The nominal values of value added for this industry group are calculated by multiplying output by the value added ratio. The value added ratio is derived from the Service Industry Survey and from the financial statements of corporations and individuals.

#### B. Real Value

##### ■ Output

9.271 Real estimates of output for the human health and social work services sector are obtained by dividing the nominal value of output by deflators using PPI or CPI.



### ■ Intermediate Consumption

9.272 The real values of intermediate consumption are obtained by deflating detailed items of nominal intermediate consumption.

### ■ Value Added

9.273 Real estimates of value added for this industry group are obtained by using the double-deflation method. In other words, real estimates of value added are calculated by deducting real estimates of intermediate consumption from real estimates of output.

## 15.4. Data Sources

9.274 There is little difference in the data sources used to derive reference year estimates and annual estimates for human health and social work services. The Service Industry Survey and data from the National Tax Service are commonly used for most sub-sections of human health and social work services. Other data sources are provided in Table III-9-31.

Table III-9-31 Human Health and Social Work Services Data Sources

Sub-sections	Reference Material	Institution Responsible
Medical and Health Care Services	Total hospital fees by type of medical care institution and establishment type	Health Insurance Review and Assessment Service, National Health Insurance Corporation
Social Work Activities	Health and welfare statistical yearbook	Ministry of Health and Welfare

## 16. Cultural and Other Services

### 16.1. Definition and Coverage

9.275 Cultural and other services cover arts, sports and recreation related services and other services. Arts, sports and recreation related services include creative, arts and entertainment services, sports and amusement services, and travel agency and related services. Other services cover personal services, maintenance and repair services, services of membership organizations, and household services. Specifically, this classification includes the activities detailed below.

#### A. Creative, Arts and Entertainment Services

9.276 Creative, arts and entertainment services include activities related to theater and music, independent artists, libraries and reading rooms, museums and art galleries, science halls, zoos, and botanical gardens.

#### B. Sports and Amusement Services

9.277 Sports and amusement services include sports facilities (golf courses, swimming pools etc.), professional sporting events, sporting organizations, sporting operation businesses, performance halls, amusement and theme parks, amusement centers (karaoke, computer rooms, etc.), and casinos.

#### C. Travel agency and Related Services

9.278 Travel agency and related services include the provision of various travel-related services, such as arranging the use of travel-related facilities and proxy for the conclusion of contracts for domestic and foreign travelers.

## **D. Personal Services**

9.279 Personal services include:

- Washing and dry cleaning;
- Personal care; and
- Other services for individuals.

9.280 Washing and dry cleaning services include the laundering and delivering of laundry. Personal care services include haircutting, skin treatments, obesity treatments, and manicures/pedicures. Other service activities include individual services that are not included in the above, such as those carried out by funeral homes, wedding halls, dating agencies, fortunetellers, and personal caregivers.

## **E. Maintenance and Repair Services**

9.281 This industry covers the professional industrial activities involved in the maintenance and repair of motor vehicles and motorcycles, computers and communication equipment, and personal and household goods.

## **F. Membership Organizations**

9.282 Membership organizations cover the activities of business, professional membership, religious, political, labor, and other social organizations.

## **G. Household Services**

9.283 The household services category covers work conducted in the house by an agent, such as cooking and cleaning. It includes all housework services whether provided by individually-hired persons or originating from a business designated to provide such services.

## 16.2. Estimation Method in Reference Year

9.284 There is little difference in the estimation methods used among the sub-sections in the cultural and other services sectors apart from data sources.

### ■ Output

9.285 Estimation of output for cultural and other services in the reference year is based on data from the National Tax Service, Economic Census from Statistics Korea, and other complete enumeration data.

### ■ Intermediate Consumption

9.286 Estimates of intermediate consumption for this industry group are calculated by using input-output tables.

### ■ Value Added

9.287 Estimates of value added for this industry group are obtained by deducting intermediate consumption from output.

## 16.3. Estimation Method in Current Year

### A. Nominal Value

#### ■ Output

9.288 The nominal values of output for the cultural and other services sector are obtained from data sources such as the Service Industry Survey from Statistics Korea, total sales data from the National Tax Service, and other complete enumeration data.

### ■ Intermediate Consumption

9.289 The nominal values of intermediate consumption for this industry group are obtained by deducting value added from output.

### ■ Value Added

9.290 The nominal values of value added for this industry group are calculated by multiplying output by the value added ratio. The value added ratio is derived from the Service Industry Survey and from the financial statements of corporations and individuals.

## B. Real Value

### ■ Output

9.291 Real estimates of output for the cultural and other services sector are obtained by dividing the nominal value output by deflators using PPI or CPI.

### ■ Intermediate Consumption

9.292 The real values of intermediate consumption are obtained by deflating detailed items of nominal intermediate consumption.

### ■ Value Added

9.293 Real estimates of value added for this industry group are obtained by using the double-deflation method. In other words, real estimates of value added are calculated by deducting real estimates of intermediate consumption from real estimates of output.

## 16.4. Data Sources

9.294 In the case of cultural and other services, the basic statistical data sources used to estimate reference and annual year are the same and the Service Industry Survey and data from National Tax Service are commonly used in most of the sub-sections. Other data sources utilized in each sector are provided in Table III -9-32.

Table III -9-32 Cultural and Other Service Data Sources

Sub-sections	Reference Material	Institutions Responsible
Creative, arts and entertainment services	Number of national library users	National Library of Korea
	Status of admission revenue	Cultural Heritage Administration
Sports and amusement services	Leisure industry yearbook	Korea Leisure Industry Research Institute
	Number of spectators and admission revenue	Korea Baseball Organization, Korea Football Association, Korea Basketball Association
	Number of golf course visitors	Korea Golf Course Business Association
	Gambling statistics	National Gambling Control Commission
	Lottery income and payouts	National Lottery Commission
	Exchange figures for casinos	Casino
	Financial statements	Korea Racing Authority, Korea Sports Promotion Foundation, etc.
Membership organizations	Survey of business activities	Statistics Korea
	Number of labor groups and union members	Ministry of Employment and Labor
	Expenditure breakdown by political party	National Election Commission
Household services	Population census, Agriculture, forestry and fishery survey	Statistics Korea
	Household income and expenditure survey	Statistics Korea

## 17. Taxes on Production and Imports, Subsidies

### 17.1. Definition and Coverage

9.295 Taxes are money or goods forcibly collected from the general public without immediate benefit in order to cover the expenses of national or local governments.

9.296 Table III-9-33 shows the system of classification for Korea's taxes and subsidies. Taxes on production and imports are divided into taxes on products and other taxes on production.

9.297 Taxes on products are taxes imposed on goods and services when a producer produces, sells or imports goods and services. Taxes on products consist of value added tax, individual consumption tax, and securities transaction tax, etc.

9.298 Other taxes on production are taxes imposed on the ownership or use of land, buildings, and other assets used in production. Other taxes on production consist of property tax, stamp tax, etc.

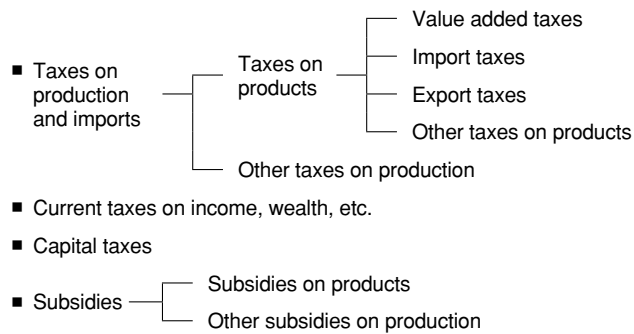
9.299 Subsidies are current unrequited payments that government units make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services produced, sold or imported. Subsidies are divided into subsidies on products and other subsidies on production.

9.300 A subsidy on a product usually becomes payable when the good or service is produced, sold or imported, but it may also be payable when a good is transferred, leased, delivered, used for own consumption or own capital formation or in other circumstances. Meanwhile, other subsidies on production consist of subsidies except subsidies on products that resident enterprises may receive as a consequence of engaging in production. This category includes payroll or total workforce subsidies but not subsidies related directly to products themselves. For reference, current taxes on income, wealth, etc. are part of secondary income receivable by the general

government sector and are a component of secondary income payable by other sectors. And capital taxes, such as inheritance and gift taxes, are non-recurrent and required to be paid only when a specific or irregular event occurs.

Table III-9-33

Structure of Taxes and Subsidies



## 17.2. Estimation Method

### A. Nominal Value

9.301 Taxes on production and imports are distributed across each industry and divided into taxes on products (value added taxes, import taxes, and other taxes on products) by using data on an accrual basis from the government revenue of the Ministry of Strategy and Finance, and the Ministry of the Interior. Table III-9-34 outlines the system of classification for Korea's taxes and their corresponding classification in the 2008 SNA.

9.302 Subsidies are estimated by adding the items that fall under the subsidies of national accounts among the current transfers to private accounts. They are split into subsidies on products and other subsidies on production by industry. Related data is derived from government expenditure reports.

9.303 Meanwhile, net other taxes on production (= other taxes on production minus other subsidies on production) are included in the value added amounts by



each industry, which are evaluated at basic prices. Unlike taxes on products, net taxes on products are announced as an individual item.

## B. Real Value

9.304 The real value of taxes on production, imports, and subsidies are estimated by multiplying the real output of taxes(subsidies) imposed product by the nominal tax rate in the previous year.

Table III-9-34 Classification of Taxes in Korea

Classification in Korea				Classification in the 2008 SNA
National taxes	Internal taxes	Direct taxes	Income tax	Current taxes
			Corporation tax	Current taxes
			Inheritance and gift tax	Capital taxes
		Indirect taxes	Value added tax	Taxes on products
			Individual consumption tax	Taxes on products
			Liquor tax	Taxes on products
			Stamp tax	Other taxes on production
			Securities transaction tax	Taxes on products
		Customs duties		Taxes on products
		Transportation, energy, environment tax		Taxes on products
Local taxes	Provincial taxes	Ordinary taxes	Education tax	Taxes on products, etc. <sup>1)</sup>
			Special tax for rural development	Taxes on products, etc. <sup>1)</sup>
			Comprehensive real estate holding tax	Other taxes on production
		Objective taxes	Acquisition tax	Taxes on products
			Registration and license tax	Other taxes on production, Current taxes
			Leisure tax	Taxes on products
			Local consumption tax	Taxes on products
			Community resource and facility tax	Other taxes on production
			Local education tax	Taxes on products, etc. <sup>1)</sup>
	City, county taxes	Inhabitant tax		Other taxes on production, current taxes
		Property tax		Other taxes on production
		Automobile tax		Other taxes on production, current taxes
		Tobacco consumption tax		Taxes on products
		Local income tax		Other taxes on production, current taxes

Notes: 1) Education tax, special tax for rural development tax, and local education tax are divided into taxes on products, other taxes on production, and current taxes according to financial resources.

## Chapter 10: Expenditure Approach

### 1. Introduction

10.1 Expenditure on GDP shows how income distributed to economic units is used by the final users. In the circular flow of the national economy, households offer enterprises the factors necessary for production, such as labor and capital, and receive income in return. Deducting net taxes (taxes paid to the government minus subsidies, unemployment benefits, etc. received from the government) from this household income leaves disposable income. Households then use disposable income to purchase goods or increase savings.

10.2 With the operating surplus received as a result of production activity, enterprises purchase machinery, factory sites and buildings to replace or expand production facilities. The government builds office buildings and social overhead capital (SOC), and purchases various goods necessary for administrative purposes with the taxes received from other economic entities.

10.3 Also, net exports, i.e. exports of goods and services minus imports of goods and services, constitute external sector expenditures. Anything remaining or lacking when these expenditures are totaled and compared with GDP from the production side is noted as changes in inventories and acquisitions less disposal of valuables.

10.4 Combining these components (household consumption, enterprise investment, government and other public sector purchases, external sector net exports, and changes in inventories and acquisitions less disposal of valuables) yields the expenditure on the final output produced in the economy, in other words “expenditures” for gross domestic product (GDP). This is called “national income from the expenditure side” ( $GDP = \text{Consumption} + \text{Investment} + \text{eXports} - \text{iMports}$ ).

10.5 In the national accounts, the expenditures of various economic units are sub-classified in accordance with specialized terms such as private consumption

expenditure, government consumption expenditure, gross fixed capital formation, exports of goods and services, imports of goods and services, and changes in inventories and acquisitions less disposal of valuables.

10.6 Each component of the national income is a major macroeconomic index that shows the economic activity level comprehensively. Such indexes can be used to inform the decision-making and post-evaluation processes of an economic unit.

10.7 The composition of the expenditure component of GDP is shown in Table III-10-1.

Table III-10-1 Composition of the Expenditure Component of GDP

Classification		Composition
Final consumption expenditure	Private consumption	<ul style="list-style-type: none"> <li>• Final consumption expenditure of households: Final consumption expenditures in the domestic market, Direct purchases abroad by resident households, (-) Direct purchases in the domestic market by non-resident households,</li> <li>• Final consumption expenditure of NPISHs</li> </ul>
	Government consumption	
Gross fixed capital formation	Facility investment	Transport equipment, machinery
	Construction investment	Buildings, civil engineering
	Intellectual property product investment	Research & Development (R&D), other intellectual property products (entertainment, literary and artistic originals, computer software and databases, mineral exploration and evaluation)
Changes in inventories and acquisitions less disposal of valuables		Finished goods, goods in the process of production (work-in-progress), goods for resale, raw materials and suppliers, acquisitions less disposal of valuables
Export of goods and services		Export of goods, export of service
(-) Import of goods and services		Import of goods, import of service

10.8 There are two methods used to compile the composition of expenditure of GDP: the demand approach method and the supply approach method. In general, when estimating the share of expenditure on GDP, we do not use just one method but use both methods depending on the situation of the preliminary data.

10.9 Most OECD members and other advanced countries generally employ the demand approach method to estimate household consumption, government consumption, construction investment, intellectual property product investment, changes in inventories and acquisitions less disposal of valuables, and the export and import of goods and services. They usually employ the supply approach method to estimate facility investments. However, the specific characteristics of each item are what actually determine whether the demand or supply approach method is used. From 2005 in Korea, the demand approach method has been mostly used for estimation; while the supply approach method has been used when there is a shortage of basic data from the demand side, e.g. in the case of facility investment.

10.10 The supply approach method is the representative indirect estimation method (e.g. commodity flow method). It discloses how much of the national economy's aggregate supply (total output + import) is used for intermediate demand and final demand according to input-output tables.

10.11 To maintain the usefulness of the CFM, input-output tables should accurately reflect the current economic situation, but devising actual survey input-output tables is very time consuming, as there are structural limitations to reflecting the current economic situation in a timely manner. And when compiling statistics, it is difficult to ensure consistency and check the national income from the production side and the expenditure side independently. Thus international organizations, such as the IMF, recommend limited use of CFM.

10.12 Demand approach method estimates are based on expenditure survey data collected from final users who directly purchase the final output, such as households, firms, and the government.

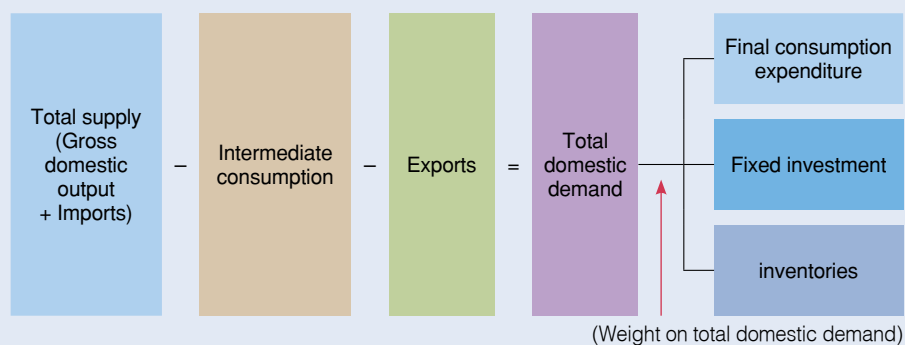
## Box III-10-1

## Commodity Flow Method

The commodity flow method is a method to estimate the share of expenditure on GDP through tracing the process of commodity circulation. It was developed by S. Kuznets and is a representative method with a supply approach. It is mainly used for estimating items for which there is a shortage of demand side basic data such as facility investment or inventories.

The estimating process by the commodity flow method is introduced briefly below.

Firstly, domestic gross output is calculated on the 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 as delineated from input-output tables in the base year.



10.13 These methods cover non-observed economic activity which is easily missed when the focus is on production. They have a high degree of accuracy because they are based on recent survey results from related fields.

10.14 In reference year 2010, most new treatments of the 2008 SNA were adapted to GDP. First of all, research and development, entertainment, literary and artistic originals, and weapons systems, which were formally treated as expenditures, were recorded as gross fixed capital formation.

10.15 “Intangible fixed assets,” which had already covered computer software and mineral exploration and evaluation, came also to include research and development, and entertainment, literary and artistic originals, and was renamed the more descriptive “intellectual property products.” Expenditures on weapons systems were also classified as facility investment.

10.16 The recording time of global manufacturing activity shifted from the physical movement of goods to the actual change in ownership of goods. As a result, transactions between countries can be recorded with greater accuracy. Furthermore, reinvested earnings of foreign direct investment were newly recognized in order to catch the income flow between economic entities.

10.17 As the role of the general government and the public sector became increasingly more important after the financial crisis, the public sector category was clarified and refined, reflecting the 2008 SNA’s classification. Total revenue, total expenditure, and net lending (borrowing) of the public sector were also newly introduced for analysis.

10.18 In this chapter, each final expenditure item will be introduced in detail.

## 2. Final Consumption Expenditure

10.19 Final consumption expenditure in the economy may be defined as the total value of all expenditures on goods and services by households, non-profit institutions serving households (NPISHs), and general government units to satisfy their individual or collective needs and wants.

### 2.1. Private Consumption Expenditure

#### A. Definition and Coverage

10.20 Private consumption expenditure consists of the following:

- Final consumption expenditure of households; and
- Final consumption expenditure of NPISHs.

