

INSURANCE SERVICES IN JAPAN'S CORPORATE SERVICE PRICE INDEX (CSPI)

Kuniko Moriya

Research and Statistics Department,
Bank of Japan

E-mail: kuniko.moriya@boj.or.jp

17th Voorburg Group Meeting - Nantes, France
23-27 September 2002

A. Business Model

Insurance services are divided into two categories. The first is life insurance services, which account for 60 percent of output, or about 53 trillion yen.¹ The second is property and casualty insurance services, which account for 40 percent, or about 33 trillion yen.

Life insurance services provide services for households, while the property and casualty insurance services provide services for both households and businesses.

The Corporate Service Price Index (CSPI), compiled by the Bank of Japan, covers services traded among corporations. In other words, the CSPI does not cover household services. Life insurance services and property and casualty insurance services for the households are thus beyond the scope of the CSPI. The CSPI covers property and casualty insurance services for business use, of which output is about 21 trillion yen.²

B. Definition of Services Output

It is very difficult to define the output of insurance services, because they are sometimes provided just one time while payment for services is done inter-temporally. Two ideas on the definition of insurance services output are explained below. In the current CSPI, the former is adopted.

B-1. Gross-based premium – Output of assumption of risk

One of the functions of insurance services is “assumption of risk” (accepting responsibility for an insurance policy and guaranteeing payment for damages or losses if they occur). Customers/policyholders pay premiums to obtain services that insure

¹ The figures cited in this paragraph are the amount of the domestic production of the “1995 Input-Output Table for Japan” (I-O Tables), compiled by the Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT).

² The figure cited in this paragraph is the total amount of the intermediate demand of the property and casualty insurance services of the 1995 I-O Tables. The weights of the property and casualty insurance services in the CSPI are estimated from the total amount. For details, see section B of the maintext.

against damage to or loss of property according to the policy contracted. For example, when a customer enters into a contract of fire insurance with an insurance company for a building that the customer owns, the customer becomes a policyholder and pays premiums that may be paid monthly, annually, or at one time, for the insurance underwritten. If the insured building is damaged or destroyed by fire, a claim is paid by the insurer to the policyholder to the extent of the policy covered.

According to a gross-based approach, the output of insurance services is regarded as the total amount of “assumption of risk,” which is transferred from policyholders to insurers. In other words, the output of insurance services is defined as the amount of premium paid by the policyholders. A premium is composed of two parts: a net premium, and a reserve for claim. The net premium corresponds to the cost of insurance business services and to their margin, while the reserve for claim is the reserve for the payment of claims in the future. When the restitution covered by the contracted policy is made, the claim is paid from the reserve. The formation of the output is as follows:

$$\text{Output} = \text{Premium} = \text{Net Premium} + \text{Reserve for claim}$$

We, the Bank of Japan, define the output of insurance services according to the formation mentioned above. As we survey premiums as a whole, not as a part of premium, such as net premium, we estimate the total of gross-based output of the services in accordance with Japan’s Input-Output Tables (I-O Tables) with an original modification. This is the adjustment to match with the actual price data, which we collect. The I-O Tables and the statistics compiled by the insurance industry associations are used for the estimation.

There is another function of insurance services: financial function. Reserve for claims are invested in the financial markets. The result of the investment is reflected to the level of premium for the next period or to the amount of dividend for the current period. The output of insurance services for the current period can be explained by adding the financial function on the “assumption of risk” function mentioned above. The formation of the output is as follows:

$$\text{Output} = \text{Premium} + \text{Interest of investment} - \text{Dividend}$$

B-2. Net-based premium – Output based on SNA definition

There are other aspects for defining the output of insurance services. For example, there is a net-based approach adopted in the System of National Accounts (SNA). By this approach, the output is defined as the value added of insurance services. The output is calculated by deducting the amount of expenses from that of revenues of insurers.

When it focuses on only one function of insurance services: “assumption of risk,” the output of insurance services for the current period can be explained as follows:

$$\text{Output} = \text{Premium} - (\text{Claim paid} + \text{Reserve for claim})$$

“Premium” in the formation stands for the insurers’ revenues received from policyholders. “Claim paid” is the amount of claims that the insurers paid during the current period. “Reserve for claim” is the reserve for future payment of claims from the insurers to the policyholders when restitution is made.

When the financial function is added to the formation mentioned above, the output of insurance services for the current period can be explained as follows:

$$\begin{aligned}\text{Output} &= \text{Premium} + \text{Interest of investment} \\ &\quad - (\text{Claim paid} + \text{Reserve for claim} + \text{Dividend})\end{aligned}$$

This formation is adopted in the I-O Tables, which correspond to the SNA.

C. Government Regulation

For motor vehicle insurance, the government sets compulsory insurance. The rate of reserve for claim of premium for the compulsory motor vehicle insurance is forced to adopt that calculated by the rating organization, the Automobile Insurance Rating Organization of Japan. The Law concerning Non-Life Insurance Rating Organizations regulates the premium rating system. Other than that, there are no regulations concerning premiums for the insurance services covered by the CSPI.

