

## Understanding Indices

## Statistical Index

- > A number or weighted mean that is used to show how the individual statistics or components of an index have changed as a whole.
- > Most indices use a base value of 100 to make figures easier to work with.

## The Consumer Price Index (CPI)

- > A measure of the changes in price of a basket of about 600 popular consumer goods and services.
- > These items range from milk, telephone services to Internet service.
- > Each item is given a weighting factor based on the average annual spending per household on the item.
- > The CPI is a widely used indicator of inflation, the overall increase in prices over a period of time

Example 1: The graph shows the CPI and the weighting factors for 2002. Use this CPI graph to answer these questions.



- a) What is the base year for the CPI?

The base year is 2002.

- b) In what year was the cost of the basket of goods about 90% of the base cost?

In 1997.

- c) What was the CPI in 1990?

The CPI in 1990 was approx. 78%.

- d) What does this mean?

It means prices in 1990 were 78% of the prices in 2002.

- e) Describe the change in the CPI from 1990 to 1991.

The line segment from 1990 to 1991 is the steepest.

- f) What do you notice about the line segment representing this period?

The CPI increased from 78 in 1990 to 83 in 1991. This is an increase of 5%.

- g) Describe the overall trend in the CPI and its significance.

The CPI has been increasing from 1990 to 2006. This means that Canadians have been paying more for the same services over the years.

- h) Calculate the average annual rate of inflation from 1990 to 2006.

$$\begin{aligned} \text{CPI}_{1990-2006} &= \text{CPI}_{2006} - \text{CPI}_{1990} \\ &= 109 - 78 \\ &= 31 \end{aligned}$$

$$\text{Avg. annual rate of inflation} = \frac{\text{CPI}_{1990-2006}}{2006 - 1990}$$

$$= \frac{31}{16}$$

$$\approx 1.9\%$$

∴ The average annual rate of inflation is approximately 1.9%.

- i) Use your answer to part b) to predict the CPI for 2019.

- From 2006 to 2019, there are 13 years. Assuming this trend continues, then CPI would increase by

$$13 \times 1.9\% = 24.7\%$$

from 2006 to 2019.

$$\begin{aligned} - \text{CPI}_{2019} &= \text{CPI}_{2006} + 24.7\% \\ &= 109 + 24.7 \\ &= 133.7\% \end{aligned}$$

∴ The CPI in 2019 would be expected to be approx. 133.7%.

Some price indices do not show a change over time. Instead, they compare prices among different geographical regions.

Example 2: The 2006 UBS Prices and Earnings report includes a comparison of clothing prices in 71 cities. The base price is the price in New York.

- Which cities have index values less than 100?
- What does this mean?
- Compare the clothing prices in Zurich and Hong Kong compared to the clothing prices in New York.

City	Clothing Price Index New York = 100
Zurich	115.6
Oslo	114.4
Dublin	97.5
New York	100.0
Toronto	73.5
Tokyo	148.1
Rome	87.5
Hong Kong	75.0
Delhi	43.8

Ans:

a) Delhi, Hong Kong, Rome, Toronto, and Dublin.

b) This means that you pay less for clothing if you lived in any of the cities in part a) than if you lived in New York.

c)  $115.6 - 100 = 15.6\%$

You would pay 15.6% more for clothing if you lived in Zurich compared to New York.

$100 - 75 = 25\%$

You would pay 25% less for clothing if you lived in Hong Kong compared to New York.

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