### ■ Final Consumption Expenditure of Households

10.21 Final consumption expenditure of households is the total value of goods and services purchased by households for the purpose of consumption. However, not all goods and services purchased by households are recorded under their final consumption expenditure. For instance, housing purchases for the purpose of own use are recorded as gross fixed capital formation since a house is not an object of consumption but a good offering residential service. Secondhand goods purchased by households are also excluded as they had already been included within household final consumption expenditure at the time of the original purchase. Conversely, some goods and services that households did not actually purchase are factored into their final consumption expenditure. Residential service (the imputed rental charge) produced by a homeowner for the purpose of one's own final use, for instance, is included in the final consumption expenditure of households even though the household did not actually purchase it.

10.22 The 2008 SNA suggests including resident households' consumption expenditures overseas among the final consumption expenditure of resident households. Accordingly, the final consumption expenditure of 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. At the same time, direct purchases abroad by resident households are recorded as service import, and direct purchases in the domestic market by non-resident households are recorded as service export in transactions with the rest-of-the-world.

### ■ Final Consumption Expenditure of NPISHs

10.23 Non-profit institutions serving households (NPISHs) refer to institutions

offering goods and services for free or at economically insignificant prices to their members or households. NPISHs are non-market producers just like the general government. Unlike the case with general market producers, for reasons of social and economic policy NPISHs' input costs are much higher than the amount (income) recovered through sales of goods and non-goods. The difference between total input costs and income from sales is regarded as the final consumption expenditure of the services produced by the producer itself.

Table III-10-2 Coverage of Private Consumption Expenditures

Classification	Coverage																										
Final consumption expenditure of households	<ul style="list-style-type: none"><li>Final consumption expenditures in the domestic market</li></ul>																										
	<table><tr><td>[COICOP<sup>1) 2)</sup>]</td><td>[Classification of final consumption expenditure of households by type]</td></tr><tr><td>- Food and non-alcoholic beverages</td><td>- Durable goods: furniture, automobiles, TVs, PCs, etc.</td></tr><tr><td>- Alcoholic beverages and tobacco</td><td>- Semi-durable goods: clothing and footwear, household appliances, etc.</td></tr><tr><td>- Clothing and footwear</td><td>- Non-durable goods: food and beverages, water, electricity, gas and other fuels</td></tr><tr><td>- Housing, water, electricity, gas and other fuels</td><td>- Services</td></tr><tr><td>- Furnishings, household equipment and routine household maintenance</td><td></td></tr><tr><td>- Health</td><td></td></tr><tr><td>- Transport</td><td></td></tr><tr><td>- Information and communication</td><td></td></tr><tr><td>- Recreation, sports and culture</td><td></td></tr><tr><td>- Education services</td><td></td></tr><tr><td>- Restaurants and accommodations services</td><td></td></tr><tr><td>- Miscellaneous goods and services</td><td></td></tr></table>	[COICOP <sup>1) 2)</sup> ]	[Classification of final consumption expenditure of households by type]	- Food and non-alcoholic beverages	- Durable goods: furniture, automobiles, TVs, PCs, etc.	- Alcoholic beverages and tobacco	- Semi-durable goods: clothing and footwear, household appliances, etc.	- Clothing and footwear	- Non-durable goods: food and beverages, water, electricity, gas and other fuels	- Housing, water, electricity, gas and other fuels	- Services	- Furnishings, household equipment and routine household maintenance		- Health		- Transport		- Information and communication		- Recreation, sports and culture		- Education services		- Restaurants and accommodations services		- Miscellaneous goods and services	
	[COICOP <sup>1) 2)</sup> ]	[Classification of final consumption expenditure of households by type]																									
	- Food and non-alcoholic beverages	- Durable goods: furniture, automobiles, TVs, PCs, etc.																									
- Alcoholic beverages and tobacco	- Semi-durable goods: clothing and footwear, household appliances, etc.																										
- Clothing and footwear	- Non-durable goods: food and beverages, water, electricity, gas and other fuels																										
- Housing, water, electricity, gas and other fuels	- Services																										
- Furnishings, household equipment and routine household maintenance																											
- Health																											
- Transport																											
- Information and communication																											
- Recreation, sports and culture																											
- Education services																											
- Restaurants and accommodations services																											
- Miscellaneous goods and services																											
	<ul style="list-style-type: none"><li>Direct purchases abroad by resident households</li></ul>																										
	<ul style="list-style-type: none"><li>(-) Direct purchases in the domestic market by non-resident households</li></ul>																										
Final consumption expenditure of NPISHs	<p>[COPNI<sup>2)</sup>]</p> <ul style="list-style-type: none"><li>- Health, recreation and culture, education, social protection, other services</li></ul>																										

Notes: 1) COICOP: Classification of individual consumption according to purpose. In the 1993 SNA, transactions between producers and the household sector are not sub-divided according to "kind of products" but functionally divided according to the "purpose" of the transaction.

2) Classifications of household consumption adjusted in accordance with the revision to the global standard "Classification of individual consumption according to purpose (COICOP 2018)"

3) COPNI: Classification of the purposes of non-profit institutions serving households.



## B. Recording Time and Evaluation

### ■ Recording Time

10.24 Final consumption expenditure of households should be recorded when the payables are created. This implies that the expenditure on a good is to be recorded at the time its ownership changes while expenditure on a service is recorded when the delivery of the service is completed. Non-monetary transactions are recorded when the goods involved are made available to the household. However, when a good is acquired under a hire purchase agreement, financial lease or a similar method of financing, the purchaser accepts the risks and rewards of ownership from the time the good is delivered. Even though there is no legal change of ownership at this point, it is assumed that there is a change of economic ownership.

### ■ Evaluation

10.25 Final consumption expenditure of households is recorded by the purchaser's price, including all of the producer's taxes. The purchaser's price is the amount that the buyer must pay to receive one unit of goods at the time and place chosen by the buyer. This includes any shipping charges that the buyer should pay. And due to market imperfections, if one household pays a different or discounted price in connection with a bulk or off-season purchase, that calculation is entered under actual price paid. The purchaser's price does not include any interest or service charges that may be added when the seller arranges for credit to be provided to the purchaser.

## C. Estimation Method in Reference Year

### ■ Final Consumption Expenditures in the Domestic Market

10.26 Final consumption expenditures in the domestic market include consumption by residents and non-residents, and are estimated with data from the Service Industry Survey, the Household Income & Expenditure Survey, and other sources.

10.27 Expenditures on most goods and services are estimated by using sales figures from the Service Industry Survey and input-output tables. To calculate expenditures at purchaser prices, sales taxes must be added to Service Industry Survey sales figures.

10.28 Goods like grain, tobacco, electricity, gas, water supply, and heat energy; and services like education, communication, health, housing rentals, financial services, and insurance are estimated by using data from related associations and production-side estimates of GDP.

#### **■ Direct Purchases Abroad by Resident Households and Direct Purchases in the Domestic Market by Non-resident Households**

10.29 Direct purchases abroad by resident households and direct purchases in the domestic market by non-resident households are compiled based on estimates indicated in the external transaction account. And those estimates are calculated from Balance of Payments statistics (e.g. travel services and credit card usage).

#### **■ Final Consumption Expenditure of NPISHs**

10.30 The final consumption expenditure of NPISHs is estimated by deducting commodity and non-commodity sales from the output of non-profit institutions as estimated from GDP using the production approach.

### **D. Estimation Method in Current Year**

#### **■ Final Consumption Expenditures in the Domestic Market**

10.31 The current year nominal value estimation method for final consumption expenditures in the domestic market is primarily the same as the reference year method. However, instead of the Service Industry Survey, the Whole and Retail Trade Survey and the Service Industry Activity Index, etc., are used.

10.32 The real value is estimated by dividing the 215 kinds of nominal value that exist under the COICOP classification system into related deflators such as CPI. These nominal and real values are added up by COICOP code and then the final consumption expenditures 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

10.33 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.

#### ■ Final Consumption Expenditure of NPISHs

10.34 Nominal and real value estimation methods for the final consumption expenditure of NPISHs are the same as those used for the reference year.

### E. Data Sources

10.35 Data for compiling private consumption expenditures are collected from the sources listed in Table III-10-3.

Table III-10-3 Private Consumption Expenditure Data Sources

Reference Material	Institution Responsible	Collection Period	Major Contents
Economic Census	Statistics Korea	Every 5 years	Service industry sales by sub-classes, sales ratio by consumers, etc.
Wholesale and Retail Trade Survey	Statistics Korea	Following year	Sales by industry for the wholesale and retail sectors
Household Income and Expenditure Survey	Statistics Korea	Quarterly	Household expenditures by item
Monthly Report of Retail Sales	Statistics Korea	Monthly	Retail sales index by item
Monthly Report on the Index of Services	Statistics Korea	Monthly	Service industry trends by industry
Automobile Statistics	Korea Automobile Manufacturers Association	Monthly	Number of domestic automobile sales
Food Grain Consumption Survey Report	Statistics Korea	Following year	Rate of change in grain consumption
IR of KT&G	KT&G	Quarterly	Domestic tobacco sales results
Status of Registrations of Imported Automobiles	Korea Automobile Importers & Distributors Association	Monthly	Number of imported and registered automobiles
Monthly Report on Major Electric Power Statistics	Korea Electric Power Corporation	Monthly	Results of electric power sales for household use

## 2.2. Government Consumption Expenditure

### A. Definition and Coverage

10.36 Within the national accounts, the government, as the producer of government services, is concurrently producer and consumer. In the 2008 SNA, the general government is the final consumer for its products – with the exception of sales proceeds it receives for the goods and services produced.

10.37 Government consumption can be divided into two primary components: 1) “expenditure executed” to supply public administration, maintain national defense, maintain law and order, maintain public health, and maintain other “free” collective

services paid by general taxes and other income; and 2) the offering of goods and services to individual households for free or at economically insignificant prices. These individual services mainly apply to medical treatment, health, education, etc.

10.38 The SNA recommends dividing expenditure into final consumption expenditure and actual final consumption to avoid ambiguity. Final consumption expenditure refers to the amount spent by the institutional sector on public-related goods and services; and actual final consumption refers to the value of all goods and services that are connected to meeting private needs and desires. The concept of government consumption is the same as that in the government final consumption expenditure. It includes the collective services offered to the whole of society and individual services offered to individual households. Government actual final consumption is the value obtained by deducting expenditures (individual services) from goods and services offered to individual households from government final consumption expenditure.

10.39 Government final consumption expenditure is the value obtained by deducting receipts from commodity and non-commodity sales from output produced by the government plus social security benefits in kind. Receipts from commodity sales are sales sold to enterprises with prices near to production costs. This includes licenses and commission fees, inspection fees, and revenues from air and port transportation. Receipts from non-commodity sales are primarily sales sold to households. This service generally is offered at the current cost and includes admission and tuition fees, parking fees, entrance fees, revenues from hospitals, etc.<sup>23)</sup>

- Government Final Consumption Expenditure  
 = Output (CT) - Receipts from commodity and non-commodity sales  
 + Social security benefits in kind

23) Using prices to separate commodities from non-commodities is unreliable. Consequently, sales to industry are labeled "commodities," and sales to households are labeled "non-commodities."

10.40 The reason receipts from commodity and non-commodity sales are deducted from output produced by the government when calculating government final consumption expenditure is that commodity and non-commodity sales are not services the government produces for self-consumption but are part of intermediate consumption and final consumption in enterprises and households. In short, within the national accounts, government consumption applies to the value of goods and services the government produces for self-consumption only.

10.41 Meanwhile, social security benefits in kind are goods and services offered by the government to individual households in the form of in kind transfers. The government purchases these goods and services in the market and offers them to households

## **B. Estimation Method in Reference Year**

10.42 As stated above, government consumption (government final consumption expenditure) is the value obtained by deducting receipts from commodity and non-commodity sales from output produced by the government and adding social security benefits in kind to output.

10.43 Government output is calculated by combining value added and intermediate consumption. Value added is measured as the sum of compensation of employees, consumption of fixed capital, and other taxes on production; and intermediate consumption is obtained by combining general operating expenses. Receipts from commodity and non-commodity sales are calculated sectorally by summing the revenues from relevant items attained from the report on settlements by central and local governments and from social security funds and public non-profit institutions.

10.44 Social security benefits in kind are estimated by deducting social security benefits paid in cash after calculating social security benefits through reported social security fund settlements. Social security benefits in kind include payments for health care from the National Health Insurance Corporation, payments for recuperation

from the Workmen's Accident Compensation Insurance, and expenditures for re-employment education from the Korea Labor Welfare Corporation. According to the revision, social security benefits in kind have been broadened to include payments for child care, government scholarships and related payments.

### C. Estimation Method in Current Year

10.45 The estimation method for government consumption in the current year is the same as that used for calculating it in the reference year.

10.46 As with government consumption, constant price output in the current year is equal to the constant price output for the general government, so the estimation methods are the same. Receipts from commodity and non-commodity sales at constant prices are calculated by dividing nominal data by the government's output deflator; and social security benefits in kind are calculated by dividing nominal social security benefits in kind by the private sector's deflators related to health and educational services.

### D. Data Sources

10.47 Data sources used to estimate government consumption in the reference year and current year are primarily the same as those used to estimate government output. However, data sources related to receipts from the sale of products and non-products and social security benefits in kind should be added. The data sources listed in Table III-10-4 are equal to those listed in Table III-9-29.

Table III-10-4 Government Consumption Expenditure Data Sources

Reference Material	Institution Responsible	Major Contents
Yearbook of Local Nontax Receipts	Ministry of Interior	Local government general accounts and special accounts nontax receipts
Report of Social Security Fund Settlements	National Health Insurance Service	Social security funds plus related benefits and contributions

### 3. Gross Capital Formation

#### 3.1. Gross Fixed Capital Formation

##### A. Definition and Coverage

10.48 Producers construct buildings and/or purchase machinery, vehicles and other equipment in order to maintain their production capacities and improve competitiveness. Such acquisitions of machinery and vehicles or construction of buildings are made from a medium and long-term viewpoint to sustain income sources. Tangible or intangible assets that are not exhausted during the relevant period but used repeatedly and continuously for production over many accounting periods (normally one year or longer) are called “fixed assets” or “capital goods.” In the SNA, the total value of a producer's net acquisition of fixed assets (acquisition less disposal), is called “gross fixed capital formation (GFCF)” or “gross fixed investment.”

10.49 Asset acquisition includes not only the purchase of new assets but also the acquisition of existing assets through purchasing, exchanging, transferring or self-producing assets. It also includes improvements in existing asset capacity and the accompanying costs related to transfers of ownership. Conversely, if existing fixed assets are sold by disposal, exchange and transfer, then gross fixed capital formation (GFCF) is calculated by the net fixed asset acquisition value (acquisition less disposals). In the case of asset acquisition by lease, the profit and risk from the asset is actually moved to the lessee, so it is included in GFCF.



10.50 Among non-financial assets, assets that are the objects of GFCF are confined to assets made through production processes. So tangible non-produced assets,<sup>24)</sup> such as land, mineral and energy resources, and non-cultivated biological resources cannot be calculated as GFCF. However, expenditures for capacity improvement, land enlargement, and soil deterioration prevention, and accompanying expenses such as commissions and taxes related to ownership transfers of non-produced assets, are included in GFCF.

## B. Classification

10.51 GFCF can be sub-classified into construction investment, facility investment, and intellectual property product investment by the type of capital good.

10.52 Firstly, the construction investment category is sub-classified into buildings and civil engineering.

10.53 Buildings are further classified into residential buildings and non-residential buildings. Residential buildings refer to single and multiple dwellings, including various types of buildings for residence such as boarding houses. Non-residential buildings include industrial buildings (such as warehouses and factories), commercial buildings, government office buildings, schools, hospitals, etc.

10.54 Civil engineering refers to structures including transportation-related social overhead capital (SOC) facilities, such as roads, railroads and subways, harbors, and other SOC facilities such as electric power, communication and water supply and sewage facilities.

10.55 Secondly, facility investment is sub-classified into two categories: transport equipment (automobiles, airplanes, ships and rolling stock) and machinery (various machines and equipment used for production facilities in industry). Livestock for

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24) These assets are necessary for producing goods and services, but they are assets that are not produced such as land, underground resources (coal, oil, natural gas, and metal and non-metal minerals) and forests and fields.

breeding, dairy cows for producing milk, and sheep for producing wool are also included in facility investment. In the 2008 SNA, the “weapons systems” category is newly included under facility investment and divided into “transport equipment” and “machinery,” accordingly.

10.56 Thirdly, intellectual property product investment is sub-classified into research and development (R&D), and other intellectual property products<sup>25)</sup> expected to be used for production for one year or more.

**Table III-10-5 Classification of Gross Fixed Capital Formation by Type of Capital Good**

Classification			Sub-classification
Construction Investment	Buildings	Residential buildings	Single and multiple dwelling buildings
		Non-residential buildings	Factories, warehouses, commercial buildings, government office buildings, schools, hospitals, etc.
	Civil engineering		Roads(including airfield runways), railroads, subways, harbors, Erosion control and river works, water supply and sewage facilities, agriculture and fishery engineering, city civil engineering, power facilities, chemical plants, etc.
Facility Investment	Transport equipment		Automobiles, aircraft, ships, rolling stock, etc.
	Machinery		General equipment, electrical and electronic equipment, precision machinery, other machinery equipment, breeding stock, dairy stock, etc.
Intellectual Property Product Investment	Research and development		Research and development(R&D)
	Other intellectual property products		Computer software and databases, Entertainment, literary and artistic originals, mineral exploration

## C. Record of Gross Fixed Capital Formation (GFCF)

### ■ Recording Time

10.57 According to the 2008 SNA, GFCF is recorded when a producer who intends to use a fixed asset for production receives ownership of the relevant asset.<sup>26)</sup>

25) Other intellectual property products include computer software and databases, entertainment, literary and artistic originals, and mineral exploration

26) Until ownership is transferred, assets are recorded as inventory.

