

The Use of SPPI for measuring Real GDP in Korea

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I. Introduction

- ◆ **The increase of demand for service statistics all over the country**
 - ✓ **Having made the efforts to improve their Service Producer Price Indexes (SPPIs)**
 - ✓ **Two different methods for estimating output at constant value**
 - ✓ **The quantity extrapolation method**
 - ✓ **The price deflation method**
- ◆ **Introducing the SPPIs in Korea and deflators applied to measure the constant price output of the service industry**
- ◆ **And then, discussing the issues of compiling the SPPIs and the way of improving them**

II. Service Producer Price Indexes (SPPI) in Korea

- ◆ **Producer Price Indexes (PPIs) in Korea consist of 923 commodities in all.**
- ◆ **SPPIs have only 77 commodities, which form about 8.3%**

Present status of PPIs

Classification	Items	Weight
Total	923	1,000.0
Goods	846	705.8
Services	77	294.2
Transportations	23	52.9
Post and Telecommunications	13	42.8
Financial Services	11	21.6
Real Estate Activities	4	90.8
Leasing and Renting	5	15.5
Advertising	4	14.4
Professional, Scientific and Technical Services	11	41.7
Other services	6	14.5

II. *Service Producer Price Indexes (SPPI) in Korea*

- ◆ **The relative insufficiency of SPPI statistics despite the importance of the services industry**
 - ✓ In 2005, the gross value added of the service sector at current prices is 57.2% of GDP at basic prices.
- ◆ **In Korea, PPIs cover 93.6% of the goods sector, whereas cover only 35.7% of the service sector by the reason of including**
 - ✓ Non-profit services which do not have market prices
 - Public Administration & National Defense, etc.
 - ✓ Services for which surveying prices is difficult
 - Wholesale & Retail Trade, etc.
 - ✓ Services for which application of the concept of price is difficult
 - Finance, R&D and Broadcasting, etc.

III. Deflators by kind of Service Industry

Overview

- ◆ **Using the PPIs to calculate constant prices output**
 - ✓ **CPIs could be used for certain services produced and consumed simultaneously**
- ◆ **Using the suitable price indexes for the input cost items to estimate the constant prices output for non-market services whose market prices do not exist**
 - ✓ **Including Public Administration & National Defense, some part of Education, Health & Social welfare and Cultural services**
- ◆ **Obtained by using the nominal and real value of outputs for services which are traded in market but whose prices indexes are not compiled**
 - ✓ **Including Wholesale & Retail Trade and Financial Intermediation Services**



III. Deflators by kind of Service Industry

◆ The Service sector is classified into 10 industries

Basic Items and Deflators by Kind of Industry

Industry	Basic items	Deflator		Reference
		PPI	CPI	
1 Wholesale and Retail Trade	6	-	-	Deflators are derived after obtaining nominal and real data
2 Restaurant and Accommodations	45	-	45	
3 Transport, Storage and Communications	56	25	9	
4 Finance and Insurance	9	3	1	Deflators are derived after obtaining nominal and real data
5 Real Estate	4	2	1	
6 Business Services	55	16	1	Some are non-market services
7 Public Administration and National Defense	1	22	3	Non-market services
8 Education Services	15	-	12	Some are non-market services
9 Health and Social Welfare Services	23	-	4	Some are non-market services
10 Other Services	66	4	24	Some are non-market services
Total	280	72	100	

III. Deflators by kind of Service Industry

Wholesale and Retail Trade

- ◆ **Estimated as a single industry, not as two sub-industries**
 - ✓ **Difficulty to obtain source data for sub-industries**
 - **Many firms carry out both wholesale and retail trade and they consist of small-scale businesses in Korea**
- ◆ **Deflators for those basic items are derived after nominal and real data on them are obtained in the process of GDP accounting**
- ◆ **Output of wholesale and Retail Trade is estimated indirectly by using the margin ratios of the basic items**
 - ✓ **Not required for estimating output at constant prices for Wholesale and Retail Trade**

