

Financial Statements as a Mean of Estimating National Accounts in Korea

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1. Introduction

In compiling national accounts, business accounts are one of the widely used source data. Financial statements, main statements of business accounts are a kind of micro-data which can be linked to national accounts data. By availability of these data in the national accounts, further data surveys or collections for the statistical purpose are not necessary, or much burden can be reduced for statistical agencies.

UN (United Nations Statistics Division) also published in 2000 a manual which explains the method to link between business accounting and national accounting, and contains several countries' experiences of its application. Most of countries utilize financial statements in their own ways for compiling national accounts. As these are easier to collect than other statistical data, financial statements will be used increasingly in the future.

In this paper, Korea's case was introduced on how financial statements are applied to compiling national accounts. In the section 2 and 3, the advantages and the limitations of financial statements in national accounting are introduced. In the section 4, general descriptions on application of financial statements to national accounts are illustrated. In the section 5, Korea's case was explained on the legal base to require financial statements, the sources, and the application method of financial statements in national accounts. Lastly, some future works for improving the Korean national accounts are referred.

2. Advantages of using financial statements in national accounting

SNA is designed and structured on the basis of two main frameworks, economic theory and business accounting practices. Therefore, the business accounting practices contribute an important role in national accounting, and financial statements are used as one of the major data source for compiling national accounts. Even if financial statements are primarily suitable for business purposes and not for macro-economic analyses to some degrees, they are essential source data for national accounting from their advantages.

One of the important advantages to use financial statements for national accounts is that they are normally administrative data collected by administrative authorities such as tax offices or securities authorities which monitor the quality of data. The contents of these data are reliable as much as data surveyed by statistical authorities. At the same time, financial statements data are easily accessible to national accountants without any more effort to survey new data. It relieves additional effort to providers of source data as well as users of them.

Another important advantage is that those data cover most of the population. Concerning the exhaustiveness in coverage, the administrative data is more advantageous than the sampled survey data. Any sampling bias or errors can be prevented from census data.

3. Limitations of financial statements data

Business accounts using financial statements have some limitations in applying to national accounts. First of all, financial statements are reported on the enterprise level, not on the establishment level. Financial statements show, therefore, consolidated data which net off the internal transactions among the establishments within one enterprise. If there are more than one establishment within an enterprise, the

output of the enterprise would be less than the sum of each establishment's output. On the other hand, the production account and the input-output table are compiled on the basis of the establishment level. Some supplementary surveys or data collections are, therefore, needed for adjusting business accounts data to national accounts.

Another weakness of financial statements to be utilized for national accounts is that business account data are historical ones which are different from those recognized in national accounts (normally at replacement costs). Fixed assets are valued at historical costs which do not reflect changes in assets value. Accordingly, the depreciation of fixed assets in financial statements, which is used as a proxy for the consumption of fixed capital, is recorded on the basis of historical costs. Therefore, some adjustment is also needed when changes in values of fixed assets are severe.

4. Outlines on the usage of financial statements in national accounts

How the financial statements are used in national accounts depends on which approach is used in estimating GDP. As is normally understood, there are three approaches in estimating national accounts, production approach, income approach, and expenditure approach. These three approaches are illustrated in simple terms for the explanation.

- Production approach: $\text{value-added} = \text{output} - \text{intermediate consumption}$
- Income approach: $\text{value-added} = \text{compensation of employees} + \text{operating surplus/mixed income} + \text{taxes on production and imports} (- \text{subsidies})$
- Expenditure approach: $\text{output} + \text{imports} = \text{intermediate consumption} + \text{final consumption} + \text{capital formation} + \text{exports}$

Business accounts can be applied in various ways, depending on these three approaches.

4.1. Application of financial statements in national accounts

In general, financial statements consist of an income statement, a balance sheet, a statement of cash flow (or a statement of changes in financial positions). In a broad coverage, "a statement of appropriations of retained earnings" and "a statement of cost manufactured" are incorporated as supplementary statements.

These financial statements are used for compiling a set of national accounts in different areas of accounts. For example, the income statement is used for calculating output and value-added in the production account. The income statements are also used for deriving the components of value-added in the generation of income account. (The items of output and value added are related to the production approach and the income approach in deriving GDP.) Opening and closing balance sheets (or a statement of cash flow) are used for estimating the capital formation in the capital account. The balance sheets are also used for estimating changes in financial assets and liabilities in the financial account.