10.58 In general, it takes a long period of time for buildings and structures to be completed. In cases where construction is carried out after conclusion of a purchase contract, ownership is regarded as being transferred in stages, so that the value of the output that is transferred at each stage is treated as purchaser's GFCF. In the case where ownership is not transferred, the structure is recorded as inventory.

## ■ Evaluation

10.59 GFCF is evaluated by the amount of net fixed assets acquisition, which includes the increase in the value of fixed assets made through production activities during the accounting period. In this case, the price of fixed assets is appraised by the purchaser's price that includes not only the price of the product itself but also the trade margin, expenses for transportation and establishment, and ownership transfer-related expenses (payment fees to engineers, technicians, architects, lawyers, and real estate brokers; ownership transfer-related taxes, etc.).

10.60 The purchaser's price means the price that the purchaser pays to acquire one unit of a good or service at a time and place chosen by the purchaser. The deductible value added tax is not included; however, transportation fees that the purchaser paid on top of the product price are included.

10.61 Thus when a used capital asset is traded, the transaction payment does not affect the GFCF of the national economy because it is offset between the acquiring enterprise and the relinquishing enterprise. But the costs of ownership transfer are added to the national economy's GFCF.

## D. Estimation Method in Reference Year

### ■ Construction Investment

10.62 The value of reference year construction investment is calculated using the value of output from construction activities, deducting the values of ordinary

maintenance and repairs, export and the change in construction inventories, and then adding accompanying costs.

10.63 Firstly, the baseline value for the assessment of output from construction activities is the value of construction completed, obtained from the Report on the Construction Survey conducted by Statistics Korea.

10.64 The value of investment in newly constructed buildings and structures is obtained by subtracting from the output the value of ordinary maintenance and repairs, exports and the change in construction inventories. The stock of construction inventories, such as unsold houses, and the value of construction investment are inversely related.

10.65 The purchaser's price-based value of construction investment is obtained by including accompanying costs. Accompanying costs include costs of ownership transfers in respect to newly constructed and existing buildings and structures, such as acquisition taxes and brokerage fees. Agency fees on sales of newly constructed buildings are also included. The value of accompanying costs is based on data from the tax statistics report and on data about the production-side output of the real estate-related services industry.

## ■ Facility Investment

10.66 Facility investment estimates basically follow the commodity flow method, which estimates the value of investment according to the disposal process of the produced commodity.

10.67 Facility investment can be sub-classified into domestic and import facilities. For domestic facilities, domestic supply by commodity is calculated by deducting the export value from the output value that is obtained from the Economic Census and related associations by commodity. Domestic final demand by commodity is then calculated by deducting the intermediate demand that is obtained from the domestic transaction table in input-output tables from domestic supply by commodity. This

domestic final demand is divided into consumption, fixed investment and changes in inventories. The ratio between consumption, fixed investment and changes in inventories is obtained from various materials, including input-output tables from the reference year.

10.68 In the case of import facilities, final import demand by commodity is calculated by deducting intermediate demand obtained from the import transaction table of input-output tables from the value of the import. Import facility investment can then be calculated by applying the fixed investment ratio of input-output tables.

10.69 But domestic and import facilities estimated in this way do not include accompanying registration and acquisition taxes, trade and transport margins, or other costs. Therefore, purchaser price-based facility investment can be estimated by adding the accompanying costs and trade and transport margins obtained from data compiled in government sectoral tax reports, margins reported in wholesale and retail industry estimation materials, and reports from other sources.

### ■ Intellectual Property Product Investment

10.70 The value of research and development investment is obtained utilizing data from the Survey of Research and Development in Korea<sup>27)</sup> conducted by the Korea Institute of S&T Evaluation and Planning. Production values of other intellectual property products are obtained from data gathered by related associations, Statistics Korea, etc.

10.71 The value of the investment is obtained by utilizing the commodity flow method after calculating the final demand value by applying the intermediate consumption ratio from input-output tables to domestic production and import value. Purchaser price-based intellectual property product investment is then obtained by adding taxes on products and trade and transport margins.

27) This survey is designed according to the "OECD Proposed Standard Practice for Surveys of Research and Experimental Development: Frascati Manual," and survey data is modified in accordance with the SNA.

## E. Estimation Method in Current Year

### ■ Construction Investment

10.72 Construction investment at current prices for the current year is estimated in the same way as the reference year. The value of construction investment in real terms is also estimated by deducting the real values of ordinary maintenance and repairs, exports, and the change in construction inventories from the real value of output from construction activities, and adding real accompanying costs. Each of these real values is obtained by deflating values at current prices using PPI, the wage index, and other relevant price indices.

### ■ Facility Investment

10.73 Current year facility investment is also estimated by using the commodity flow method, as with reference year facility investment. It is estimated by multiplying the previous year's facility investment figure by the current year's year-on-year rate of increase in supply by facility asset.

10.74 Domestic facility investment is estimated by using the year-on-year rate of increase in domestic supply that is calculated by deducting the export amount by commodity from the shipment amount by commodity. The shipment data is obtained from the Mining and Manufacturing Survey of Statistics Korea and other reports by related associations. The export amount is obtained from Korea Customs Service statistics. Import facilities are estimated by using the year-on-year rate of increase in import as indicated in Korea Customs Office statistics.

10.75 By adding the accompanying cost and trade and transport margins to these estimated investment values, the final facility investment estimates are obtained.

10.76 The real value is calculated by dividing nominal value by PPI, IPI, and relevant price indices.

## ■ Intellectual Property Product Investment

10.77 Current year intellectual property product investment is estimated in the same way as in the reference year. Investment in some products is estimated by multiplying the previous year's investment figure by the year-on-year rate of increase in domestic supply and import figures. Firstly, nominal value is estimated and then the real value is calculated by dividing the nominal value by the relevant price indices.

## F. Gross Fixed Capital Formation by Kind of Economic Activity

10.78 GFCF by kind of economic activity is estimated by distributing the total GFCF value by type of capital goods according to economic activity. The weights which are used to distribute it by kind of economic activity can be obtained from the Mining and Manufacturing Survey, Construction Survey, the financial statements of corporations, etc.

## G. Data Sources

10.79 The data sources needed to compile GFCF are given in Table III -10-6.

Table III-10-6 Gross Fixed Capital Formation Data Sources

Classification	Reference Material	Institution Responsible	Major Contents
Construction Investment	Construction Survey	Statistics Korea	Construction orders received and the value of construction completed
	Service Industry Survey	Statistics Korea	Information of real estate-related service industry
	Statistics on Building Permission and Commencement Works	Ministry of Land, Infrastructure and Transport	Building permission and commencement works
	Input-Output Tables	Bank of Korea	Intermediate demand ratio, investment ratio
	Government Settlement Report	Ministry of Economy and Finance; Ministry of the Interior and Safety	Budget spending of governments by economic purpose
	Producer Price Index	Bank of Korea	Price index by commodity
	Export & Import Price Index	Bank of Korea	Price index by commodity
Facility Investment	Economic Census, Mining and Manufacturing Survey	Statistics Korea	Output, shipment value by commodity
	Customs Clearance-based Export and Import	Korea Customs Service	Export/import volume and value
	Monthly Automobile Statistics	Korea Automobile Manufacturers Association	Basic data on automobile investment
	Aircraft Registration Status	Ministry of Land, Infrastructure and Transport	Aircraft registration
	Input-Output Tables	Bank of Korea	Intermediate demand ratio, investment ratio
	Producer Price Index	Bank of Korea	Price index by commodity
	Export & Import Price Index	Bank of Korea	Price index by commodity
Intellectual Property Product Investment	Survey of Research and Development in Korea	Korea Institute of S&T Evaluation and Planning	Research and development expenditure by sector
	Information & Communication Technology Survey	Ministry of Science and ICT	Software production
	Economic Census, Service Industry Survey	Statistics Korea	Software and other industry production statistics
	Content Industry Statistics	Ministry of Culture, Sports and Tourism	Expenditure related to entertainment, literary and artistic original works
	Status & Insight : Korean Film Industry	Korean Film Council	Film production
	Foreign Exchange Receipts and Payments	Bank of Korea	Export/import value of intellectual property products



### 3.2. Changes in Inventories and Acquisitions Less Disposal of Valuables

#### A. Definition and Coverage

10.80 Inventories in the economic account refer to goods which each industry (producer) possesses prior to further processing (i.e. production) or sale at a certain time.

10.81 Gross capital formation is measured by the total GFCF value, and changes in inventories and acquisitions less disposal of valuables. Changes in inventories are included because inventories are stored for future consumption.

10.82 Changes in inventories take place during certain time periods. In other words, inventories are known as stock variables, and changes in inventories – i.e. stock-building – are considered flow variables. The main components of inventories are as follows: materials and supplies, works-in-progress, finished goods, and goods for resale. They are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period.

10.83 Changes in inventories cover not only inventories possessed by producers, but also changes in inventories in the process of distribution, changes in forest tree growth amounts in artificial forestation areas, and changes in unsold houses whose ownership has not been transferred. However, changes in natural assets where ownership cannot be exercised and changes in inventories possessed by consumers (households) are excluded.

10.84 Inventory changes are classified by agricultural and non-agricultural inventories, with the latter subdivided into materials and supplies, works-in-progress, finished goods, and goods for resale.

10.85 Acquisitions less disposals of valuables (precious metals and stones, antiques and other art objects, other valuables) are items that are not used primarily for

production or consumption and are expected to appreciate or at least not to decline in real value, that do not deteriorate over time in normal conditions, and that are acquired and held primarily as stores of value.

10.86 Due to these characteristics, it is difficult to treat them as GFCF or intermediate consumption. In the 2008 SNA, it is recommended that they are recorded in the capital account.

## **B. Estimation Method**

10.87 Changes in book value of mining and manufacturing inventories are estimated using the Service Industry Census, the Mining and Manufacturing Survey, financial statements from the National Tax Service, and others.

10.88 Real changes in inventories are estimated by deducting the real inventory level at the beginning of the period (inventory book values divided by price index at the beginning of the period) from the real inventory level at the end of the period (inventory book value divided by price index at the end of the period).

10.89 Different price indices are used depending on the types of inventories. PPI is used for finished goods and works-in-progress inventories in the mining and manufacturing industries. PPI and CPI are used for inventories of goods for resale in the wholesale and retail industries. The housing price index is used for housing inventory in the construction sector. PPI and the import price index are used for material inventory.

10.90 Holding gains (or losses) for inventory value adjustment are calculated by subtracting changes in value at current prices (based on National Accounts standards) from changes in book value (based on business accounting standards).

10.91 Inventory valuation adjustment is required to accurately reflect current economic status. It is assumed that many enterprises in Korea use first-in first-out

(FIFO), which implies goods are withdrawn in the same order as they are entered. But an exception is crude oil since its price is so volatile; it is therefore estimated by the average cost method.

10.92 Inventories of crude oil are directly estimated using information from the Korea National Oil Corporation. Inventories of buildings are estimated by obtaining data on unsold buildings.

## Box III-10-2

### Estimation of Annual Changes in Inventories Using Corporate Accounting Data (Example)

#### <Conditions>

##### ▶ Value of Inventory Level

- Inventory at the beginning of the period (Dec. 31, 2018) 1,000
- Inventory at the end of the period (Dec. 31, 2019) 1,500

##### ▶ Price Index

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	94.5	95.5	96.5	97.5	98.5	99.5	100.5	101.5	102.5	103.5	104.5	105.5
2019	106.5	107.5	108.5	109.5	110.5	111.5	112.5	113.5	114.5	115.5	116.5	117.5

#### 1. Changes in book value

Inventory on Dec. 31, 2019 (1,500) – Inventory on Dec. 31, 2018 (1,000) = 500

#### 2. Changes in real value

(Inventory on Dec. 31, 2019/price index for Dec. 2019)  
 – (Inventory on Dec. 31, 2018/price index of Dec. 2018)  
 =  $(1,500/1.175) - (1,000/1.055) = 1,276.6 - 947.9 = 328.7$

#### 3. Changes in inventories at current price

Changes in real value (328.7) × Average price index for the year (1.12) = 368.1

\* Average price index for 2019 (same monthly weight)

#### 4. Holding gains/losses

Changes in book value (500) – Changes in inventories at current price (368.1) = 131.9

## C. Data Sources

Table III-10-7 Changes in Inventories Data Sources

Reference Material	Institution Responsible	Major Contents
Financial Statements	National Tax Service, Korea Information Service	Year-end inventories for corporations, listed by industry and type
Report on Mining and Manufacturing Survey	Statistics Korea	Year-end inventories for corporations registered with the NTS by industry and type
Producer Product Inventory Index	Statistics Korea	Inventory index of finished goods by item from mining and manufacturing establishments
Petroleum Supply and Demand Statistics	Korea National Oil Corporation	Crude oil inventories
Newly Built Housing Unsold	Ministry of Land, Infrastructure and Transport	Unsold housing inventories
Automobile Statistics	Korea Automobile Manufacturing Association	Automobile inventories
Iron & Steel Statistics	Korea Iron & Steel Association	Iron & steel inventories

## 4. Exports and Imports of Goods and Services

### 4.1. Exports and Imports of Goods

#### A. Definition and Coverage

10.93 Goods covers general merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and non-monetary gold.

10.94 General merchandise refers to most goods accompanied by change of ownership in the middle of exporting or importing. Goods for processing include goods that are exported or imported for processing across the border and that are calculated on a gross basis before and after processing.

10.95 The category of repairs on goods covers repair activity that involves work performed by residents on movable goods owned by nonresidents (or vice versa).

Examples of such goods are ships, aircraft, and other transportation equipment. This is differentiated from goods for processing in that it is counted only for the repair value.

10.96 Goods procured in ports cover goods (e.g., fuels, provisions, stores, and supplies) procured by resident or nonresident carriers abroad or in the compiling economy.

10.97 Non-monetary gold covers exports and imports of all gold not held as reserve assets (monetary gold) by the authorities. Non-monetary gold is treated as any other commodity and, when feasible, is subdivided into gold held as a store of value and other (industrial) gold.

## **B. Estimation Method in Reference Year**

10.98 The price of exported or imported goods can be evaluated on an FOB basis and recorded when its ownership is transferred to nonresidents (or vice versa). Trade statistics are needed to convert on a change of ownership basis as recommended by the SNA because export and import data are discerned at the time goods clear customs. This entails that re-export and re-import are extracted from customs data respectively and smuggled goods should be added (coverage adjustment). In addition, some customs clearance statistics such as ships exports should be calculated by adding or subtracting in accordance with the transfer of ownership (timing adjustment).

10.99 Customs clearance-based import statistics should be converted to a Free on Board (FOB) basis by deducting freight and insurance charges, which should be counted as a service import if it is a transaction between residents and nonresidents.

10.100 The average exchange rate weighted by the daily trade value is applied to the dollar-denominated nominal export import data so as to convert them to the won-denominated data.

### C. Estimation Method in Current Year

10.100 Current-year methodology is primarily the same as that used for reference-year calculations.

10.101 Some real export or import data can be extrapolated for some items through volume records kept in customs clearance statistics, i.e. mineral fuel, energy, steel and iron whose quality rarely varies (volume extrapolation method). Alternatively, real data can be derived by dividing nominal export or import by each export or import price index, which is established especially for machinery, electronic products and motor vehicles (price deflation method). In addition, the nominal value of aircraft is converted into real value through the trade partner's product price indices.

### D. Data Sources

Table III-10-8 Export and Import of Goods Data Sources

Reference Material	Institution Responsible	Major Contents
Custom clearance statistics	Korea Customs Service	Amounts of exports and imports of goods by commodity types
Transactions between North and South Korea	Korea Customs Service	Amounts of transactions on by commodity types
Balance of payment (BOP)	The Bank of Korea	Exports and imports of goods and services by volume, compiled in accordance with BOP
Exported and imported goods prices	The Bank of Korea	Exported and imported goods prices by commodity types

## 4.2. Exports and Imports of Services

### A. Definition and Coverage

10.102 The service sector includes transportation and communication, insurance, miscellaneous services, direct purchases in domestic market (abroad) by non-residents (residents) household, and by extraterritorial bodies (government).

## ■ Transportation and Communication Services

10.103 Transportation services cover all transportation services that are performed by residents of one economy for those of another and that involve the carriage of passengers, the movement of goods, rentals of carriers with crew (by sea, air, land, internal waterways, or pipelines) and related supporting and auxiliary services.

10.104 Communications services cover transactions between residents and nonresidents in international communications be it postal and courier services, telecommunications, or other types of transmission. Related repair and maintenance are also included.

## ■ Insurance Services

10.105 Insurance services encompass the provision of various types of insurance to nonresidents by resident insurance enterprises, and vice versa. Such services cover freight insurance, other types of direct insurance (such as life, non-life insurance) and reinsurance.

## ■ Miscellaneous Services

10.106 Miscellaneous services cover construction; financial; computer and information services; royalties and license fees; other business services; and personal, cultural and recreational services.

## ■ Construction Services

10.107 Construction services cover work performed on construction projects and installations by employees of an enterprise in locations outside the economic territory of the enterprise. Projects carried out by foreign subsidiaries or branches of enterprises (direct investors) and certain site offices are not included because such projects are part of the production of the host economy.



### ■ Financial Services

10.108 Financial services cover financial intermediary and auxiliary services conducted between residents and nonresidents. Included are intermediary service fees, such as those associated with letters of credit, bankers' acceptances, lines of credit, financial leasing, and foreign exchange transactions. Also included are commissions and other fees related to transactions in securities-brokerage, placements of issues, underwriting and other hedging instruments.

### ■ Computer and Information Services

10.109 Computer and information services cover computer data and news-related service transactions between residents and nonresidents. Included are data bases (such as development, storage, and online time series) and maintenance and repair of computers and peripheral equipment.

### ■ Royalties and License Fees

10.110 Royalties and license fees cover the exchange of payments and receipts between residents and nonresidents for the authorized use of intangible, non-produced, non-financial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, franchises, etc.) and for the use of produced originals or prototypes (such as manuscripts and films).