III. Deflators by kind of Service Industry

Restaurants and Accommodations

- ◆ **Composed of 45 basic items and using the relevant 45 CPIs for estimating real output**
 - ✓ **In the case of Restaurants, the detailed price indexes corresponding to the basic item are provided**
 - ✓ **And therefore constant upper item prices are derived using the deflators weighted by those price indexes**
 - ✓ **In the case of Accommodations, the relevant price indexes for Hotels, Inns, and Condominiums are used to derive the per-item constant prices and CPI Accommodation is applied to Others**
- ◆ **There are no particular problems to obtain the constant prices of Restaurants and Accommodations**

III. Deflators by kind of Service Industry

Transport, Storage and Communications

- ◆ Composed of 56 basic items and using the relevant 25 PPIs and 9 CPIs for estimating constant prices output

Present Status of Usage of Transport, Storage and Communications Deflators

Classification	Basic Items	Price Indexes
Transport (45 items)	Railroad Passengers , Railroad Freight, Road Freight, Coastal Waters Passengers, Coastal Waters freight, Domestic Air Passengers, International Air Passengers, Operation of Freight Terminals, Parking lot operation, etc.	relevant PPIs
	Subway Passengers, Intra City Buses, Inter-city Buses, Express buses, Taxicabs, etc.	relevant CPIs
Storage (5 items)	General Warehouses, Refrigeration & Cold Storage Warehouses, Farm Product Warehouses, Dangerous Goods Warehouses, Other Warehouses	relevant PPIs
Communications (6 items)	Postal Service, Courier Services, Wire Telecommunications, On-line Access Services	relevant PPIs
	Wireless Telecommunications, Telecommunication Reselling	relevant CPIs

III. Deflators by kind of Service Industry

Transport, Storage and Communications cont...

◆ Problem of choosing PPI or CPI

- ✓ If the users of the services consist of both corporations and households, and each sector has considerable weight in use of the services, CPI and PPI should be applied to the usages by corporations and by households, respectively

Improvements in Applying Transport, Storage and Communications Deflators

Basic Items	Current Status	Needed improvement
Road passenger transport	Railroad passenger Fares PPI	Railroad Passenger Fares CPI for household use
Domestics Air Passenger	Domestic Air Passenger Fares PPI	Domestic Air Passenger Fares CPI for household use
International Air Passengers	International Air Passenger Fares PPI	International Air Passenger Fares CPI for household use
Wire Telecommunications	Wire Telecommunications PPI	weighted price index of Local Area Charges CPI and Domestic Long Distance Charges CPI for household use
Postage, Courier Charges, Coastal Waters Passengers, etc	relevant PPIs	relevant CPIs for household use



III. Deflators by kind of Service Industry

Transport, Storage and Communications cont...

- ◆ **Items using price indexes of similar items**
 - ✓ **Required to develop new price indexes for the items having over 500 billion won in output at current prices and which do not have suitable price indexes**

Items for which Price Indexes of Similar Items are used

Items	Price indexes
Chartered Buses	Arithmetic average of CPI on Local Bus Fares, Cross Country Bus Fares and Express Bus Fares
Hearse Operation	Road Freight Transportation PPI
Oceangoing Foreign Passengers	Transoceanic Water Freight Charges PPI
Ship Piloting	Sea Transportation Support Activities PPI
Ship Cleaning Services	Sea Transportation Support Activities PPI
Road loading & Unloading	Railroad Loading & Unloading Charges PPI
Travel agencies, Land Freight Forwarding, Compound Freight Forwarding, etc.	Transportation PPI

III. Deflators by kind of Service Industry

Finance and Insurance

- ◆ **Composed of 9 basic items and using the relevant 3PPIs and 1 CPI to estimate output at constant prices**
- ◆ **The deflator Financial Intermediation Services Indirectly Measured (FISIM) is estimated by dividing Nominal FISIM by Real FISIM**
 - ✓ Real FISIM is calculated by extension using the rates of change of real interest-bearing assets, which are derived by deflating nominal interest-bearing assets with the all-item PPI
- ◆ **Using the Services CPI for the items not having their suitable deflators**
 - ✓ For example, Life Insurance Corporations, Financial service fees of Other Depository Corporations and Other Financial Intermediaries

III. Deflators by kind of Service Industry

Finance and Insurance Cont...

