Answer on Question #57547 – Economics – Other

Question:

The table below gives the index prices of four items A, B, C, and D sold at a store in 2000 and 2014.

Item:	2000 Price:	2014 Price:	2000 Quantity:	2014 Quantity:
A	40	45	1000	800
B	55	74	1900	5000
C	95	105	600	3000
D	250	320	50	200

What is the Laspeyres index for these items?

What is the Paasche index for these items?

According to Laspeyres index, prices in 2014 increased on average by how much over 2000?

According to Paasche index, prices in 2014 increased on average by how much over 2000?

Solution

Price indices are used to monitor changes in prices levels over time. This is useful when separating real income from nominal income, as inflation is a drain on purchasing power. The two most basic indices are the Laspeyres index (named after Etienne Laspeyres) and the Paasche index (named after Hermann Paasche).

Laspeyres index for price:

$$P_L = \frac{\sum p_1 q_0}{\sum p_0 q_0} = \frac{45 \cdot 1000 + 74 \cdot 1900 + 105 \cdot 600 + 320 \cdot 50}{40 \cdot 1000 + 55 \cdot 1900 + 95 \cdot 600 + 250 \cdot 50} = \frac{264600}{214000} = 1{,}236$$

Paasche index for price:

$$P_P = \frac{\sum p_1 q_1}{\sum p_0 q_1} = \frac{45 \cdot 800 + 74 \cdot 5000 + 105 \cdot 3000 + 320 \cdot 200}{40 \cdot 800 + 55 \cdot 5000 + 95 \cdot 3000 + 250 \cdot 200} = \frac{785000}{642000} = 1{,}223$$

According to Laspeyres index, prices in 2014 increased on average over 2000 by 23,6 %.

According to Paasche index, prices in 2014 increased on average over 2000 by 22,3%.

Answer: $P_L = 1{,}236$, $P_P = 1{,}223$, 23,6 %, 22,3% .