### ■ Other Business Services

10.111 Other business services cover various categories, other than those previously defined, of service transactions between residents and nonresidents. Merchanting and other trade-related services, operating leases, miscellaneous business, professional and technical services are included in this category.

## ■ Cultural and Recreational Services

10.112 Cultural and recreational services cover expenditures related to the production of films or videos, radio and television programs, and musical recordings; the operation of libraries, museums and other cultural venues; and sports-related activities.

### ■ Direct Purchases in Domestic Market (Abroad) by Non-resident (Resident) Households

10.113 Direct Purchases in Domestic Market (Abroad) by Non-resident (Resident) Households in the national accounts primarily correspond to goods and services acquired within an economy by recreational travelers during visits of less than one year and recorded under the Balance of Payments. International students and patients who remain residents are excluded from this category even though the total period of residence is over one year. Business travel is not included in this category. Instead, the value spent on business travel is treated as intermediate inputs, thus classified as miscellaneous services item.

### ■ Direct Purchases in Domestic Market (Abroad) by Extraterritorial Bodies (Government)

10.114 Direct Purchases in Domestic Market (Abroad) by Extraterritorial Bodies (Government) relate to the government services in the Balance of Payments. Included are all transactions by non-resident embassies, consulates, military units, and defense agencies located within an economy. These transactions comprise expenditures on goods and services, such as office supplies, furnishings, utilities, operation and maintenance of official vehicles, and official entertainment.

## B. Estimation Method

10.115 The respective values of exports and imports of services are based on

receipts and payments in the Balance of Payments. The Export (Import) of Services-weighted average exchange rate is used to convert the dollar-denominated values into Korean won.

## Chapter 11: Income Approach

### 1. Outline of Income Approach

11.1 The income account reveals how value added derived from the production account is distributed and used by institutional units. The account consists of the primary and secondary distributions of the income account, the redistribution of income in kind account, and the use of income account.

11.2 The primary distribution of income account shows how gross value added is distributed to labor, capital, and government, and flows to and from the rest-of-the-world. This account contains the generation of income account and the allocation of primary income account.

11.3 The secondary distribution of income account covers redistribution of income through current transfers between each institutional sector. The redistribution of income in kind account shows transfers in kind, such as public education or health services provided to households by the government or NPISHs. The use of income account delineates how each institutional sector uses their disposable income for final consumption expenditures and saving.

### 2. Concept of Income Components

11.4 The income account contains non-financial corporations, financial corporations, general government, households and NPISHs, and the rest-of-the-world as institutional sectors.

#### A. Compensation of employees

11.5 Compensation of employees is defined as the total remuneration in cash or in kind payable by an enterprise to an employee in return for work performed during the accounting period. The unpaid voluntary workers of unincorporated enterprises

owned by a member of the workers' own household are excluded from the count. Compensation of employees is composed of wages and salaries in cash or in kind and the employer's social contributions.

11.6 Employers' social contributions consist of two types – employers' actual contributions to social insurance schemes; and employers' imputed contributions. First, the actual contributions by employers to social insurance schemes are social contributions payable by employers to social security schemes or other employment-related schemes to secure social benefits for their employees. Second, in some situations where employers provide non-pension benefits themselves directly to their employees or family members without involving an insurance enterprise or autonomous pension fund or special fund, these remunerations shall be imputed for such employees equal in value to the amount of social contributions.

11.7 As employers' actual social contributions are made for the benefit of their employees, that amount is first recorded in the generation of income account as a component of compensation of employees, and then recorded in the secondary distribution of income account as being transferred by households to social security funds or other employment-related social insurance schemes, as the case may be.

11.8 The amounts of employers' imputed contributions ought to be based on the actuarial schemes that insurance companies determine the level of premiums charged for similar insurance contracts. As is the case with the employers' actual social contributions, this imputed social contribution is also first recorded in the generation of income account as a component of compensation of employees, and then recorded in the secondary distribution of income account as being paid to employers by employees.

## **B. Operating Surplus and Mixed Income**

11.9 Operating surplus and mixed income are surpluses that are made in the process of production and are also defined as income prior to deducting explicit

and implicit interest or rent on financial assets, lands, and other non-produced assets needed in production activities. In addition, operating surplus and mixed income are the balancing items of the income generation account and are calculated by deducting compensation of employees and net taxes on production and import from net value added. Mixed income is accrued to households in which the owners of unincorporated enterprises or members of the same household may contribute unpaid labor inputs. Because mixed income implicitly contains an element of remuneration for work done by the owner or other members of the household, it cannot be separately identified from the return to the owner as entrepreneur.

### C. Property Income

11.10 Property income is defined as a reward for lending financial or tangible non-produced assets. Property income accrues when the owners of financial assets and natural resources put them at the disposal of other institutional units of production. The income payable for the use of financial assets is called “investment income,” while the income payable for the use of a natural resource is referred to as “rent.” Property incomes are divided by interest, dividends, and withdrawals from income of quasi-corporations, reinvested earnings on foreign direct investment, and investment income disbursements and rent.

11.11 Interest is a form of income that is receivable by the owners of certain kinds of financial assets – which include deposits, debt securities, loans, and other accounts receivable – in return for putting the financial asset at the disposal of another institutional sector. And the amounts of interest in the income account, paid by borrowers to financial corporations, are less than actual payments by the estimated values of the charges payable (FISIM), while the amounts of interest in the income account, receivable by depositors to financial corporations, are higher than actual receipts by the amount of the service charge payable (FISIM).

11.12 Dividends are a form of investment income to which shareholders become entitled as a result of placing funds at the disposal of a corporation. Although

dividends may occasionally take the form of an issue of shares, this form is not included in the dividends that the SNA defines, because the issues of bonus shares simply represent a reclassification between own funds, reserves, and undistributed profits.

11.13 Withdrawal of income from a quasi-corporation consists of that part of distributable income that the owner withdraws from the quasi-corporation, analogous to the income withdrawn from corporations by paying out dividends to their shareholders. Withdrawals of income from a quasi-corporation are calculated by deducting from operating surplus any interest, investment income disbursements and rent payable, and adding property incomes receivable, not including withdrawals of funds realized by the sale or disposal of the quasi-corporation's assets, such as the sale of inventories, fixed assets, land or other non-produced assets.

11.14 Reinvested earnings on foreign direct investment, as imputed retained earnings, are equal to the earnings arising from residents' foreign direct investment or non-residents' domestic direct investment attributable to investment fund shareholders, less the dividends payable or withdrawal of income from the corporation or quasi-corporation. Reinvested earnings are treated as if they were distributed and remitted to foreign direct investors in proportion to their ownership of the equity of the enterprise and then reinvested by them by means of additions to equity in the financial account.

11.15 Investment income on technical reserves and pension entitlements, such as interests or dividends, is treated as income attributable to the policyholders.

11.16 Rent is the income receivable by owners of natural resources leased to other units. The SNA demonstrates the distinction between rent and rentals, with rent considered a form of property income and rentals treated as sales or purchases of services. The Bank of Korea currently estimates the rent on land only.

## **D. Taxes Less Subsidies on Production and Imports**

11.17 Taxes on production and imports are taxes that are levied on the production, sale and use activities of goods and services. Subsidies on production and imports are one-way current transfers from government to enterprises without a corresponding transaction in proportion to the quantity or value of goods and services produced or imported.

## **E. Social Contributions**

11.18 Social contributions are actual or imputed social contributions paid by employers or employees to sustain social insurance schemes such as social security funds. Social contributions consist of employers' actual and imputed social contributions, and households' social contributions. Actual social contribution in Korea includes national pension, health insurance, unemployment insurance, industrial accident insurance, government employees' pension, military personnel pension, teachers' pension, and retirement pension. And imputed social contributions in Korea include retirement pay and other benefits, etc.

## **F. Social Benefits**

11.19 Social benefits are current transfers received by households provided in certain situations, such as in cases of sickness, unemployment or retirement. They are divided into social security benefits in cash, other social insurance benefits, and social assistance benefits in cash.

11.20 Social security benefits in cash are social insurance benefits payable in cash to households by social security funds. The benefits are divided between pension (national pension) and non-pension (unemployment insurance, industrial accident insurance) benefits. Other social insurance benefits are social benefits payable by social insurance schemes other than social security to contributors to the schemes, their dependents or survivors. The benefits are divided between pensions (government



employees' pension, military personnel pension, teachers' pension, and retirement pension) and other benefits (retirement pay, etc.). Social assistance benefits in cash are current transfers payable to households by the government sector to meet the same needs as social insurance benefits but which are not made under a social insurance scheme requiring participation usually by means of social contributions.

11.21 Meanwhile, health insurance, a social contribution, is treated as a social transfer in kind provided to households by the general government.

## **G. Other Current Transfers**

11.22 Other transfers consist of all current transfers between resident institutional units, or between resident and non-resident units, other than current taxes on income, wealth, etc., social contributions and benefits and social benefits in kind, and other miscellaneous current transfers.

11.23 Non-life insurance policies provide coverage against various events or accidents resulting in damage to goods or property or harm to persons as a result of natural or human causes (e.g. fires, floods, accidents, sickness, etc.). Insurance policyholders pay premiums to obtain insurance coverage during the accounting period.

11.24 Service charges are provided to the insurance corporation by insurance policyholders, and net insurance premiums are insurance policyholders' shares of the amounts payable to them by the insurance corporation for settlement of damages. Therefore, service charges constitute purchases of services by the policyholders and are recorded as intermediate or final consumption, as appropriate. Net non-life insurance premiums constitute current transfers and are recorded in the secondary distribution of income account. Non-life claims are also recorded as current transfers to policyholders.

11.25 Other current transfers not elsewhere classified consist of current transfers

other than insurance-related premiums and claims, current transfers within the general government and current international cooperation, fines and penalties, current transfers to NPISHs (membership dues, subscriptions, voluntary donations, etc.), current transfers between households, and compensation payments.

## **H. Social Transfers in Kind**

11.26 Social transfers in kind are defined as goods and services that the government or NPISHs provide households as a form of transfer in kind.

## **I. Balance of Primary Income**

11.27 Primary income is income that accrues to institutional units as a consequence of their involvement in the processes of production or ownership of assets that may be needed for the purpose of production. Balance of primary income is calculated by summing compensation of employees, operating surplus, taxes less subsidies on production and import, and net property income.

## **J. Disposable Income and Adjusted Disposable Income**

11.28 Disposable income is defined as income available for consumption or investment expenditure activities per institutional unit. Adjusted disposable income is calculated to add social transfers in kind to disposable income.

## **K. Adjustment for the Change in Net Equity of Households in Pension Funds**

11.29 Because private pension fund reserves are a collective possession of households, pension benefits and payments should be regarded as the acquisition and disposal of financial assets. But these are recorded as current transfers to avoid confusion caused by the different recording manner used for public pension funds. So to calculate savings correctly, these should be adjusted to household savings.

## L. Savings

11.30 Savings are calculated to deduce final consumption expenditures from disposable income and serve as a source of future consumption or investment.

## 3. Estimation Method

### A. Generation of Income Account

11.31 Compensation of employees, operating surplus, other taxes on production, other subsidies on production, and consumption of fixed capital, resulting from the production account, are all recorded in the uses of each institutional sector. Gross domestic product at basic prices is recorded in the resources of each institutional sector. However, taxes less subsidies on products is only recorded in the total economy sector, not the separate institutional sector.

### B. Allocation of Primary Income Account

11.32 Compensation of employees from the production account and net compensation of employees from the rest-of-the-world account are recorded in the household and NPISHs sector, while the uses and resources for the rest-of-the-world come from the external transaction account.

11.33 The total operating surplus generated in the production account is divided into the sources of each institutional sector. The data for distribution come from financial statements by business type, provided by the National Tax Service (NTS).

11.34 Taxes on production and imports and subsidies come from the production account and constitute a source for government expenditure.

11.35 Data for property income come from NTS' financial statements by business type, the final accounts provided by financial corporations, financial statement

analyses, estimates from the government account, and estimates from the external transaction account, etc.

## **C. Secondary Distribution of Income Account**

### **1) Current Taxes on Income, Wealth, etc.**

11.36 Current taxes on income, wealth, etc., are derived from the government section and constitute sources of the government sector and are divided into the uses of other institutional sectors.

### **2) Social Contributions**

11.37 Social contributions related to the national pension, health insurance, unemployment insurance, industrial accident insurance, government employees' pension, military personnel pension, and teachers' pension are considered transactions between the government and the household and NPISHs sector, and are recorded as resources of the government and uses of the household and NPISH sector. Social contributions related to retirement pension are considered transactions between financial corporations and the household and NPISHs sector, and are recorded as sources of financial corporations and as uses of the household and NPISHs sector based on data from the Financial Supervisory Service. Data for employers' imputed social contributions derive from NTS and estimates from the government account.

### **3) Social Benefits**

11.38 Social security benefits in cash come from the government account and are recorded as uses in the government sector and as resources of the household and NPISHs sector.

11.39 Other social insurance benefits come from the government account and

retirement pension data.

11.40 Social assistance benefits in cash are compiled by classifying government financial reports and are recorded as uses of the government sector and resources of the household and NPISHs sector.

#### **4) Other Current Transfers**

11.41 Net non-life insurance premiums and claims come from the annual bulletins of insurance and so on. The total amount is divided into each institutional sector referring to the related insurance type: i.e. fire, automobile, marine, guarantee, casualty insurance, etc. Data from the government account and external transaction account are also used for each sector.

11.42 Other current transfers n.e.c. related to residents are estimated by using data from financial statements by business type (from NTS), the household survey (from Statistics Korea), and estimated data from the government account.

#### **C. Redistribution of Income in Kind Account**

11.43 Government consumption for health, recreation, culture and religion, education and social protection are accounted for as social transfers in kind and recorded as uses of the government sector and as resources of the household and NPISHs sector.

11.44 Consumption by NPISHs is considered social transfers in kind by NPISHs and is recorded as uses and resources of the household and NPISHs sector.

#### **D. Uses of the Income Account**

11.45 Final consumption of the government and household and NPISHs sectors come from the government account and private consumption expenditure,

respectively. Actual consumption of the government and household and NPISHs sectors is calculated by adjusting social transfers in kind in final consumption. Adjustments for the change in net equity of households in pension funds is the difference between social contributions and benefits.

## 4. Data Sources

The primary data sources for the income account are listed in the table below.

Table III-11-1 Income Account Data Sources

Reference Materials	Institution Responsible
Consolidated Accounts for the Nation, Product Accounts by Institutional Sectors, External Transactions, estimates from government account, estimates from finance & insurance and real estate & leasing industries	Bank of Korea
Financial statement analyses	Bank of Korea
Flow of funds (Financial assets and liabilities)	Bank of Korea
Financial statements (Corporations and individual businesses)	National Tax Service
Statistical Yearbook	National Tax Service
Financial statements (life and non-life insurance corporations)	Insurance Corporations, etc.
Population and Housing Census, Household Survey, Farm/Fishery Household Economy Survey, Census of Agriculture, Forestry and Fisheries, Transportation Survey, Construction Survey	Statistics Korea
Annual bulletins of property insurance	Korea Insurance Development Institute
Balance sheets (Financial corporations, retirement pension)	Financial Supervisory Service

# IV. Tables and Principal Indicators

- Chapter 12 Overview
- Chapter 13 Consolidated Accounts
- Chapter 14 Sectoral Accounts
- Chapter 15 Public Sector Accounts
- Chapter 16 Supporting Tables





## Chapter 12: Overview

12.1 The Bank of Korea officially announces four types of sequential national income statistics: “advance” and “preliminary” quarterly estimates, and “preliminary” and “final” annual estimates. The “advance” quarterly estimates list the real growth rate, real value, and real increase rate of economic activities and expenditure components within 28 days (4 weeks) of the quarter’s end. The “preliminary” quarterly estimates provide more detailed analysis, e.g. nominal value of economic activities and expenditure components, GNI, and savings and investment ratios, within 70 days of the end of the quarter. Various consolidated accounts, sectoral accounts, and supporting tables are published in the “preliminary” and “final” annual estimates, which are released around 6 months after the covered year ends and 6 months after the year following it ends, respectively.

12.2 Also, national income statistics are classified into four types by form and content of statistics tables: consolidated accounts, sectoral accounts, public sector accounts, and supporting tables.

12.3 The five consolidated accounts reveal most major aggregates and all transactions regarding production, income, capital, finance, and foreign trade. The gross domestic product and expenditure, national disposal income and its appropriation, capital transactions, financial transactions, and external transactions accounts are all consolidated accounts recorded only at current prices.

12.4 The sectoral accounts record transactions above consolidated accounts for each institutional sector: non-financial corporations, financial corporations, general government, households and NPISHs, and the rest-of-the-world. They comprise the production, income, capital transactions, and financial transactions accounts and are recorded only at current prices. Sectoral accounts for the external transactions account are not compiled.

12.5 The public sector account shows economic activities by public sector, which

includes both general government and public corporations. The public sector account is constructed according to a systemic framework. It includes the production, income, and capital transactions accounts. Total revenue and total expenditure of the general government and the public sector are compiled and recorded only at current prices.

12.6 The supporting tables include detailed, economically valuable data which are worth analyzing but not suitable for tabulating in accounting forms. They supplement the consolidated and sectoral accounts by defining transactions by sector, purpose, and type. The Bank of Korea publishes 16 supporting tables.

12.7 Table IV-12-1 shows the corresponding release details and compilation frequencies. The detailed methods and the main indicators derived from the tables are explained in the chapters that follow.