- ◆ **Suitable indexes required for some basic items**
 - ✓ Developing the existing CPI on financial service fees by compiling CPI for three sub-items (Depository Corporations, Credit Card Companies and Securities Companies)
 - ✓ Making a new CPI for Life Insurance Corporations

Present Status of Usage of Finance and Insurance Deflators

Basic items	Price index
Central Bank(non-market output)	Applying (PPI all items, etc) by kind of cost
FISIM of Other Depository Corporations, Other Financial Intermediaries and Financial Auxiliaries	All-item PPI
Life Insurance Corporations, Service fees of Other Depository Corporations and Other Financial Intermediaries	services CPI
Financial Auxiliaries	Weighted average of Services CPI and Security Brokerage Services PPI
Non-life Insurance Corporations	Non-life insurance PPI



III. Deflators by kind of Service Industry

Real Estate

- ◆ Composed of 4 basic items and using the relevant 2 PPIs and 1 CPI for estimating constant prices

Present status of Usage of Real Estate Deflator

Basic items	Price index
Real Estate Leasing, Real Estate Development	Real Estate Renting PPI
Real Estate-related Service Industry	Real Estate Agencies & Appraisal Services PPI
Housing Services	House Rental CPI

- ◆ Required for relevant indexes of Real Estate Development

III. Deflators by kind of Service Industry

Business Services

- ◆ **Composed of 55 basic items and using relevant 16 PPIs and 1 CPI for estimating constant prices**
 - ✓ **Mainly using adequate PPIs as deflators, otherwise using all-item CPI or the average of all-item CPI and services PPI**

Present Status of Usage for Business Services Deflators

Basic items	Price indexes
34 items such as Advertising, Legal, Accounting, Software Development & Supply, etc.	PPIs of relevant items
In-company Research & Development (R&D)	All-item CPI
Research Institutions (Industry and Non-Profit Organization) including 5 items such as Natural Science and Social Science, Other Business Services including 15 items such as Human Resource supply & Employment Agency Services, business intermediation services, and so on	Arithmetic average of all-item CPI and services PPI



III. Deflators by kind of Service Industry

Business Services Cont...

- ◆ Needs for new compilation of relevant price indexes
 - ✓ It's necessary to newly develop price indexes for the items which do not have appropriate price indexes, and whose current outputs are in excess of 500 billion won

Basic items for which surveys of new deflators are necessary

Classification	Basic items
6 related Research Services Items	Research Institutions (Industrial Institutions: Natural Sciences and Social Sciences), Research Institutions (Non-Profit Organizations: Natural Sciences, Social Sciences and Others), and In-Company Research & Development (R&D)
12 items of Other Business Services	Technology Test Inspection , Geological Surveys & Exploration, Market & Public Opinion Surveys, News Supply, Business & Management Consulting , Credit Surveys, Human Resource Supply & Employment Agency Services , Business-Intermediation Services , Organizations of Businesses & Business Managers , Professional Organizations, Entertainer Representation , Free Lance Professions



III. Deflators by kind of Service Industry

Business Services Cont...

- ◆ **Compilation of price indexes using the indirect method**
 - ✓ **The difficulty in finding standard specifications of samples**
 - **Leasing & Renting PPI is obtained by the indirect method using PPI of General Machinery & Equipment, and economic variables such as exchange rate and interest rates, etc.**
 - ⇒ **Necessarily required to reflect the trends of lease prices of standard samples and cost factors additionally**

III. Deflators by kind of Service Industry

Business Services Cont...

- ✓ The difficulty of applying the direct method (survey method)
 - **Architectural & Other Engineering-Related Services**
PPI is obtained by using the wage data of the related associations and the price indexes for the relevant raw & intermediate materials of construction
- ⇒ Required to reflect the actual market-based data

III. Deflators by kind of Service Industry

Public Administration, National Defense and Compulsory Social Security

- ◆ **Regarded as one basic item**
 - ✓ **It produces non-market services and its sub-items have very similar production structures**
- ◆ **Constant price estimates of output are calculated by dividing input expenses (i.e., fixed capital consumption, intermediate consumption and so on) by their respective deflators**
- ◆ **It is necessary to devise a new means of calculating the deflator for compensation of employees at constant prices**

III. Deflators by kind of Service Industry

Education Services

- ◆ **Composed of Education (Industry), Education (Non-profit organization) and Education (National institution)**
- ◆ **Composed of 15 basic items and using 12 CPIs for estimating of constant output**
 - ✓ **Mainly using the relevant CPIs**
 - ✓ **Otherwise using the CPI of similar items or all-item CPI**
- ◆ **It's reasonable to estimate the constant output by the current method.**

III. Deflators by kind of Service Industry

Education services Cont...

