The Aggregate Price Level

A means to aggregate prices to compare prices over time.

This is done through aggregating prices with the current value of a basket of goods relative to a base period for the same basket of goods.
Calculating the value of the basket.

**Value of the Basket** = \( p_1 x_1 + p_2 x_2 + \ldots + p_n x_n \)

Example:
- \( P1=3 \quad x1=3\)
- \( P2=1 \quad x2=3\)
- \( P3=5 \quad x3=1\)

\[ PI=3*3+1*3+5*1=9+3+5=17 \]
Calculating a Price Index

\[ PI = \frac{p_1^c x_1 + p_2^c x_2 + \ldots + p_n^c x_n}{p_1^B x_1 + p_2^B x_2 + \ldots + p_n^B x_n} \]
Example:

X1=3  P11=3  p12=5
X2=3  P21=1  P22=1
X3=1  P31=5  P32=4

Numerator: $5 \cdot 3 + 1 \cdot 3 + 4 \cdot 1 = 22$

Denominator: $3 \cdot 3 + 1 \cdot 3 + 5 \cdot 1 = 17$

PI = $22 / 17 = 1.29 \Rightarrow (1.29) \times 100 = 129$

Interpretation: It takes $129 today to buy the same thing yesterday.
Types of Price Indices

1. Consumer Price Index

2. Producer Price Index

3. GDP Deflator
   \[ PI = \frac{\text{Nominal GDP}}{\text{Real GDP}} \]