Table IV-12-1 Release Schedule of Tables

Name of Table	Compilation Frequency			
	Quarterly <sup>1)</sup> (advance)	Quarterly (preliminary)	Annual (preliminary)	Annual (final)
[Consolidated Accounts]				
• Gross Domestic Product and Expenditure			○	○
• National Disposable Income and its Appropriation			○	○
• Capital Transactions		○	○	○
• Financial Transactions <sup>2)</sup>			○	○
• External Transactions			○	○
[Sectoral Accounts]				
• Product Accounts by Institutional Sectors				○
• Income Accounts by Institutional Sectors			○	○
• Capital Accounts by Institutional Sectors				○
• Financial Accounts by Institutional Sectors <sup>2)</sup>		○	○	○
[Public Sector Accounts]				
• General Government Total Revenue and Total Expenditure			○	○
• Public Sector Total Revenue and Total Expenditure				○

[Supporting Tables]				
• Gross Domestic Product by Kinds of Economic Activities and Gross National Income	○ <sup>3)</sup>	○	○	○
• Expenditure on Gross Domestic Product	○	○	○	○
• Gross Value Added and Factor Income by Kinds of Economic Activities				○
• National Income and National Disposable Income			○	○
• Gross Capital Formation by Sector and Type of Capital Goods		○	○	○
• Gross Fixed Capital Formation by Kinds of Economic Activities				○
• Gross Fixed Capital Formation by Kinds of Economic Activities and Type of Capital Goods				○
• Facilities investments by investment Kinds of Economic Activities				○
• Final Consumption Expenditure of Households by Purpose		○	○	○
• Final Consumption Expenditure of Households by Type		○	○	○
• Final Consumption Expenditure of Non-profit Institutions Serving Households by Purpose			○	○
• Final Consumption Expenditure of Non-profit Institutions Serving Households According to Cost-composition and Purpose				○
• General Government Final Consumption Expenditure by Function				○
• General Government Total Expenditure by Function				○
• External Transactions (Current Transactions, Capital and Financial Transactions)			○	○
• Gross Savings and Gross Investments		○	○	○

Notes: 1) Compiled only at real value.

2) Financial transactions accounts are published separately in flow of funds statistics.

3) Gross National Income (GNI) is not calculated for advance estimates.

## Chapter 13: Consolidated Accounts

### 1. Gross Domestic Product and Expenditure Account

13.1 The gross domestic product and expenditure account is the starting point for the sequence of consolidated accounts, representing the composition of value added generated from the domestic production process and disposal of final products.

13.2 As illustrated in Table IV-13-1, the left column of the account records value added from domestic production under distribution items, which consist of compensation of employees, operating surplus, consumption of fixed capital, and taxes on production and imports (less subsidies). In the right column of the account, the expenditure components of GDP are listed, e.g. private and government final consumption; gross fixed capital formation; changes in inventories and acquisitions less disposals of valuables; and exports and imports of goods and services.

13.3 Although gross domestic production and its expenditures should be theoretically balanced, in practice a statistical discrepancy could appear as a result of using different data sources and compilation methods. This discrepancy is recorded in the right column of the account. GNI at market prices is calculated by adding factor income receivable from abroad to GDP (and deducting factor income payable abroad). Though GNI is included in this account, it is treated as an off-balance item.

13.4 From the gross domestic product and expenditure account, various economic indicators including current GDP (which means the size of an economy), GNI per capita, etc., are obtained on a yearly basis. These indicators provide a useful tool for measuring the economic status of a country and the living standards of its people. They also give a useful basis for international comparison as the values are often expressed in US dollars.

13.5 For example, the World Bank lists the relative size of economies, according

to the Atlas method.<sup>28)</sup> In the World Bank's 2018 rankings, Korea ranked 10th in the world in terms of economic scale, and ninth in terms of GNI per capita among 57 countries with a population larger than 20 million.

13.6 Although GNI per capita is useful to measure and compare living standards of people across countries, it has some flaws: GNI per capita actually includes the income of corporations and government as well as the income of households. Therefore, the Bank of Korea also publishes "PGDI per capita," which is a better alternative to GNI per capita for measuring households' income and living standards.

Table IV-13-1 Gross Domestic Product and Expenditures in 2018

(Unit: billion won)

Compensation of employees	868,145	Private final consumption expenditure	911,576
Operating surplus	489,156	Government final consumption expenditure	304,693
Consumption of fixed capital	359,140	Gross fixed capital formation	576,587
Taxes on production and imports	194,183	Changes in inventories and acquisitions less disposals of valuables	21,100
(less) Subsidies	12,431	Exports of goods and services	791,799
		(less) Imports of goods and services	707,562
		Statistical discrepancy	0
Gross domestic product	1,898,193	Expenditure on gross domestic product	1,898,193
Net factor income from the rest-of-the-world			7,645
Gross national income			1,905,837

## 2. National Disposal Income and its Appropriation Account

13.7 The national disposal income and its appropriation account is a consolidated income account that shows the generation of income and its use in the national economy.

28) When converting gross national income from the national currency to US dollars for international comparison, this method applies a three-year average of exchange rates, adjusted for differences in rates of inflation between countries, to smooth transitory fluctuations in exchange rates and prices.

13.8 As shown in Table IV-13-2, the left side of the account consists of private and government final consumptions and net saving. The net saving of this account is carried forward to the capital account. The final consumption expenditure should coincide with final consumption displayed on the right side of the consolidated gross domestic product and expenditure account.

13.9 The right column of the account records income resources such as compensation of employees, operating surpluses, and taxes on production and imports, minus subsidies. These are carried forward from the gross domestic product and expenditure account. Disposable incomes received from the rest-of-the-world, such as compensation of employees, property and entrepreneurial income, and capital transfers, are also recorded in the right column of the account on a net basis.

13.10 As for the off-balance items, the account includes national income at factor cost and national income at market prices. National income at market prices is calculated by deducting net current transfers from abroad from national disposable income. National income at factor cost can then be derived from national income at market prices by subtracting net taxes on production and imports (taxes less subsidies). Thus, national income at market prices coincides with net national income (NNI), defined as GNI less the consumption of fixed capital. National income at factor cost is exactly the same as national income (NI) obtained from compensation of employees and operating surpluses generated within the economy, and is derived by adding compensation of employees, property and entrepreneurial income from the net rest-of-the-world figure.

Table IV-13-2 National Disposable Income and its Appropriation in 2018

(Unit: billion won)

Private final consumption expenditure	911,576	Compensation of employees	868,145
Government final consumption expenditure	304,693	Net compensation of employees from the rest-of-the-world	-1,280
Net saving	323,216	Operating surplus	489,156
		Net property and entrepreneurial income from the rest-of-the-world	8,925
		Taxes on production and imports	194,183
		(less) Subsidies	12,431
		Net current transfers from the rest-of-the-world	-7,212
Appropriation of national disposable income	1,539,485	National disposable income	1,539,485
Consumption of fixed capital			359,140
Gross national disposable income			1,898,625
National income at factor cost			1,364,946
National income at market prices			1,546,697

Chart IV-13-1

Comparison of Various Gross National Income Indicators in 2018

(Unit: trillion won)

	4,369.3 <sup>1)</sup>				
Gross output	Gross domestic value added (GDP) 1,898.2 <sup>1)</sup>			Intermediate consumption 2,471.1	
	1,898.2				
Gross Domestic Product (GDP)	Compensation of employees 868.1	Operating surplus 489.2	Taxes less subsidies 181.8	Consumption of fixed capital 359.1	
	1,905.8				
Gross National Income (GNI)	868.1	489.2	181.8	359.1	Net factor income from the rest -of- the-world 7.6
	1,546.7				
Net National Income (NNI) = National income at market prices	866.9 <sup>2)</sup>	498.1 <sup>3)</sup>	181.8		
	1,539.5				
National Disposable Income (NDI)	866.9	498.1	181.8	Net current transfers -7.2	
	1,898.6				
Gross National Disposable Income (NDI)	866.9	498.1	181.8	-7.2	Consumption of fixed capital 359.1
	1,364.9				
National Income (NI) = National income at factor cost	866.9	498.1			

Notes: 1) Recorded at market prices.

2) Includes net compensation of employees from the rest-of-the-world.

3) Includes net property and entrepreneurial income from the rest-of-the-world.



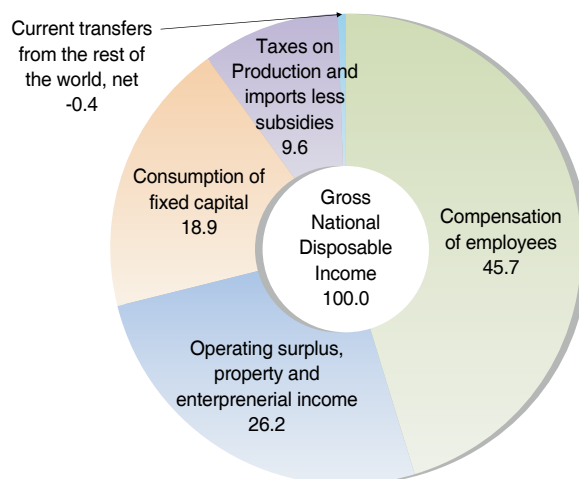
13.11 From the national disposal income and its appropriation account, some economic indicators can be obtained, such as consumption (or savings) ratio, gross domestic investment ratio, gross domestic fixed investment ratio, labor share, and so on. This account also provides data on the composition of gross national disposable income, including components such as compensation of employees, operating surplus, consumption of fixed capital, taxes on production and imports, and net current transfers from abroad.

$$\text{Ratio of compensation of employees to GNDI (\%)} = \frac{\text{Compensation of employees}}{\text{GNDI}} \times 100$$

Chart IV-13-2

Composition of Gross National Disposable Income in 2018

(Unit: %)



13.12 The consumption ratio represents the nation's level of consumption by means of the ratio of goods and services used for final consumption expenditure to gross national disposable income. The savings ratio is simply the opposite of the consumption ratio, as savings means the part of income not used for consumption.

$$\text{Consumption ratio (\%)} = \frac{\text{Final consumption expenditure}}{\text{GNDI}} \times 100$$

$$\text{Savings ratio (\%)} = 100 - \text{Consumption ratio}$$

13.13 The gross domestic investment ratio is the portion of goods and services purchased by the national economy that is treated as an increase in produced assets to gross national disposable income. The gross domestic investment consists of fixed investments and inventories. The former is termed as “gross fixed capital formation” and the latter as “changes in inventories.” The sum of them is referred to as “gross capital formation” (or “gross domestic investment”). Accordingly, the gross domestic investment ratio is calculated by dividing gross capital formation by gross national disposable income.

$$\text{Gross domestic investment ratio (\%)} = \frac{\text{Gross capital formation}}{\text{GNDI}} \times 100$$

13.14 Meanwhile, fixed investment can have a significant effect on the level of gross national income and its growth rate in the long run, as it affects the production capacity of the national economy. For this reason, the gross domestic fixed investment ratio (the ratio of gross fixed capital formation to GNDI) is regarded as a key variable for medium- or long-term economic policy making.

$$\text{Gross domestic fixed investment ratio (\%)} = \frac{\text{Gross fixed capital formation}}{\text{GNDI}} \times 100$$

13.15 Labor share (or wage share) is defined as the ratio of income distributed to workers in return for their labor, which is calculated by dividing compensation of employees by national income (NI) at factor cost. The higher the price of labor becomes relative to the price of capital, the bigger the ratio gets.

$$\text{Labor share (\%)} = \frac{\text{Compensation of employee}}{\text{National income at factor cost}} \times 100$$

### 3. Capital Transactions Account

13.16 The capital transactions account records the flows of non-financial assets acquired (or disposed of) and the change in net worth by means of capital transfers.

13.17 As illustrated in Table IV-13-3, the left column of the account displays acquisitions of non-financial assets, including capital accumulation items such as gross fixed capital formation, changes in inventories and valuables, net acquisitions of non-produced non-financial assets, and net lending to the rest-of-the-world.

13.18 The resources available for the accumulation of these assets are recorded in the right column. These consist of net saving, which is the balancing item carried forward from the national disposable income and its appropriation account, consumption of fixed capital, and net capital transfers from the rest-of-the-world. Consumption of fixed capital is carried forward from the gross domestic product and expenditure account, while net capital transfers comes from the external transaction account.

Table IV-13-3

Capital Transactions Account in 2018

(Unit: billion won)

Gross fixed capital formation	576,587	Net saving	323,216
Changes in inventories	19,205	Consumption of fixed capital	359,140
Acquisitions less disposal of valuables	1,895	Net capital transfers from the rest-of-the-world	-4
Acquisitions less disposal of non-produced non-financial assets	-358		
Net lending to the rest-of-the-world	85,023		
Gross accumulation	682,352	Finance of gross accumulation	682,352

## 4. Financial Transactions Account

13.19 The financial transactions account is the account that records transactions of financial assets and liabilities.

13.20 The left column of the account represents acquisitions of financial assets less disposals, while the right column records incurrence of liabilities less their repayment. The balance of the left and right columns of the account is recorded as net lending or borrowing. This item is equal to net lending, which is the balancing item of the capital transaction account. Moreover, since all domestic financial positions are netted on consolidation in the financial transaction account, the figure coincides with the value of the economy's financial position with the rest-of-the-world, which appears in the external transactions account.

13.21 In principle, net lending or borrowing in the financial transactions account should be identical to the net lending or borrowing in the capital transactions account. However, in practice, this identity can be very difficult to achieve due to errors and omissions as a result of different data sources and valuation methods.

Table IV-13-4

Financial Account in 2018

(Unit: billion won)

Financial assets	876,822	Financial liabilities	790,212
		Net lending (+) / Net borrowing (-)	86,611
Financial assets	876,822	Financial liabilities + Net lending (or borrowing)	876,822

## 5. External Transactions Account

13.22 The external transaction account is a consolidated account which covers transactions between residents and non-residents recorded respectively in the previous four consolidated accounts. This account consists of current and capital transactions accounts. First of all, as illustrated in Table IV-13-5, the current transactions account shows items such as exports of goods and services,

compensation of employees, property and entrepreneurial income receivable, and current transfers from the rest-of-the-world in the left column. Imports of goods and services, compensation of employees, property and entrepreneurial income payable, and current transfers to the rest-of-the-world are displayed in the right column of the account. The balancing item, the remaining amount of receipts from the rest-of-the-world after deducting payments to it, is treated as a national surplus (or deficit) on current transactions and is recorded in the right column of the account.

13.23 Meanwhile, the capital transactions account records net acquisition of foreign financial assets as a right column payment. The receipts, which are listed in the left column, consist of national surpluses from current transactions carried over from the current transactions account, net rest-of-the-world capital transfers, net incurrence of foreign liabilities, acquisitions less disposal of non-produced non-financial assets (a deducted item), and errors and omissions.

Table IV-13-5

## The External Transactions Account in 2018

## &lt;Current Transactions&gt;

(Unit: billion won)

Exports of goods and services	791,799	Imports of goods and services	707,562
Compensation of employees from the rest of the world	902	Compensation of employees to the rest of the world	2,183
Property and entrepreneurial income from the rest of the world	39,847	Property and entrepreneurial income to the rest of the world	30,922
Current transfers from the rest of the world	12,299	Current transfers to the rest of the world	19,512
		Surplus of the nation on current transactions	84,669
Receipts from the rest of the world	844,848	Payment to the rest of the world and surplus of the nation on current transactions	844,848

## &lt;Capital Transactions&gt;

(Unit: billion won)

Surplus of the nation on current transactions	84,669	Net acquisition of foreign financial assets	129,060
Net capital transfers from the rest of the world	-4		
Net incurrence of foreign liabilities	43,848		
(-)Acquisitions less disposal of non-produced financial assets	-358		
Errors and omissions	189		
Incurrence of liabilities	129,060	Acquisitions of financial assets	129,060

## Chapter 14: Sectoral Accounts

### 1. Production Account by Institutional Sector

14.1 The production account can be recorded by institutional sector. In this manner, the account can be used for analysis of the effect that changes in the industrial structure or government economic policies have had on each economic participant's productivity or performance.

14.2 The production account is composed of output, intermediate consumption, and value added. Output can be broken into market output, non-market output, and output for own final use. Gross value added is defined as the value of output less the value of intermediate consumption. Net value added is calculated by deducting fixed capital consumption from gross value added.

14.3 Table IV-14-1 shows the production account by institutional sector in 2018. The non-financial corporation sector produced 3,225 trillion won, and recorded 2,092 trillion won in intermediate consumption. National gross value added in 2018 was 1,737 trillion won. By institutional sector, it breaks down as follows: 1,133 trillion won from non-financial corporations, 99 trillion won from financial corporations, 184 trillion won from the general government, and 319 trillion won from households and NPISHs.

Table IV-14-1 Production Accounts by Institutional Sectors in 2018

(unit: billion won)

Transaction and Balancing Items	Non-financial Corporations		Financial Corporations		General Government		Households and NPISHs <sup>1)</sup>		Total Economy	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
Gross Output <sup>2)</sup>	-	3,225,255	-	173,485	-	256,046	-	552,875	-	4,207,480
Market output	-	3,225,255	-	173,485	-	36,809	-	356,565	-	3,792,114
Output for own final use	-	-	-	-	-	-	-	78,682	-	78,682
Other non-market output	-	-	-	-	-	219,237	-	117,628	-	336,865
Intermediate consumption	2,091,867	-	74,206	-	71,652	-	233,395	-	2,471,120	-
Taxes less subsidies on products	-	-	-	-	-	-	-	-	161,652	161,652
Gross value added <sup>2)</sup>	1,133,388	-	99,279	-	184,393	-	319,480	-	1,736,541	-
Fixed capital consumption	238,521	-	8,449	-	54,249	-	57,920	-	359,140	-
Net value added <sup>2)</sup>	894,867	-	90,830	-	130,144	-	261,560	-	1,377,401	-

Note: 1) Non-profit institutions serving households

2) Recorded as basic prices.

## 2. Income Account by Institutional Sector

14.4 The income account by institutional sector is a compilation that re-records the national disposable income and its appropriation account separated into institutional sectors. This account shows distributed gross value added and factor income by institutional sector that comprises production activities. It also indicates income transfers between sectors and details uses and sources of income in the secondary distribution of income account. Table IV-14-2 shows the income account by institutional sector in 2018. The institutional sector consists of rest-of-the-world and domestic sectors, including non-financial corporations, financial corporations, the general government, and households. The households sector also contains NPISHs and private unincorporated enterprises.

