The Sixth Lecture
Course /
Agricultural price analysis

Fourth Year- Agribusiness Program

Professor of the Course:

Prof.Dr/ Nadia Al-Sheikh - Dr. Fatma Al-Bateh

الأرقام القياسية

INDEX NUMBERS

الرقم القياسي (Index number)

- It is a statistical indicator that measures the relative change in a specific phenomenon, price, quantity, value or wage, For a specific basis, it may be a certain period of time or a specific geographical location, where the value of the phenomenon is taken as a basis for calculating the index. The time or place to which the phenomenon is attributed is called a period or place of foundation.
- The time or place we attribute to a period or place is also called comparison.

History of index numbers

The use of index numbers dates back more than two centuries, as the Italian statistician Carly (1764) used it to compare prices in Italy for the year 1750 with prices in the year 1500, then it was more widely used since then, as governments took care in installing and calculating some indices. One of the important things when installing the index is choosing the base period or base location for the installation of the index. The base period is usually prior to the comparison period. The period or place of the foundation must be chosen so that it is distinguished by economic stability and free from violent unrest that the phenomenon, such as wars and economic crises, may be exposed to, as preferred. Not too far from the comparison years.

Areas of use of indices

It is used in statistical applications in the field of economic studies, during which the economic conditions of different countries can be identified by studying economic changes in the country or countries under study, to help predict what might happen to different variations in the future. It is also used to measure multiple phenomena, such as comparing the prices of food commodities in a specific year with another previous year or another, comparing the production of a particular economic sector in one country with its counterpart in another country, to determine the development of this sector's production over time.

They are used in social, administrative and agricultural sciences to make comparisons and measure changes. There are records in different fields such as the index of wholesale prices, the record for exports and the record for imports, as well as records for agricultural production, industrial production and the cost of living.

Formation of indices

Two basic formats of indices can be distinguished

Are the simple formulas,

Weighted formulas for indices.

Simple formulas for indices

These include:

1. Levels: المناسيب

The price is one of the simplest examples of the index, which is the ratio of the value of the variable in (Relative) is a ratio representing the price of the commodity during the Po period of comparison to the value of the same variable in the base period.

2. Simple aggregate method:

In this method, the index is the sum of the prices or quantities of commodities in the comparison year as a percentage of their total prices and quantities in the base year.

3. Arithmetic mean for price levels:

It is the sum of the commodity price levels divided by the number of commodities

Weighted formulas for indices

To overcome the problem of simple aggregate method defects, we weight the prices or quantities of each commodity using a specific parameter. Usually the quantity or price of the commodity sold is used during the base period, comparison period, or model year (it may be an average number of years).

These weights indicate the relative importance of the commodity. As for wages, the total wages paid in each sector are appropriate weights. There are three weighted index formats for whether or not we will use quantities or prices for the base or comparison year or model year.

Laspier number:

The weighted aggregate index using the base year. There are two formulas for this number:

The first formula is the formula for the aggregate price index. In this formula, it is assumed that consumers' tastes persist and continue to consume the same quantities of goods even if their prices change up or down.

The second formula is the formula for the aggregate index of quantities. In this formula, price stability is assumed in the base and comparison periods, regardless of the change in quantities consumed in the two periods.

Bashi number:

- The weighted aggregate index using the comparison year. It also has two formulas as in the number of Laspier and this formula measures the change in expenditures to obtain quantities of goods in the comparison period weighted by the prices of the comparison period and the base period prices. Thus, it is assumed that the same quantities of the comparison year were consumed in the base year despite the change in prices, which is also an unacceptable assumption.
- In spite of the difference between the numbers of Laspier and Bashi resulting from the difference in the weights used, both indicate the trend towards change, and that the two numbers depend on a comparison of the values with the different purpose used to calculate the value.

Optimal index:

It is clear from the foregoing that Laspier's number makes the index formula biased upward given that it is based on weighting with base period weights, unlike the Bashi number which is based on weighting with comparison period weights, which pushes the number formula down.

Weighted mean of levels:

It is used to overcome defects in the simple mean method of levels. A weighted arithmetic mean is most common although it is possible to use other weighted media, such as a weighted geometric mean.

In this way, each price level is weighted by the total value of the commodity instead of the units, q in the quantity p of cash

Uses of indices

The uses of the standard number formulas that were reviewed varied, although most were concentrated in the economic fields.

Living Expenditure Index:

This figure measures the change in the sum of goods and services consumed by community members annually, and expresses it as one number.

This does not mean that specialists must search the indices for the thousands of goods that society consumes, as this is a difficult and impractical process.