Available financial statements data for national accounts

Kinds of national accounts	Kinds of financial statements applicable	Approach of GDP measurement
Production account	Income statement	Production approach
Generation of income account	Income statement	Income approach
Distribution of income account	Income statement, Statement of appropriations of retained earnings	Income approach

Use of income account	-	Expenditure approach
Capital account	Balance sheet(opening and closing), or Statement of cash flow	Expenditure approach
Financial account	Balance sheet(opening and closing), or Statement of cash flow	
Other changes in assets account	Balance sheet(opening and closing)	
Balance sheet	Balance sheet(opening and closing)	

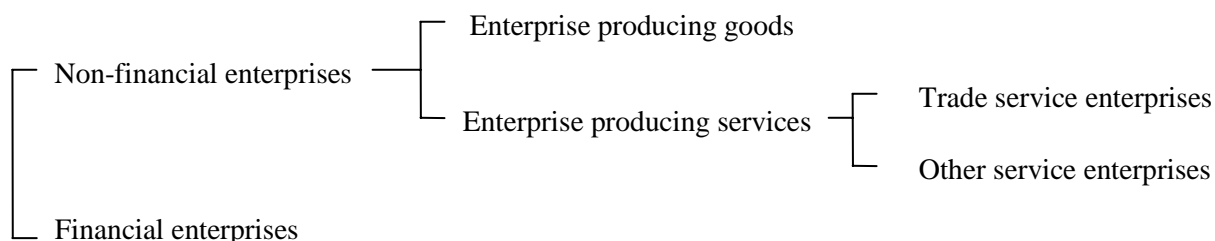
4.2. Calculation of Value-added by using financial statements

The way how to calculate the output and the value-added components from the financial statements are briefly introduced in this part.¹ It is confined to deriving current price data, not volume data of national accounts.

4.2.1. Output

There are several different types of output recognized in the financial statements. It can be classified by the method to calculate output which is derived through the financial statements. Normally, the output can be differentiated between financial enterprises and non-financial enterprises. Financial enterprises have their unique characteristics to derive output according to their financial institutions. Concerning non-financial enterprises, goods versus services are a main criterion to divide the output because service producing enterprises have no inventories. In the service industries, the output of “trade services” versus “service industries other than trade” is a criterion to distinguish it.

< Classification of enterprises by types of output >



Non-financial enterprises: Total output (at basic prices) = 1) + 2) + 3)

- 1) Output of goods = sales (net of taxes on products) + changes in inventories of goods
- 2) Output of trade services = sales of merchandised goods – cost of merchandised goods
- 3) Output of other services = sales (net of taxes on products)

Financial enterprises:

¹ For the detailed explanation, refer to “Links between business accounting and national accounting”(UN, 2000)

Financial enterprises are the typical industry to adopt financial statements for estimating the value added at current prices. There are numerous types of output to be derived according to their own kinds of financial institutions. Therefore, there is no uniform formula to calculate the output for this industry.

4.2.2. Consumption of fixed capital:

Depreciation (from statements of cost of goods manufactured + income statement)

4.2.3. Compensation of employees:

Wages (from statements of cost of goods manufactured + income statement) + salaries + employer's social security contributions + provisions for retirement reserve + indirect welfare cost (from statements of cost of goods manufactured + income statement) × portion of compensation of employees

4.2.4. Operating surplus:

Net operating income² + bad debt allowances + rents of non-produced assets such as land, patents and subsoil assets

4.2.5. Intermediate consumption:

Total output – value-added

5. How financial statements are used in the national accounts of Korea

In compiling GDP in Korea, financial statement data are used in a widely way. As production approach is adopted as the primary compiling method in Korea, the income statement which is used in the production approach and income approach are the main sources to compile the GDP at current prices. Financial statement data are used especially in compiling “the production account by kind of activities” and “the income distribution account by institutional sectors”.

5.1. Law and regulations to require financial statements

The legal backgrounds to require the standardized form of financial statements are illustrated as follows.

5.1.1. For all business enterprises:

- Act and regulations on Corporation Taxes: these regulations deal with corporations which have the obligation to report tax returns with financial statements to tax authorities.
- Act and regulations on Income Taxes: these regulations are applied for persons and unincorporated enterprises. Under these regulations, there are two kinds of enterprises, one which should maintain the double entry book-keeping and report standard financial statements, and the other which is exempt from the double entry book-keeping. The latter indicates small-sized unincorporated business which can keep simple ledgers, therefore, have no responsibility

² In illustrating the items of the income statement, there are two different types of format according to how to classify the expenses and incomes. One is the Anglo-American style and the other is Continental European style. The explanation in this paper follows the former style.

to report the financial statements. Instead, these unincorporated enterprises submit sales amounts to the tax authorities.