14.5 The institutional sector income account reveals balance of primary incomes, disposable incomes, adjusted disposable income, consumption expenditures, savings, net personal saving ratios, and others. Personal net disposable income represents disposable income usable at one's own discretion. Personal adjusted net disposable income is calculated by adding net social transfer in kind to personal net disposable income. The net personal savings ratio is calculated by dividing personal net savings by personal adjusted net disposable income with adjustments made for changes in the net equity of households in pension funds. This net personal savings ratio effectively represents the household sector's propensity to save.

$$\text{Net personal savings ratio (\%)} = \frac{\text{Net personal savings}}{(\text{Personal adjusted net disposable income} + \text{Adjustment for changes in the net equity of households in pension funds})} \times 100$$



Table IV-14-2

## Income Account by Institutional Sector in 2018

(unit: billion won)

Transaction and Balancing Items	Non-financial Corporations		Financial Corporations		General Government		Households and NPISHs <sup>1)</sup>		Rest-of-the-world	
	Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources
Generation of income account										
Compensation of employees	563,498	-	40,940	-	128,596	-	135,112	-	-	-
Operating surplus	322,448	-	48,685	-	1,541	-	116,483	-	-	-
Other taxes on production	12,116	-	1,373	-	10	-	11,795	-	-	-
Other subsidies on production	-3,195	-	-168	-	-3	-	-1,830	-	-	-
Consumption of fixed capital	238,521	-	8,449	-	54,249	-	57,920	-	-	-
Value added at basic prices, gross	1,133,388	1,133,388	99,279	99,279	184,393	184,393	319,480	319,480	-	-
Taxes less subsidies on products	-	-	-	-	-	-	-	-	-	-
Allocation of primary income account										
Compensation of employees	-	-	-	-	-	-	866,865	903	2,183	
Operating surplus	-	322,448	-	48,685	-	1,541	116,483	-	-	
(Mixed income)	-	-	-	-	-	-	66,646	-	-	
Taxes on production and imports	-	-	-	-	-	194,183	-	-	-	
Subsidies	-	-	-	-	-	-12,431	-	-	-	
Property income	152,007	46,158	145,427	138,474	21,676	32,266	38,784	149,922	39,847	30,922
Interest	43,990	21,480	89,253	124,183	21,676	24,096	37,413	32,888	18,471	8,156
Distributed income of corporations	104,065	17,934	16,651	13,751	-	7,198	-	75,970	14,732	20,596
Dividends	53,203	17,934	16,651	13,751	-	7,198	-	25,108	14,732	20,596
Withdrawals from income of quasi-corporations	50,862	-	-	-	-	-	-	50,862	-	-
Reinvested earnings on foreign direct investment	1,913	6,104	257	540	-	-	-	-	6,644	2,170
Investment income disbursements	-	570	39,147	1	-	6	-	38,570	-	-
Rent	2,039	70	120	-	-	966	1,371	2,493	-	-
Balance of primary incomes, net/ NNI	216,599	216,599	41,732	41,732	193,882	193,882	1,094,485	1,094,485	-	-
Balance of primary incomes, gross/ GNI	455,120	455,120	50,181	50,181	248,131	248,131	1,152,405	1,152,405	-	-
Secondary distribution of income account										
Current taxes on income, wealth, etc.	73,137	-	15,029	-	-	179,189	91,023	-	-	-
Social contributions	-	8,900	-	42,855	-	154,014	205,769	-	-	-
Employers' actual social contributions	-	-	-	36,788	-	67,872	104,659	-	-	-
Employers' imputed social contributions	-	8,900	-	1,057	-	5,943	15,899	-	-	-
Households' social contributions	-	-	-	5,011	-	80,199	85,210	-	-	-
Social benefits other than social transfers in kind	8,900	-	28,560	-	97,510	-	134,970	-	-	-
Social security benefits in cash	-	-	-	-	33,679	-	33,679	-	-	-
Other social insurance benefits	8,900	-	28,560	-	24,527	-	61,987	-	-	-
Social assistance benefits in cash	-	-	-	-	39,304	-	39,304	-	-	-
Other current transfers	35,788	28,235	45,242	34,687	65,449	41,288	93,804	128,861	12,299	19,512
Net non-life insurance premiums	8,201	-	18	33,889	117	-	25,305	-	307	59

Non-life insurance claims	-	6,629	33,889	168	-	106	-	26,738	59	307
Current transfers not-elsewhere classified	27,588	21,606	11,335	630	65,332	41,182	68,499	102,123	11,933	19,145
Residents	24,126	19,319	11,335	630	63,334	40,969	54,813	92,690	-	-
Rest-of-the-world	3,462	2,287	-	-	1,997	214	13,686	9,432	11,933	19,145
Disposable income, net / NDI	135,909	135,909	30,442	30,442	405,414	405,414	967,720	967,720	-	-
Disposable income, gross / GDI	374,430	374,430	38,892	38,892	459,664	459,664	1,025,640	1,025,640	-	-
Redistribution income in kind account										
Social transfers in kind	-	-	-	-	167,559	-	34,148	201,706	-	-
Adjusted disposable income, net	135,909	135,909	30,442	30,442	237,856	237,856	1,135,278	1,135,278	-	-
Adjusted disposable income, gross	374,430	374,430	38,892	38,892	292,105	292,105	1,193,199	1,193,199	-	-
Use of income account										
Final consumption expenditure	-	-	-	-	304,693	-	911,576	-	-	-
Actual final consumption	-	-	-	-	137,134	-	1,079,135	-	-	-
Adjustment for the change in net equity of households in pension funds	-	-	14,295	-	-	-	-	14,295	-	-
Net saving	135,909	-	16,148	-	100,722	-	70,439	-	-	-
Gross saving	374,430	-	24,597	-	154,971	-	128,359	-	-	-

Note: 1) Non-profit institutions serving households

### 3. Capital Account by Institutional Sector

14.6 The capital account by institutional sector is compiled by dividing the capital transaction account of the consolidated accounts into institutional sectors. It represents a net lending corresponding to the amount available to each sector for financing, directly or indirectly, other sectors or a net borrowing corresponding to the amount a sector is obliged to borrow from other sectors. Table IV-14-3 shows the accumulation of non-financial assets, the form of the capital raised by each sector, and the amount of net lending or net borrowing for each sector.

14.7 Initially, three items are recorded in the liabilities and net worth section: net savings those are carried forward from the income accounts by institutional sectors, the current external balance of the external transactions account (current account surplus), and net capital transfers. However external transactions, such as current external balance (current account surplus) and net-capital transfers, are recorded reversely since they are viewed from the position of a foreign country. Meanwhile, the domestic institutional sector's net-capital transfers are compiled from additional

survey results. Five items are recorded in the accumulation of assets part (changes in assets): gross fixed capital formation, consumption of fixed capital, changes in inventories, acquisitions less disposal of valuables, and acquisition less disposal of non-produced non-financial assets.

14.8 Among the recorded items discussed above, on the gross fixed capital formation, (-) consumption of fixed capital, changes in inventories and acquisitions less disposal of valuables, the total values of the gross domestic product and expenditure accounts are distributed by relevant institutional sector. On the acquisitions less disposal of non-financial assets of foreign trade, the figures of the foreign trade account are recorded and for those of domestic trade, separately investigated and recorded. Also, net lending (total capital raising less total capital accumulation) is recorded on the changes in assets.

14.9 Domestic net lending must be adjusted (offset) with external transactions, but statistical discrepancies can occur due to differences in estimation methods and data sources between saving and investment.

14.10 Table IV-14-3 shows the capital account by institutional sector in 2018. The households and NPISHs, financial corporations, and general government sectors are fund-surplus sectors where saving (changes in liabilities and net worth) exceed investment (changes in assets). However, the non-financial corporation sector is a fund-shortage sector where investment exceeds saving. In the rest-of-the-world sector, investment exceeds saving; this means that the domestic funds surplus owing to the current account surplus is supplied to the rest-of-the-world.

Table IV-14-3

## Capital Account by Institutional Sector in 2018

(unit: billion won)

	Non-financial Corporations		Financial Corporations		General Government		Households and NPISHs <sup>1)</sup>		Rest-of-the-world	
	Changes in assets	Changes in liabilities and net worth	Changes in assets	Changes in liabilities and net worth	Changes in assets	Changes in liabilities and net worth	Changes in assets	Changes in liabilities and net worth	Changes in assets	Changes in liabilities and net worth
Net saving	-	135,909	-	16,148	-	100,722	-	70,438	-	-
Current external balance	-	-	-	-	-	-	-	-	-	-84,669
Net capital transfers	-	1,743	-	-508	-	-6,853	-	5,613	-	4
Gross fixed capital formation	362,721	-	11,623	-	85,495	-	116,748	-	-	-
Consumption of fixed capital (less)	238,521	-	8,449	-	54,249	-	57,920	-	-	-
Changes in inventories	19,291	-	-	-	-1,158	-	1,072	-	-	-
Acquisitions less disposals of valuables	-	-	-	-	-	-	1,895	-	-	-
Acquisitions less disposals of non-produced <sup>2)</sup>	39,521	-	-41	-	6,364	-	-46,202	-	358	-
Net lending	-45,360	-	12,507	-	57,418	-	60,457	-	-85,023	-
Changes in net worth due to saving and capital transfers	137,652	137,652	15,640	15,640	93,869	93,869	76,051	76,051	-84,665	-84,665

Note: 1) Non-profit institutions serving households

2) Includes natural resources (land, etc.) and radio spectra, etc.

## 4. Financial Account by Institutional Sector

14.1 The financial account by institutional sector shows the financial transactions of institutional sectors. In this account, the operations of funds through acquisition of financial assets and the raising of funds through the issuance of various financial liabilities are recorded. Changes in financial assets less changes in financial liabilities is recorded as fund excesses and deficiencies in liabilities section.

14.2 Theoretically, the excesses and deficiencies of funds in the financial accounts by institutional sector and net lending of capital accounts by institutional sector should balance out, but statistical discrepancies do occur due to different estimation methods and basic data. The net lending and the excesses and deficiencies of funds are the items that relate financial transactions to real economy, and are very important

means of showing the supply and demand patterns of funds between institutions. In general, the household sector is a fund-surplus agent in which saving exceeds investment, whereas the non-financial corporations sector is a fund-shortage agent in which investment exceeds saving. If the national economy only consists of households and non-financial corporations, the non-financial corporations would raise funds for investment by increasing financial liabilities and then the households would supply funds to corporations by increasing financial assets. Capital and financial accounts by institutional sector show the investment and fund-raising scale of these sectors transparently.

14.3 Table IV-14-4 shows the amount of fund-surplus in the households and NPISHs sector as being 58 trillion won in 2018. This sector raised 100 trillion won through loans from financial corporations for economic activities, such as housing purchases and consumption. The households and NPISHs sector purchased deposits, insurance, pensions, equity and related items with its fund-surplus.

14.4 The financial account by institutional sector is very useful when investigating the outside fund-raising patterns of institutions, especially the patterns of non-financial corporations that generally use three methods to raise outside funds: indirect financing, i.e. borrowing funds from banks and other financial companies; direct financing, i.e. raising funds directly by issuing bonds or stocks in the financial market; and, foreign financing, i.e. borrowing from abroad through foreign loans. According to Table IV-14-4, non-financial corporations raised 90 trillion won from loans and 61 trillion won via direct financing, such as issuing bonds, in 2018.

Table IV-14-4

## Financial Account by Institutional Sector in 2018

(unit: billion won)

	Non-financial Corporations)		Financial Corporations		General Government		Households and NPISHs <sup>1)</sup>		Rest-of-the-world	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
Total	130,117	174,600	492,527	478,337	93,475	34,323	160,704	102,952	43,970	130,580
Gold & SDRs	-	-	63	-	-	-	-	-	-	63
Currency & Deposits	46,676	-	60,918	210,476	30,440	2,996	75,295	-	144	-
Insurance & Pension Reserves	1,232	-	3,046	64,960	-	-	60,683	-	-	-
Securities other than Shares	22,824	8,786	87,662	89,588	13,200	19,287	-50	-	30,425	36,401
Loans	-	90,266	195,996	13,207	-	-4,363	-	100,288	-31	-3,434
Government Loans	-	9,968	-	-2,409	9,283	-436	-	2,160	-	-
Equity and Investment Fund Shares	22,685	41,945	78,065	59,989	31,267	7,188	23,501	-	-7,082	39,315
Financial Derivatives	-	-	-	-	-	-	-	-	-	-
Trade Credits	-1,259	3,383	5,821	-	-516	-301	-	193	834	1,604
Foreign Direct Investment	35,082	13,554	3,334	-196	2,200	-	1,483	-	13,358	42,100
Other Foreign Claims and Debts	215	2,029	17,004	-5,237	-1,954	-943	-735	-	6,322	14,531
Miscellaneous	2,662	4,670	40,618	37,486	9,556	10,895	527	311	-	-
Fund excesses or deficiencies	-	-44,484	-	14,190	-	59,153	-	57,752	-	-86,611

Note: 1) Non-profit institutions serving households

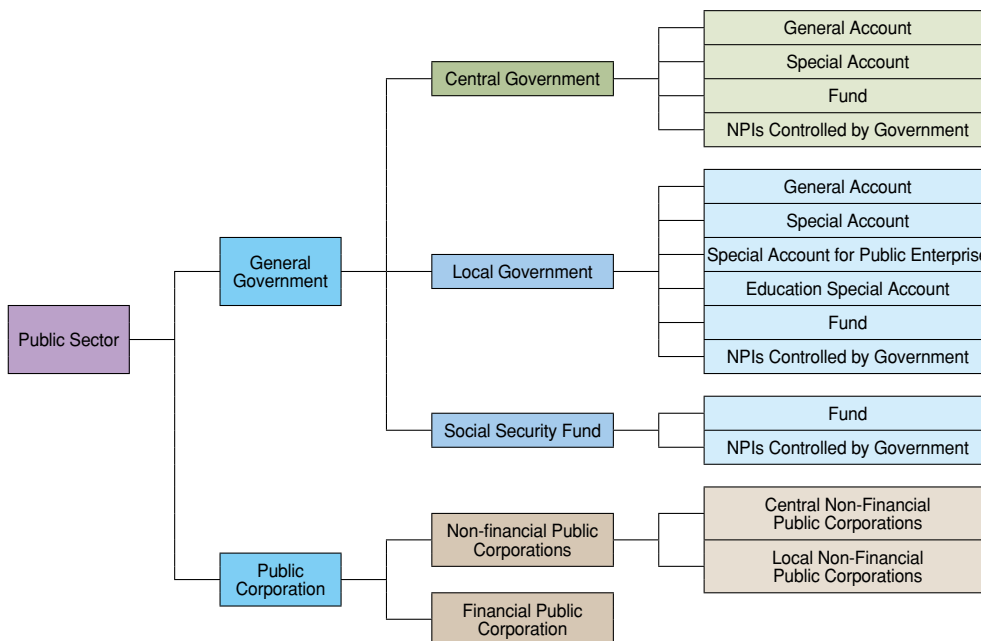
## Chapter 15: Public Sector Account

15.1 After the global financial crisis revealed the severe financial issues of many European countries, some European governments began to inject significant public funds into saving weakened organizations, or made the decision to simply take them over. Subsequently, the demand for accurate financial statistics, which expose the level of financial soundness and sustainability of the public sector – government and public corporations included – increased dramatically. Reflecting these circumstances, the 2008 SNA recommended that each country establish an official public sector account, and South Korea began to do so in 2014.

15.2 The public sector account provides statistics on every economic activity of the public sector within certain period of time. As Figure IV-15-1 shows, the public sector includes the general government (central government, local government, and social security funds), non-financial public corporations, and financial public corporations which perform quasi-public financial activities.

Figure IV-15-1

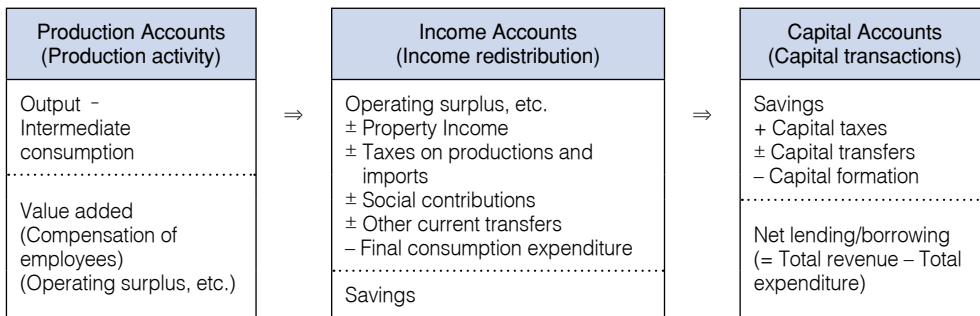
Coverage of the Public Sector



15.3 The public sector account consists of production and income and capital accounts in accordance with how products have been created and then disposed. That is, the public sector account presents how the value added and capital income created by the production activities of the public sector have been disposed of, maintained, or in what ways they are deficient. Meanwhile, every economic activity of public sector is recorded on an accrual basis, and internal transactions between subsections are removed.

Figure IV-15-2

System of Public Accounts



15.4 The public sector account consists of “general government” total revenue, total expenditure, and net lending/borrowing by subsector; and “public sector” total revenue, total expenditure, and net lending/borrowing by subsector, from which differing financial indicators are induced. Net lending/borrowing is the remaining amount of money after production, income and capital transactions, and is equal to the difference between total revenue and total expenditure. Net borrowing means excessive expenditure beyond annual capacity, which has resulted in either increased debt or decreased assets. Using total expenditure and net lending/borrowing divided by nominal GDP, it is possible to analyze the propriety of the size, financial soundness and sustainability of the public sector or make comparisons with other countries. Table IV-15-1 shows total expenditure of the public sector in 2019 as 862.4 trillion won, 44.9% of GDP.