After the revision of the Law concerning Non-Life Insurance Rating Organizations in

July 1998, the premium rating system was deregulated, except for the compulsory motor vehicle insurance.

D. Pricing Methodology

On the actual price survey, we capture premium as a whole, because we want to capture the cost of policyholders based on the actual transactions between policyholders and insurers.

Premium consists of two factors, the premium rate and the value of the insured property. Premium is calculated by the rate multiplied by the value. Insurance companies sometimes provide premiums themselves for our price survey. However, in most of the cases they provide premium rates, because the premiums change frequently, depending on the price movement of insured property. In the former case, we use the premiums themselves obtained from reporting companies. They are actual transaction prices. In the latter case, we set models for the price survey because the change in property value is not yet included in the premium rates. The models are composed of the premium rates multiplied by the price indexes. Price indexes are used as a proxy for the change in values of insured property. We call the price indexes the “inflator.”

We compile four items regarding insurance services in the CSPI: “voluntary motor vehicle insurance,” “compulsory motor vehicle insurance,” “fire insurance,” and “marine and other transportation insurance services.”³ They are classified by type of service, not by industry.⁴

For the items of “voluntary motor vehicle insurance” and “compulsory motor vehicle

³ “Item” is the lowest index aggregation level published in the CSPI.

⁴ The CSPI adopts a classification system based on type of service. In this system, outputs of each company are categorized by the type of service. This is different from the industry classification system, in which outputs are categorized by the major output of each company. In the industry classification system, all outputs of each company are counted in one industry, although minor output can be quite different from the output of the industry in which the company is categorized.

Therefore, the item “fire insurance” in the CSPI, for example, includes fire insurance services only. Even if the insurers supply services categorized in other fields, they are not included in the item “fire insurance.”

insurance,” actual transaction premiums are surveyed from the reporting companies. Each premium is surveyed by a fixed quality, such as by type of motor vehicle, type of coverage of insurance, and limit of the amount of claim.

For the item of “fire insurance,” model prices are surveyed. Premium is calculated by the premium rate multiplied by the value of insured property. The premium rates are surveyed from reporting companies, while the value of insured property is obtained from the price indexes (“inflators”) as a proxy. Concretely, the Building Construction Cost Index compiled by the Construction Research Institute is adopted for the inflators. Inflators are adjusted to the indexes of the five-year moving average in order to take into account the depreciation of insured property. As type of insured property, office buildings, factories, and warehouses are selected for the price survey.

For the item “marine and other transportation insurance services,” model prices are also surveyed. As inflators, corresponding indexes of the Wholesale Price Index (WPI) compiled by the Bank of Japan are adopted. As type of insured property, inbound ocean freight (e.g., crude oil, iron ore, soybeans, and textiles), coastal and inland waterways freight (e.g., coal, electrical machinery, and chemicals), overland freight (e.g., textiles, and electrical machinery), and ships used for transportation are selected for the price survey.

E. Remarks Regarding Published Data

We capture price movements with the change of prices caused by the change of risk. We consider risk to be a part of price change, since we are on the standpoint of the demand side. If policyholders need to secure their freights whatever it happened, the cost will change depending on the change of risk. That means policyholders don’t recognize the change of risk as a quality change of services, but as a pure price change.

Of course, there is another way to eliminate the price movement caused by the change in probability of risk from the pure price movement. In this case, prices of services are defined as the prices paid for the services provided by insurers under the same condition of risk.

The definition of output for capturing insurance services, and whether the risk should be

included or excluded, is arguable.

F. Analysis of “Goodness” of Published Data

We have compiled four item indexes of the insurance services for more than 15 years, starting in January 1985. The indexes generally show a decreasing trend through time.⁵ We would like to try to evaluate its “goodness” through qualitative analysis from three different viewpoints: impact of deregulation, change of risks, and downward prices, especially of imports.

First, we can see the impact of deregulation on the downward trend in prices of three items; “voluntary motor vehicle insurance,” “fire insurance,” and “marine and other transportation insurance services,” since the middle of 1998. After the revision of the Law concerning Non-Life Insurance Rating Organizations in July 1998, there was a two-year period of allowance for recognizing the revised law. When that period expired at the end of June 2000, real price competition began and prices decreased further.

Second, we can observe the price change due to change of risk, especially in the “marine and other transportation insurance services.” For example, we can see the skyrocketing increase at the beginning of 1991. This is because of the extreme increase of risk due to the Gulf War. The part of the premium covering the outbreak of war soared.

Finally, the influence of downward prices of imports can be observed in the “marine and other transportation services.” A downward trend of insured property decreases premium. Decrease of the property was due to the appreciation of the yen against foreign currencies.

Overall, the trend of the indexes of insurance services, which we have surveyed for more than 15 years, can be explained qualitatively by taking into account the changes in the costs of policyholders.

⁵ See appendices for the indexes of insurance services. Graphs and a table of the indexes are available.