All the financial statement data reported to tax authorities under the above two regulations are classified according to the standard industry classification and are maintained in the database of Korea National Tax Service office.

- Act and regulations on External Audit for Corporations: these regulations take control of standard forms of financial statements for all the corporations which receive audits from outside auditors.

5.1.2. For all financial institutions:

- Regulations and accounting standards for financial institutions by “Financial Supervisory Service”, supervisory authority of financial institutions: these regulations and standards take control of detailed reporting forms of financial statements for banks, insurance corporations, securities brokers, and other non-banking businesses.

5.2. Sources of financial statements data for national accounts

There are several databases of financial statements to be used for estimating GDP at current prices and compiling national accounts.

- Financial statements database of all enterprises in “Korea National Tax Services”

This database contains financial statements (income statement, balance sheet, and statement of cost manufactured) of all enterprises which report tax returns to tax authorities. The data are available 1) by the classification of corporation versus unincorporated enterprise, and 2) by industry. The data of unincorporated enterprises are collected according to “Income Tax Law” which enforces the enterprises above certain amounts of the annual sales to submit their financial statements. The small business enterprises below certain amounts of the annual sales are exempt from double-entry book keeping and thus reporting financial statements. The data on these small business enterprises (which are called “household unincorporated enterprises” in SNA) are not recorded in the database. The annual database of the National Tax Services is available for the national accountants from the third quarter after the end of the year.

The National Tax Service database is used to derive 1) the output and value-added of service industries, such as business and social services in the production account, and 2) property incomes in the income distribution account.

- “Survey of Financial statements on Corporations” by the Bank of Korea

These data are collected every quarter by surveys from the Bank of Korea on corporations which record above certain amounts of annual sales. The surveyed corporations are selected by sampling techniques from the population of corporations for all industries except for agriculture and forestry, financial institutions and insurance corporations, health and education services, and government sector. The survey data are used to derive ratios of the value-added and its components for each industry in the production account at current prices. The quarterly data are available around 80 days after the end of each quarter, and the annual data are offered 5 months after the end of the year.

- Financial statements database of all financial institutions in the “Financial Supervisory Services”

This database contains financial statements data of all financial institutions supervised by the Financial Supervisory Services. Financial institutions cover banks, securities brokers, insurance corporations, mutual savings banks, merchant banks, and mutual financial businesses. The data of financial statements are collected on a monthly basis for most of the financial institutions, and are available for national accounts to compile the quarterly national account as well as annual national accounts. The database is offered to national accountants two months after the end of each month.

- Direct collection of individual financial statements of other enterprises such as public enterprises or oligopolies

The financial statements data which are not available on time from the database, such as those of public enterprises or oligopolies are collected directly from the companies. “Electricity, gas, water supply industry” and “communication industry” are compiled through the direct collection of the data.

5.3. Methods to be applied for estimation

Two kinds of method are used for estimating the GDP. One is to obtain the amounts directly and the other is to derive ratios, respectively, from the financial statements.

5.3.1. Direct use of amounts

Relevant amounts for each component of the value-added and intermediate consumption are picked up throughout the financial statements. This method is used in the case that financial statement data for all the enterprises are collected. Financial and insurance industries; electricity, gas and water supply industries; transport, storage and telecommunications industries are estimated by this method.

5.3.2. Use of ratios

Instead of using the amount of the financial statements directly, ratios of each value-added component over output are used to derive the total value of the component. The ratios can be acquired by several sources such as Surveys for financial statements of corporations by the Bank of Korea, National Tax Service database, and input-output tables. Normally, in this case, only output data are identified as source data, and the intermediate consumption and value-added components are uncollectible. The industries in which this method is adopted are manufacturing and mining, construction, wholesale and retail, restaurant and hotel, business service, and NPISH etc.

5.4. The current national accounts to be compiled by using financial statements

Currently, the national accounts to be compiled by using financial statements data in Korea are, 1) the production accounts by industries, and 2) the distribution of income account by institutional sectors.

Financial statement data are normally used for estimating current price data at the national accounts. Constant price data should be acquired through deflating these current price data or through the direct collection of volume data. In the production account by industries, most of the industries’ output and value-added are derived, in some parts or all, by using financial statement data except for agriculture & forestry, fishing, and construction industries.

5.4.1. Production account

Sources of financial statement data and those application methods for the industries in the production account are illustrated as follows.