Table IV-15-1 Public Sector Total Revenue, Total Expenditure, and Net Lending/Borrowing

(Unit: trillion won, %)

	2014	2015	2016	2017	2018	2019 <sup>p</sup>
Total revenue (a)	711.7	733.1	768.1	807.7	852.7	876.3
Total expenditure (b)	694.2 (44.4)	700.7 (42.3)	720.9 (41.4)	753.7 (41.1)	799.6 (42.1)	862.4 (44.9)
Net lending/borrowing (a-b)	17.5	32.4	47.2	54.1	53.1	13.8

Note: Numbers in brackets are the ratio to nominal GDP.

## Chapter 16: Supporting Tables

### 1. GDP and GNI by Kinds of Economic Activities

16.1 The table which shows GDP and GNI by kinds of economic activities contains a detailed listing of value added in kind for 15 economic activities based on basic prices. It also contains taxes less subsidies on products, GDP (at market prices), trading gains and losses from changes in the terms of trade, GNI, and net factor income from the rest-of-the-world. Data on growth rates by kinds of economic activities, deflators, and contributions to GDP growth are additional benefits.

16.2 The table's values are given in current prices and chained 2015 year prices, and both the seasonally adjusted and seasonally non-adjusted series are provided.

### 2. Expenditure on Gross Domestic Product

16.3 This table shows GDP by type of final disposal: final consumption expenditures, gross capital formation, and export and import of goods and services. It includes data on the growth rates, deflators, and contributions to GDP growth by expenditure type. Data is based on current prices and chained 2015 year prices, and both the seasonally adjusted and seasonally non-adjusted series are provided.

### 3. Gross Value Added and Factor Income by Kinds of Economic Activities

16.4 This table shows output, intermediate consumption, and value added and its components by economic activities. Using this table, the value added ratio and ratio of compensation of employees can be calculated. The value added ratio is defined as the ratio of value added to gross output. The ratio of compensation of employees is calculated by dividing compensation of employees by total factor income (which is the sum of compensation of employees and operating surplus).

## 4. National Income and National Disposable Income

16.5 This table complements the gross national disposable income and its disposal account. It represents the relationship between national income at factor cost or market prices and gross national disposable income. National income at factor cost is defined as the sum of compensation of employees and operation surplus such as property income and entrepreneurial income. National income at market prices is calculated by adding taxes on production and imports (less subsidies) to national income at factor cost.

## 5. Gross Capital Formation by Type of Capital Goods and by Sector

16.6 This table shows classified gross capital formation by type of capital goods and by sector. Construction, facilities investment, and intellectual property products are divided into more detailed types. Construction is composed of residential buildings, non-residential buildings, and other construction. Facilities investment is divided into transport equipment, and machinery and equipment. Intellectual property products are separated into two types: research and experimental development, and other intellectual property products. This table also represents the sectoral amounts of private and government investment for each type of capital goods. Values both at current prices and at chained reference year prices are provided.

## 6. Gross Capital Formation by Kinds of Economic Activities

16.7 This table shows classified construction and facilities investment by 15 kinds of economic activities. Values both at current prices and at chained reference year prices are provided.

## 7. Gross Fixed Capital Formation by Kinds of Economic Activities and Type of Capital Goods

16.8 Gross fixed capital formation is composed of construction, facilities

investment, and intellectual property products. This table shows classified gross fixed capital formation by economic activities. This table also provides the sectoral amounts of transport equipment, machinery and equipment, and research and experimental development by economic activities. Data at both current prices and chained reference year prices are shown.

## 8. Facilities investments by Kinds of Economic Activities

16.9 This table shows facilities investments classified by economic activities. Values both at current prices and at chained reference year prices are provided.

## 9. Final Consumption Expenditure of Households by Purpose

16.10 This table records final consumption expenditure of households classified by purpose. It is composed of 12 items which are classified by expenditure purposes. This table is useful not only for analyzing consumers' consumption patterns but also for assessing national welfare.

## 10. Final Consumption Expenditure of Households by Type

16.11 This table details final household consumption expenditure by type. Final consumption expenditures are divided into expenditures on goods and on services. In addition, goods are divided into durable goods, semi-durable goods, and non-durable goods. The table aids analysis of cyclical consumer demand fluctuations.

## 11. Final Consumption Expenditure of Non-profit Institutions Serving Households by Purpose

16.12 This table shows NPISHs' activities by purpose: i.e. health, recreation and culture, education, social protection, and others.

## 12. Final Consumption Expenditure of Non-profit Institutions Serving Households According to Cost Composition and Purpose

16.13 This table shows input cost and disposal of services in the NPISH sector. Services produced by NPISHs are mostly disposed of as final consumption expenditures connected to own use or as sales to other institutional sectors.

## 13. General Government Final Consumption Expenditure by Function

16.14 This table is a re-recording of general government final consumption expenditure by sector and by function. By sector, the general government is divided into central government, local government, and social security funds. The activities of the general government are composed of 10 functions: general public services, defense, public order and safety, economic affairs, environment protection, housing and community amenities, health, recreation, culture and religion, education, and social protection. The table can be used to project the scale of future government expenditures or to make comparisons of government expenditure structures with other countries.

## 14. General Government Total Expenditure by Function

16.15 This table shows current and capital expenditures of the general government by sector and function, as well as the government transfers to other institutional sectors.

## 15. External Transactions

16.16 This table is composed of current accounts and capital and financial accounts. It is a detailed compilation of the external transaction account in the consolidated account.

16.17 From this table, the ratio of exports and imports to GNI, which represents an economy's degree of dependency on external trade, can be derived as follows:

$$\text{Ratio of Exports and Imports to GNI (\%)} = \frac{\text{Total Exports and Imports}^*}{\text{Current GNI}} \times 100$$

\* Exports and imports of goods and services + factor income received and paid

## 16. Gross Savings and Gross Investments

16.18 This table shows gross savings and gross investments by institutional sector. Gross savings are calculated by deducting final consumption expenditure from gross national disposable income. Gross investments are divided into domestic gross capital formation and foreign investment. Foreign investment is equal to the national surplus in current transactions.

16.19 Gross saving and gross investment ratios are calculated by dividing gross saving and gross investment by gross national disposable income, respectively. Gross saving ratios by institutional sector are the ratios of each institutional gross saving to gross national disposable income. Rather than representing institutional propensities for saving, they represent each institutional sector's share of the national gross saving ratio.

$$\text{Gross savings ratio (\%)} = \frac{\text{Gross saving}}{\text{GNDI}} \times 100$$

# V. Technical Issues

- Chapter 17 Seasonal Adjustment
- Chapter 18 Chained-Linking Method
- Chapter 19 Benchmarking Method





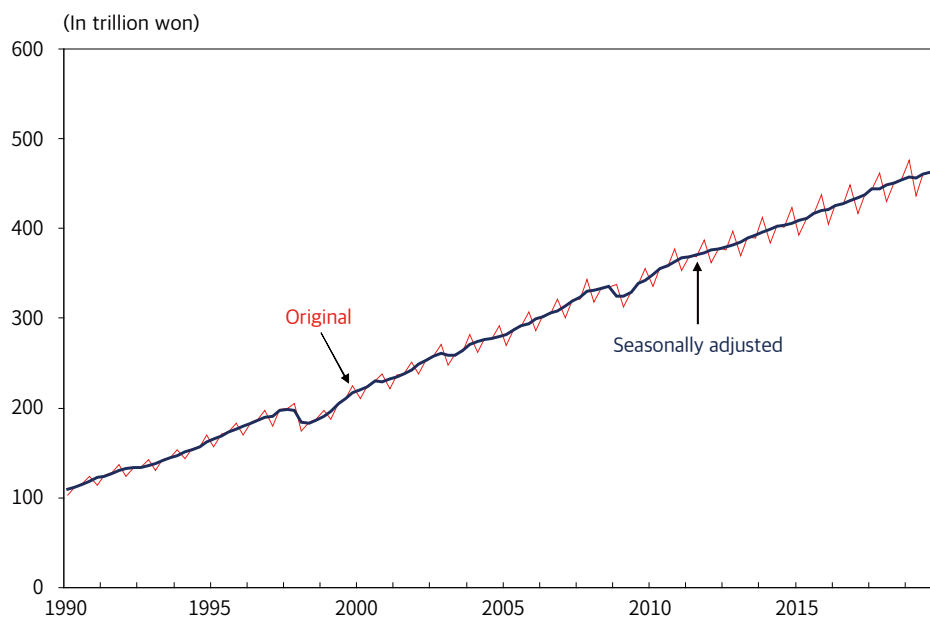
## Chapter 17: Seasonal Adjustment

### 1. Introduction

17.1 Monthly or quarterly economic time series often show cyclical patterns over the course of a year because of changes in weather, national holidays, social habits, etc. These periodic movements are called seasonal variations. For example, GDP figures are generally lower every first quarter and relatively higher every fourth quarter, as Chart V-17-1 indicates.

17.2 If raw data were used or analyzed without removing seasonality, inaccurate comparisons of different periods within the same year could result. Therefore, seasonal fluctuations should be estimated and removed from the original series for a more accurate understanding of short-term GDP movements.

Chart V-17-1 Original and Seasonally Adjusted GDP Figures(Chain Volume Measure)



17.3 In general, economic time series contain four separate components: trend, cyclical, seasonal, and irregular. The original series are formulated by the addition or multiplication of these components. A trend shows an underlying long-term movement over time usually due to the lasting impact of technological changes or consumer preferences. Cyclical variations are medium-term (normally, over 1 year) changes caused by circumstances which repeat in cycles, such as successive business expansions and economic recessions.

17.4 Seasonal variations are short-term movements (usually with a 1 year cycle) caused by the climate and various social customs. The seasonal component also includes calendar effects which influence economic activity because of the composition of trading days or moving holidays (such as Lunar New Year and Chuseok (Korea's Thanksgiving)). Irregular variations are random disturbances due to strikes, natural disasters, and other unpredictable events.

17.5 Seasonal adjustment (SA) refers to the statistical process that breaks the original time series down into trend, cyclical, seasonal, and irregular components. Through this process, the seasonal component is removed from the original series. Accordingly, seasonally adjusted figures can reveal certain non-seasonal features more clearly.

Chart V-17-2

Seasonal Adjustment Process



## 2. Seasonal Adjustment Methods

17.6 The simplest method to remove seasonality from the original series is to observe year-on-year changes (or growth rates). Other alternatives include taking a moving average of the seasonal-irregular ratios for each quarter or applying a regression model with seasonal dummy variables. All of these methods assume that seasonality does not change over time. This fixed seasonality approach has been criticized for neglecting economic structural changes which could have an impact on seasonality.

17.7 For this reason, seasonal adjustment techniques to estimate moving seasonality have been developed. There are two main approaches: the moving average method and the model-based method. The key premise of the moving average method is that seasonality can be removed by applying moving average to the original series. Due to advances in computer technology, more elaborated techniques have become feasible, such as the widely used X-11 variants, especially X-12-ARIMA developed by the U.S. Census Bureau.

17.8 The X-12-ARIMA process consists of three main steps: prior adjustment, seasonal adjustment by moving averages (X-11 method), and diagnostics. First, prior adjustment is performed by applying regARIMA (regression model with ARIMA errors) to the original series. The treatment of outliers and adjustment of calendar effects are carried out in this step. Next, by applying moving averages to the data adjusted in the previous step, seasonal variations are removed. In the final step, the quality of seasonal adjustment is assessed. Spectrums, sliding spans, and revision history are the tools for such diagnostics.

17.9 In contrast, the model-based method assumes that the trend, cyclical, seasonal, and irregular components follow stochastic processes (like ARIMA). Each component is estimated using signal extraction techniques – SEATS developed by the Bank of Spain being the best known technique. The Census Bureau incorporated X-11 and SEATS into a unified system, X-13ARIMA-SEATS.

### 3. Seasonal Adjustment of GDP in Korea

17.10 From September 1999, seasonally adjusted GDP figures have been released to the public. For most GDP series, appropriate regARIMA models are set once a year and the projected seasonal factors are produced for the current year. Consequently, there is no revision of seasonally adjusted figures during the course of a single year. At the time of revising seasonal factors, the figures for the previous 9 years are revised. However, at the benchmark year which is set every 5 years, the whole series is revised.

17.11 Since different seasonal adjustment options (detection of outliers, treatment of calendar effects, and ARIMA models) produce different results, the seasonal adjustment process should be well defined. The Bank of Korea annually reports the assessment measures for stability and the quality of seasonally adjusted statistics and the revisions of seasonal factors in the periodical Quarterly National Accounts (available in Korean only).

### 4. Recommendation for Using Seasonally Adjusted Figures

17.12 Seasonally adjusted figures still contain irregular variations. For this reason, quarter-on-quarter growth rates can show severe fluctuations. Therefore, it is dangerous to gauge economic trends using a single quarterly growth rate or annualized growth rate. In order to find the fundamental flow of GDP, it is better to use the rate of change based on moving averages taken over 2 or 3 quarters or a trend cycle component. However, trend-cycle values at the end of a series are more likely to be revised than those at the center of the series.

## Chapter 18: Chain-Linking Method

### 1. Overview

18.1 Given the steady advances in information and communications technology, the prices of ICT-related goods can drop sharply and the industry's structure dramatically change. In this situation, a fixed-weighted method can distort real GDP statistics over time. Conversely, a chain-linked method which adopts the previous year's price weight every year can much more readily reflect technological, industrial or economic changes. Consequently, international organizations related to national accounts, such as the UN, IMF, and OECD, recommend the chain-linked method for compiling real GDP. For this reason, the KSNA adopted this method when the tenth rebasing of the Korean National Income Statistics took place with 2005 selected as the new reference year.

### 2. Basic Comprehension of Indices

#### A. Index Concept

18.2 An index is an indicator which measures comparative inter-temporal or inter-spatial changes of quantities or numbers. Two methods can measure changes between temporal points: one compares two temporal points directly, and the other compares two points by studying intermediate temporal points cumulatively. Because an index represents a relative scale, it needs a comparison point, which is called a reference base.

#### B. Type of Index

18.3 Indices are used in a variety of fields, especially in economics in the form of a price index or quantity index. There are many kinds of price and quantity indices depending on the method of applying weights and calculating the mean. The variability of weights determines if an index is "fixed" or "chained."

### C. GDP Volume Index

18.4 Among the large variety of quantity indices, the fixed Laspeyres quantity index and chained Laspeyres quantity index are commonly used to measure real GDP.

18.5 The fixed Laspeyres quantity index is defined as a weighted arithmetic mean that relies on base-year prices that do not change despite the passage of time.

- Fixed Laspeyres quantity index :  $Q_t^L = \sum w_o \frac{q_t}{q_o} = \frac{\sum p_o q_t}{\sum p_o q_o}$

$$\text{where, } w_o = \frac{p_o q_o}{\sum p_o q_o}$$

18.6 The chained Laspeyres quantity index accumulates the quantitative year-on-year changes cumulatively from reference year to current year. First, the link is calculated by dividing GDP in the previous-year prices by last year's nominal GDP. Then, a chain index is calculated to multiply the links cumulatively from reference year to current year.

- Laspeyres link index :  $Q_{t-1,t}^L = \sum w_{t-1} \frac{q_t}{q_{t-1}} = \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}}$

$$\text{where, } w_{t-1} = \frac{p_{t-1} q_{t-1}}{\sum p_{t-1} q_{t-1}}$$

- Chained Laspeyres quantity index :  $Q_{0,t}^{LC} = Q_{0,1}^L \times Q_{1,2}^L \times \Lambda \times Q_{t-1,t}^L$

## 3. Real GDP Measurement Methods

18.7 Real GDP can be calculated by two methods: fixed weighted or chain linked. In accordance with the 1993 SNA, the year-on-year chain-linking method has been adopted to better reflect economic reality and for easier international comparison. For

this reason, Korea also adopted the annual chain-linking method to measure real GDP.

### A. Fixed-weighted Method

18.8 The real GDP calculated by a fixed-weighted method is defined as the sum of current year quantities multiplied by base year prices, or stated as a formula:

- Fixed Laspeyres quantity index

$$Q_t^L = \sum w_0 \frac{q_t}{q_0} = \frac{\sum p_0 q_t}{\sum p_0 q_0} \quad (\text{where, } w_0 = \frac{p_0 q_0}{\sum p_0 q_0})$$

- Real GDP<sub>t</sub>:  $\sum p_0 q_t = \sum p_0 q_0 \times Q_t^L$

- Growth rate of real GDP<sub>t</sub>(%)

$$\left( \frac{\sum p_0 q_t}{\sum p_0 q_{t-1}} - 1 \right) \times 100 = \left( \frac{Q_t^L}{Q_{t-1}^L} - 1 \right) \times 100$$

### B. Chain-linked Method

18.9 Links representing changes in quantity compared to the previous year are calculated first, and chain indices are compiled by multiplying these links cumulatively. Finally, real GDP at chained prices is derived by multiplying GDP at the reference year by the chain index for the year. This process can be expressed by using the chain index below:

- Laspeyres link

$$Q_{t-1,t}^L = \sum w_{t-1} \frac{q_t}{q_{t-1}} = \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}}$$

$$(\text{where, } w_{t-1} = \frac{p_{t-1} q_{t-1}}{\sum p_{t-1} q_{t-1}})$$

- Laspeyres chain index:  $Q_{0,t}^{LC} = Q_{0,1}^L \times Q_{1,2}^L \times \dots \times Q_{t-1,t}^L$

- Real GDP<sub>t</sub>:  $\sum p_o q_o \times Q_{0,t}^{LC}$  or  $GDP_{t-1} \times Q_{t-1,t}^L$

- Growth rate of real GDP<sub>t</sub>(%)

$$\left( \frac{GDP_t}{GDP_{t-1}} - 1 \right) \times 100 = \left( Q_{t-1,t}^L - 1 \right) \times 100$$

18.10 As shown in the formulas above, the most outstanding characteristic of a chain-linked method is that the growth rate of real GDP is calculated on the basis of the previous year's weight and prices, which are very relevant to the current year. Another noticeable feature is that the change in weights, which is closely related to changes in relative prices and technical structures, is reflected in real GDP estimates.