Present Status of Usage for Education Services Deflators

Basic items	Price indexes
Mostly basic items related to education (10 items such as middle school, high school, and so on)	CPI of relevant items
Elementary school	Middle school CPI
4 items such as Special Education Institutions, Vocational & Technology Education Institutions, Educational Foundation, and so on	all-item CPI

III. Deflators by kind of Service Industry

Health and Social Welfare Services

- ◆ **Composed of 23 basic items and using 4 CPIs for estimating of constant output**
 - ✓ **Mainly using the relevant CPIs**
 - ✓ **In the case of non-profit related services, using the same CPI as for the relevant for-profit organization or all-term CPI**
- ◆ **It's necessary to newly develop price indexes on non-market services to reflect the economic condition correctively**

III. Deflators by kind of Service Industry

Health and Social Welfare Services Cont...

Present Status of Usage for Health and Social Welfare Services

Basic items	Price indexes
15 items such as Privately-Established General Hospitals & Clinics, Dental Hospitals & Clinics, Drugs & Pharmaceuticals, and so on	CPI of relevant items
8 non-profit items such as Social Work Activities (Children, the Elderly, Women, the Disabled), Health Services, and so on	all-item CPI or Price indexes related to relevant for-profit businesses

III. Deflators by kind of Service Industry

Other Services

- ◆ **Composed of 66 basic items and using 4 PPIs and 24 CPIs for estimating of constant output**
 - ✓ **Mainly using the relevant CPIs**
 - ✓ **Using the all-item CPI or services PPI for several basic items such as Program Supply, Recording Business, etc., due to lack of relevant price indexes**
- ◆ **To improve the accuracy of constant prices of services, new price indexes of PPI are necessary to compile**

III. Deflators by kind of Service Industry

Other services Cont...

- ◆ It's necessary to newly develop the price indexes on the item of which current outputs are in excess of 500 billion won without their appropriate price indexes

The basic items which are necessary to survey new deflators

Basic items	Newly Surveyed Deflators
Program supply, Manufacturing of movies, Distribution, Program production	PPIs
Ceremony Halls, Matrimonial Agencies, Fortune Telling, Checkrooms, Massage Parlors, Rental of Theaters, Entertainer Membership Organizations, Independent Arts, The Recording Business , Professional Athletes, Sporting Organizations & Support Organization, Sporting Operation Business, Gym, Tennis Courts, Table Tennis Halls, Baduk Rooms and Gambling Rooms etc.	CPIs

IV. *Concluding Remarks*

- ◆ **More new items of SPPIs are required to develop**
 - ✓ **The items of SPPIs are insufficient compared with those of the goods sector**
- ◆ **It is necessary to develop SPPIs for non-market services**
 - ✓ **Non-market services such as government services, which are more than 20% of total services, have no suitable price indexes**
 - ✓ **The outputs at constant prices are calculated by application of the relevant price indexes for the input cost items**

IV. *Concluding Remarks*

- ◆ **In compiling SPPIs, attention should be made for the services consumed both corporations and households simultaneously**
 - ✓ **If the users of the services consist of both corporations and households, and each sector has considerable weight in use of the services, CPI and PPI should be applied to the usages by corporations and by households, respectively**

Deflation of Government Services in Korea

- ◆ **Government Services in the national accounts in Korea mean all services produced by the general government.**
 - ✓ **Composed of 7 basic items**
 - **Public Administration, National Defense & Compulsory Social Security**
 - **Research (National Institutions)**
 - **Education (National Institutions)**
 - **Health Services (National Institutions)**
 - **Social Welfare Services (National Institutions)**
 - **Sewage & Refuse Disposal, Sanitation & Similar Services (National Institutions)**
 - **Cultural Services (National Institutions)**

Deflation of Government Services in Korea Cont...

- ◆ **Constant price estimates of output for the general government are calculated by combining constant price value added and constant price intermediate consumption after their respective real values are estimated.**
- ✓ **Compensation of employees**
- ✓ **Fixed capital consumption**
- ✓ **Intermediate consumption**