Data source of financial statements for the production account

Industry classification (by ISIC division)	Data sources of financial statements	Quarterly(Q) or Annual(A)	Preliminary(P) or Final(F)	Application method
A- Agriculture, hunting and forestry	-	-	-	-
B- Fishing	-	-	-	-
C- Mining and quarrying	“Survey of Financial Statements on Corporations” by the Bank of Korea	A	P, F	Ratios
D- Manufacturing	“Survey of Financial Statements on Corporations” by the Bank of Korea	A	P, F	Ratios
E- Electricity, gas and water supply	“Korea Electric Power Corporation”, “Korea Gas Corporation”, as distribution corporations, “Korea Water Resources Corporation”, Water management public corporations in local government	Q, A	P, F	Amounts
F- Construction	-	-	-	-
G- Wholesale and retail trade	“National Tax Service database”	A	F	Amounts
H- Hotels and restaurants	“National Tax Service database”	A	F	Amounts
I- Transport, storage and communications	“Railroad Account” (public corporation), Subway corporations, Highway corporation, Airline corporations, “National Tax Office database” (private sector of transport and storage), “Telecommunication Account” (public corporation), Private telecommunication corporations	A	F	Amounts
J- Financial intermediation	“Financial Supervisory Service database” (banks, life and non-life insurance, securities brokers, other non-depository financial institutions)	Q, A	P, F	Amounts
K- Real estate, renting and business activities	“National Tax Service database”	A	F	Amounts
L- Public administration and defense; compulsory social security	(Government budget data, Actual fiscal revenue and expenditure data) ¹	Q, A	P, F	Amounts
M- Education	“National Tax Service database”	A	F	Amounts
N- Health and social work	“National Tax Service database”	A	F	Amounts
O- Other community, social and personal service activities	“National Tax Service database”	A	F	Amounts

Note: 1) data in parenthesis are not financial statements.

5.4.2. Income account

In compiling the distribution of income account, the financial statement data are also used to distribute the total amount of income components by institutional sectors. Among the sectors, non-financial corporations and financial corporations are derived by using the financial statement data. The government sector is obtained from the government budget data, and the rest of the world is from the balance of payment data respectively. The individual sector (households + non-profit institutions serving households) is derived as residuals by deducting the other sectors’ amount from the total value which is transferred directly from the production account.

Data sources of financial statements for the income account

Sectors	Data sources of financial statements	Quarterly(Q) or Annual(A)	Preliminary(P) or Final(F)
Non-financial corporations	“National Tax Service database” (for corporations plus unincorporated enterprises as quasi-corporations data)	A	F
Financial corporations	“Financial Supervisory Service database”	A	F
General government	(Government budget) ¹	A	F
Individual (households + NPISHs)	-	-	-
The rest of the world	(Balance of Payment) ¹	A	F

Note: 1) data in the parenthesis are not financial statements.

6. Some tasks for Korean national accounts

Two suggestions are raised in this paper for the future tasks of Korean national accounts.

6.1. Estimation of quarterly national accounts by income approach

In Korea, the quarterly national accounts are compiled by the production approach and the expenditure approach, and the income approach is not adopted yet due to the lack of timely acquisition of income data. However, it has been available to get the information on quarterly financial statements of enlisted corporations and other corporations which are obliged to be audited from outside auditors by law. The release of survey data of quarterly financial statements on corporations is under way by the Bank of Korea. Currently, financial industries and electricity & gas & water supply industries are being compiled for quarterly data. Therefore, if more supplementary data surveys are performed, it will be possible to acquire the income components data on quarterly national accounts.

6.2. Compilation of the production account and the generation of income account by institutional sectors

Compiling the production account and the generation of income account by institutional sectors is a target of the Korean statistical agency in order to complete the whole series of national accounts by institutional sectors. The necessity to compile institutional sector accounts is explained in the literatures of national accounts.³ The advantage of institutional sector accounts is that it becomes available for policy maker to analyze the behavior of group of economic agents through, for example, social accounting matrix (SAM) by combining the supply and use table with institutional sector accounts. In addition, it integrates

³ UN(1999), A systems approach to national accounts compilation, page 22

sectoral statistics together, such as balance of payment, government finance statistics, and monetary and financial statistics.

The comprehensive financial statement database such as from “the National Tax Service” and “the Financial Supervisory Service” is available since the year 1995. They might provide the national accountants with appropriate information on the corporations sector for compiling the production and income generation accounts by institutional sectors. The remaining problem is that how to estimate the data on the unincorporated household enterprises. Unincorporated household sector is lacking of enough information on financial data. Therefore, further research is thus needed to collect information for the sector.