18.11 Table V-18-1 shows the simplified formulas for the fixed- and chain-linked methods.

Table V-18-1 Comparison of Real GDP Compilation Formulae

	Fixed-weighted Method	Chain-linked Method
Quantity Index (Laspeyres)	$Q_{0,t}^L = \sum w_0 \frac{q_t}{q_{t0}}$ $= \frac{\sum p_o q_t}{\sum p_o q_o}$	$Q_{0,t}^{LC} = Q_{0,t}^L \times Q_{t-1,t}^L \times \Lambda \times Q_{t-1,t}^L$ <p>where, <math>Q_{t-1,t}^L = \sum w_{t-1} \frac{q_t}{q_{t-1}} = \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}}</math></p> <p>(<math>Q_{0,t}^{LC}</math>: chain index, <math>Q_{t-1,t}^L</math>: link)</p>
Weights	$w_o = \frac{p_o q_o}{\sum p_o q_o}$	$w_{t-1} = \frac{p_{t-1} q_{t-1}}{\sum p_{t-1} q_{t-1}} \text{ (changing every year)}$
Real GDP (amount)	$GDP_t = \sum p_o q_o \times Q_t^L$ $= \sum p_o q_o \times \sum w_0 \frac{q_t}{q_0}$ $= \sum p_o q_t$	$GDP_t = \sum p_o q_o \times Q_{0,t}^{LC}$ $= \sum p_o q_o = Q_{0,t}^L \times Q_{t-1,t}^L \times \Lambda \times Q_{t-1,t}^L$ $= \sum p_o q_o \times \sum w_0 \frac{q_t}{q_0} \times \Lambda \times \sum w_{t-1} \frac{q_t}{q_{t-1}}$
Growth Rates (%)	$\left( \frac{\sum p_o q_t}{\sum p_o q_{t-1}} - 1 \right) \times 100$ $= \left( \frac{Q_t^L}{Q_{t-1}^L} - 1 \right) \times 100$	$\left( \frac{GDP_t \text{ at chained prices}}{GDP_{t-1} \text{ at chained prices}} - 1 \right) \times 100$ $= \left( \frac{Q_{0,t}^{LC}}{Q_{0,t-1}^{LC}} - 1 \right) \times 100$ $= \left( Q_{t-1,t}^L - 1 \right) \times 100$



## 4. Chain-linked Method: Advantages and Disadvantages

### A. Advantages

18.12 The most desirable advantage of a chain-linked method compared to a fixed-weighted method is that it better reflects economic reality.

18.13 Since a fixed-weighted method applies the same price weights from the base year to all the comparative years, real GDP can be distorted and slow to reflect recent economic changes. In a fixed-weighted method, substitution bias, which is defined as over or under estimation of a growth rate by failing to adopt the relative price changes, becomes a major problem.

18.14 In comparison, since the change in weights is reflected every year, a chain-linked method can mitigate substitution bias. Moreover, it can solve the problem of potentially rewriting history. When applying a fixed-weighted method, all the growth rates of the time series are subject to change according to the changing base year. But there is no need to change the growth rate of the time series with a chain-linked method as this method changes the base year every year.

### B. Disadvantages

18.15 The biggest disadvantage of a chain-linked method is that the aggregate value at chained prices is not identical to the sum of its components because of its non-additivity. However, according to the 1993 SNA, additivity is satisfied in only special cases such as with a fixed Laspeyres index, and the non-additivity of a chain-linked method is merely a mathematical anomaly that does not significantly detract from its advantages.

18.16 In addition, a chain-linked method needs more price information than a fixed-weighted method and requires more detailed calculations.

## 5. Complications with Real GDP Use

18.17 Due to the non-additivity, using real GDP statistics can pose some problems. First of all, when an ordinary contribution formula is used, the sum of subsectors' contributions to GDP growth may not equal the GDP growth rate. And the sum of the subsectors' real value may not equal aggregate real value. These problems come from the characteristics of non-additivity in the chain-linked method.

18.18 To solve these problems, the Bank of Korea regularly posts a revised contribution formula which satisfies the additivity on ECOS (the Bank of Korea's online economic statistics system). Also, the Bank of Korea provides addition and deduction programs for chained real GDP on ECOS.

## Chapter 19: Benchmarking Method

### 1. Introduction

19.1 Annual estimates of GDP are fundamentally different from quarterly estimates in regard to data sources and compilation methodologies. When compiling quarterly preliminary estimates, reliable data are seldom available. For the timeliness of GDP, monthly, quarterly indicators or sampling survey results are used. Conversely, there are supply and use tables, census results, and much more reliable information for annual estimates (especially annual final estimates). Therefore, inconsistency between quarterly and annual estimates is common.

19.2 Benchmarking is the statistical adjustment process which combines quarterly data with annual data in a consistent time series. Through benchmarking, short-term movements of quarterly estimates are preserved, while the annual benchmarks are used for long-term movements. To maintain the temporal consistency of GDP, benchmarking should be an essential part of the compilation process.

### 2. Benchmarking Methods

19.3 Benchmarking techniques can be categorized into two main approaches: numerical and statistical modeling. The main advantage of the numerical approach is that there is no need to set a statistical model for quarterly national accounts. The numerical approach includes the family-of-Denton, Bassie, and other methods. As for the statistical modeling approach, there are the Chow-Lin, the generalized-least-squares (GLS) regression model, and other methods (refer to the IMF's Quarterly National Accounts (QNA) manual or Eurostat for detailed explanations of the different techniques). Among the various benchmarking methods, the proportional-Denton method is the most widely used. Its main advantages are summarized below:

1) It is easier to understand and implement since it uses a quadratic-minimization method.

2) It effectively preserves the quarter-to-quarter changes (short-term movement) of the original estimates.

3) Unlike the additive Denton, it adjusts the original values in proportion to the level of each observation.

19.4 Benchmarking deals with two problems: distribution (quarterization) and extrapolation. Distribution refers to the process which aligns historical quarterly data to annual benchmarks. On the other hand, extrapolation is the adjustment process for the most recent period when the annual value is not yet available. For desirable extrapolation, it is important to forecast future annual data or an annual benchmark to indicator BI ratio precisely.

19.5 Setting the reference year as 2010, the Bank of Korea adopted the proportional-Denton method primarily to maintain temporal consistency between preliminary estimates of GDP and final annual estimates.

### 3. Step Problem

19.6 The simple way to remove discrepancies between quarterly and annual estimates is to distribute the annual total according to the proportions of quarterly values within a year. This is called “prorating” and can be formulated as below.

$$X_{q,\beta} = A_{\beta} \times \frac{I_{q,\beta}}{\sum_{q=1}^4 I_{q,\beta}} = I_{q,\beta} \times \frac{A_{\beta}}{\sum_{q=1}^4 I_{q,\beta}}$$

where,  $X_{q,\beta}$  is the benchmarked value for quarter  $q$  of year  $\beta$ ;

$I_{q,\beta}$  is the value of the indicator or original quarterly estimates;

$A_{\beta}$  is the annual benchmark for year  $\beta$ .

The annual BI ratio is contained here in the second line of the previous formula,

$$A_{\beta} / \sum_{q=1}^4 I_{q,\beta}$$

19.7 Since the discrepancies vary between years, prorating could cause a break between years (i.e. between the fourth quarter of one year and the first quarter of the next year). As shown in Table V-19-1, the step problem can be found in every first quarter. This occurs since the annual BI ratios are different between years.

Table V-19-1 Prorating and Step Problem

Quarter	Original Series		Annual Bench -mark	Annual BI ratio	Distributed Data		Quarterly BI ratios (=B/A)
	Value	Quarterly growth rates (%)			Value	Quarterly growth rates (%)	
Year 1. 1	5,324				5,324		1.000
2	4,591				4,591		1.000
3	4,654				4,654		1.000
4	4,457				4,457		1.000
Total	19,026		19,026	1.000	19,026		
Year 2. 1	5,764	29.3			5,822	30.6	1.010
2	4,770	-17.3			4,818	-17.3	1.010
3	4,944	3.6			4,994	3.7	1.010
4	4,519	-8.6			4,565	-8.6	1.010
Total	19,997		20,199	1.010	20,199		
Year 3. 1	6,232	37.9			5,822	35.2	0.990
2	4,958	-20.5			4,818	-20.5	0.990
3	5,372	8.4			4,994	8.4	0.990
4	4,580	-14.8			4,565	-14.8	0.990
Total	21,142		20,930	0.990	20,199		

#### 4. Proportional-Denton Method

19.8 The proportional-Denton method prevents the step problem by minimizing differences between neighboring quarterly BI ratios as follows.

$$\min \sum_{t=2}^T \left[ \frac{X_t}{I_t} - \frac{X_{t-1}}{I_{t-1}} \right]^2, \quad t = 2, \Lambda, 4\beta, \Lambda, T$$

$$\text{subject to } \sum_{4y-3}^{4y} X_t = A_y, \quad y = 1, 2, \Lambda, \beta$$

where,  $X_t$  is the benchmarked quarterly value;

$I_t$  is the value of the indicator or original quarterly estimates;

$A_y$  is the annual benchmark for year  $y$ ;

$\beta$  is the last year with annual benchmarks.

19.9 Regarding distribution and extrapolation, the proportional-Denton method has the following features.

**Distribution** : The average of quarterly BI ratios within a year equals the annual BI ratio. The quarterly BI ratios are smooth in order to relieve the step problem.

**Extrapolation** : For those quarters when the annual benchmark is not available ( $4\beta < t \leq T$ ), the values are adjusted using the BI ratio for the last quarter of the last benchmark year. That is,

$$X_t = I_t \times \frac{X_{q,\beta}}{I_{q,\beta}}$$

$$= X_{q,\beta} \times \frac{I_t}{I_{q,\beta}}$$

19.10 The second line of the formula above shows that extrapolation in the proportional-Denton method uses growth rates from the last quarter of the last benchmark year.

19.11 As in Table V-19-2, the proportional-Denton method reduces the size of breaks between years when compared to the prorating result in Table V-19-1. Instead,

the quarterly values for year 1 are adjusted even when the annual BI ratio is equal to 1. This is needed for quarterly BI ratios to be as smooth as possible. When the annual benchmark for the previous year is still unavailable, the ratio for the last quarter of the last benchmark year is used for the BI ratio. For example, the BI ratio from Q4 Year 2 (1.013) was used as the BI ratio for Year 3. If the annual BI ratio for Year 3 is found to deviate widely from 1.013, substantial revisions of the extrapolation results will be made.

Table V-19-2 Benchmarking by the Proportional-Denton Method

Quarter	Original Series		Annual Bench-mark	Annual BI ratio	Benchmarked Data		Quarterly BI ratios (=B/A)
	Value (A)	Quarterly growth rates (%)			Value (B)	Quarterly growth rates (%)	
Year 1. 1	5,324				5,315		0.998
2	4,591				4,585		0.999
3	4,654				4,655		1.000
4	4,457				4,471		1.003
Total	19,026		19,026	1.000	19,026		
Year 2. 1	5,764	29.3			5,804	29.8	1.007
2	4,770	-17.3			4,817	-17.0	1.010
3	4,944	3.6			5,002	3.8	1.012
4	4,519	-8.6			4,576	-8.5	1.013
Total	19,997		20,199	1.010	20,199		
Year 3. 1	6,232	37.9			6,313	38.0	1.013
2	4,958	-20.5			5,022	-20.5	1.013
3	5,372	8.4			5,442	8.4	1.013
4							
Total			?	?			

19.12 It may be possible to reduce the size of the probable revision by forecasting the next annual BI ratio. In order to do this, it is important to find a systematic pattern among annual BI ratios from the past movements. By including the forecast values of the next annual BI ratio, the proportional-Denton method can be enhanced as follows:

$$\min \sum_{t=2}^T [QBI_t - QBI_{t-1}]^2, \quad t = 2, \Lambda, 4\beta, \Lambda, T$$

subject to ①  $\sum_{t=4y-3}^{4y} QBI_t \cdot w_t = ABI_y, \quad t = 1, 2, \Lambda, 4\beta, \quad y = 1, 2, \Lambda, \beta$

①  $\sum_{t=4y-3}^{4y} QBI_t \cdot w_{t-4} = \hat{ABI}_y, \quad t = 4\beta + 1, \Lambda, T, \quad y = \beta + 1, \Lambda$

Where  $QBI_t$  is the quarterly BI ratio;

$ABI_y$  is the observed annual BI ratio for the back series;

$\hat{ABI}_y$  is the forecast of annual BI ratio for the forward series;

$$w_t = \frac{I_t}{\sum_{t=4y-3}^{4y} I_t}$$

Forecasting the annual BI ratio correctly is a difficult process, given the complexity of finding the systematic movement of BI ratios. Given this situation, it is preferable to avoid incorporating the forecast information into the benchmarking process.



# Appendices

1. Classifications
2. Using the Economic Statistics System(ECOS)



## I Appendices

### 1. Classifications

#### 1.1 Sector Classifications

The 2008 SNA classifies resident institutional unit by one of five institutional sectors, according to its principal function, behavior and purpose. An institutional unit is defined as an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities. The institutional sector is composed of non-financial corporations, financial corporations, general government, households and non-profit institutions serving households. Such classification by institutional sector makes it possible to analyze the effect economic policy has had on each sector: non-financial corporations, financial corporations, general government, households, non-profit institutions serving households, the rest of the world.

#### A. Total Economy

##### (1) Non-financial corporations

The non-financial corporations sector consists of corporations and quasi-corporations which produce goods and non-financial services.

A quasi-corporation is defined as an unincorporated enterprise which has a complete accounting system like an incorporated enterprise.

##### (2) Financial corporations

The financial corporations sector is composed of corporations and quasi-corporations whose principal activity is financial intermediation or financial auxiliary services.

### **(3) General government**

The general government is an institutional unit that mainly produces non-market goods and services for individual or collective consumption. The government provides goods and services at prices below what is considered economically significant and supplies collective services such as defense, public administration and public health services free of charge.

### **(4) Household**

A household is defined as a group of persons who share the same living accommodations; who pool some, or all, of their income and wealth; and who consume certain types of goods and services collectively, primarily housing and food. The main function of a household is to supply labor and final consumption expenditures, and it may also function as a non-corporation enterprise producing goods and services.

### **(5) Non-profit institutions serving households (NPISHs)**

The non-profit institutions serving households sector comprises institutional units which provide goods and services free of charge or at prices below those considered economically significant and which fund their principal resources through the spontaneous charity of households.

## **B. The Rest of the World**

The ROW sector is composed of resident units and all non-resident institutional units engaged in economic relations.

## 1.2 Functional Classification

The 2008 SNA proposes functional classification as a means to separate transactions by producers and institutional sectors. The classification's four items appear below. The official Korean SNA has adopted all of them except the classification of outlays of producers by purpose (COPP).

### A. Classification of Individual Consumption by Purpose (COICOP)

- Food and non-alcoholic beverages
- Alcoholic beverages and tobacco
- Clothing and footwear
- Housing, water, electricity, gas and other fuels
- Furnishings, household equipment and routine household maintenance
- Health
- Transport
- Information and communications
- Recreation, sport and culture
- Education services
- Restaurants and accommodation services
- Miscellaneous goods and services

### B. Classification of the Functions of Government (COFOG)

- General public services
- Defence
- Public order and safety
- Economic affairs
- Environmental protection
- Housing and community amenities
- Health
- Recreation, culture and religion
- Education
- Social protection

## C. Classification of the Purposes of Non-profit Institutions Serving Households (COPNI)

- Health
- Recreation and culture
- Education
- Social protection
- Others

### 1.3 Industry and Product Classification

The Korean System of National Accounts (KSNA) classifies industries and products based on the Korean Standard Industrial Classification (KSIC) and Input-Output Tables. The 15 relevant economic activities used to define separate parts in the national account are listed below:

- Agriculture, forestry and fishing
- Mining
- Manufacturing
- Electricity, gas and water supply
- Construction
- Wholesale and retail trade, accommodation and food services
- Transportation
- Finance and insurance
- Real estate
- Information and communication
- Business activities
- Public administration, defence and other government services
- Education
- Human health and social work
- Cultural and other services

## 1.4 Assets Classification

An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. In the KSNA, assets are classified as non-financial assets and financial assets/liabilities.

### A. Non-financial assets

Non-financial assets are further subdivided into those that are produced and those that are non-produced.

(1) non-financial produced assets are defined as those assets which are the result of a production process. In addition, these assets are composed of fixed assets, inventories and valuables.

(2) non-financial non-produced assets are defined as those assets which are produced by nature. The assets are divided into three categories, land, mineral and energy reserves, and standing timber assets.

### B. Financial assets/liabilities

Financial assets are defined as those assets which have corresponding liabilities. According to the 2008 SNA, financial assets consist of gold and SDRs; currency and deposits; insurance and pension reserves; securities other than shares; loans; shares and other equities; financial derivatives; and other accounts receivable/payable.

## 2. Using the Economic Statistics System (ECOS)

The Economic Statistics System (ECOS) is the Bank of Korea's website (<http://ecos.bok.or.kr>) built to make economic statistics available to the general public online in Korean and English. The Bank of Korea announces national accounts (advance and preliminary) quarterly and annually through press releases and online through ECOS.

Users of the statistics can conveniently search through the varied and detailed national income statistics listed on ECOS at any time, convert them into rates of change (compared to the previous quarter, year-on-year, etc.) and three-period moving averages, as well as depict them in various types of graphs. They can also download their search results in the form of EXCEL files.

ECOS includes not only detailed statistical data related to national income, but also lists the release methods and release calendars for these statistics, along with such statistical commentary publications as Korean Quarterly National Accounts and Korean System of National Accounts.

For further information about the use of national income statistics in ECOS, please contact the National Accounts Coordination Team at the Bank of Korea (+82-2-759-4380, 5286), or leave a message on ECOS's "Questions and Answers" board.



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