The matter here is related to the formula for the retail price index for commodities that individuals or families deal with, with an appropriate weighting process based on weights being determined and changed from time to time taking into account the changing consumption and spending habits and patterns that family budget research is a basis for determining their trends.

The following is a summary of the most important steps that must be followed in order to set the cost of living index:

All humanitarian goods and services are often grouped into several major groups

They number nine groups: food, drink, cigarettes, clothing and footwear, rent, fuel, and driving forces, furniture and furnishing, medical care and health services, transportation and communications, entertainment and leisure services, education and culture, miscellaneous goods and services, transfer payments.

The price indices are weighted with relative weights, determined on the basis of relative importance For each group, it is estimated from special research, the most important of which are family budget research and consumption research.

Consumer price index:

It is a statistical method for measuring changes in the prices of goods and services purchased by the consumer. It is necessary to note that changes in consumer prices are affected by several factors

The most important of these are retail prices, and other factors are related to changes in the quality and quantity of goods and services and the amounts spent on them. Accordingly, the CPI is a measure of price changes only and not a measure of changes in the cost of living. The consumer price index differs from the retail price index, in that the latter relates to the prices of all goods that fall within the retail trade, while interest in the consumer price index is focused on goods and services purchased by the consumer, as it is limited only to measuring change during a period of time The cost of a fixed set of goods and services called the consumer basket.

The CPI is widely used as an indicator of inflation and economic downturn trends. It is also used by the general public as a guide for family budget and funding sources. In addition to using it as a measure of changes in the purchasing power of the currency. In the area of national accounts, it is used as a planning factor to elicit estimates of the fixed price of private spending and related components.

There is no perfect way to set the index, it depends on its components, its ease of obtaining it and the possibility of finding weightings for it.

Wholesale Price Index:

The prices used in this standard are the prices of commodities exchanged in organized shares, regular markets, or product prices. The price change here is the price of one commodity or group

Commodities or a mixture of commodity prices. The index of wholesale prices requires conducting sample surveys, as is the case with consumer prices or the cost of living.

Because of the importance of this number, statisticians usually resort to surveying the prices of 2,600 commodities in the middle of each month. Standard prices are calculated separately for the commodities according to their classifications.

Among the most important classifications used is classification according to the practical stages of the commodity, as commodities are divided into raw materials commodities, intermediate goods commodities, and final commodities.

There is a classification of agricultural field production that is divided into fresh goods, poultry and livestock. The wholesale price index is calculated using the weighted average method for price levels, using the values of the comparison year as weights

Production index:

This figure expresses the changes that occur in the quantities of total production in relation to the national economy or in relation to a sector or a single industry from the sectors or industries that make up the national economy, during a specific period that may be determined by one or several years. Accordingly, there is a record for industrial production and another for agricultural production, services ... and other economic sectors.

As for the Industrial Production Index, it measures the material changes that occur in the amount of outputs of extractive industries such as those of mines, quarries, oil and gas, as well as manufacturing industries in all of their sectors. There are detailed index numbers for each of the main components within each economic sector, such as oil and wheat production, etc. .. These index numbers are according to the need for them. Some of them are monthly and some are annual.

Export index:

It is an indicator to measure the change in the total value of a representative group of exports in a given year compared to the corresponding value in the base year. This figure is constructed using the Laspir formula of the Quantity Index for each of the main commodity groups for exports

Then the index of total exports is calculated by giving weighting weights to each of the commodity groups: the raw materials group, intermediate goods, investment goods, durable consumer goods, and fuel. The same applies to the import index, which measures the change in the total value of the same group chosen in exports compared to their counterparts in the base year.

Calculating the export index with the import index is useful in extracting the so-called trade exchange rate, which measures the relationship between export prices and import prices. If the price of imports rises relative to the prices of exports, then the rate of trade has moved in the interests of the country concerned, or more precisely in the interests of the exporting country. The trade exchange rate can be expressed as a record

Wage index:

This figure is used to show the extent of the change in the level of wages during a specific period of time compared to another time period. The installation of this number is done through the following steps:

The wage level, which is the ratio of the average wage in the comparison period to the average wage in the base period, is calculated for each section of the economic activity separately.

The weighted average of the wage levels is calculated, and weights are used for the purpose of weighting that clarifies the relative importance of each section of the economic activity, which is the total wages paid in the base period as it represents a period of stability assumed when choosing the lowest probability of workers moving from an industry or a craft to an industry or a craft

Other.

money purchasing power:

As the price index indicates the amount of relative change between two time periods, it is possible to identify the amount of change in the value of money at home, as this change reflects the opposite direction of change in the prices of all goods and services. That is, the purchasing power of money is the inverted price index.

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