ch ⇒ index no.

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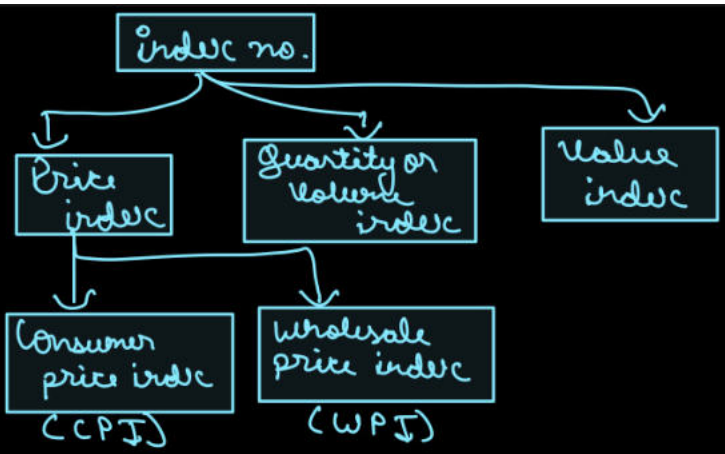
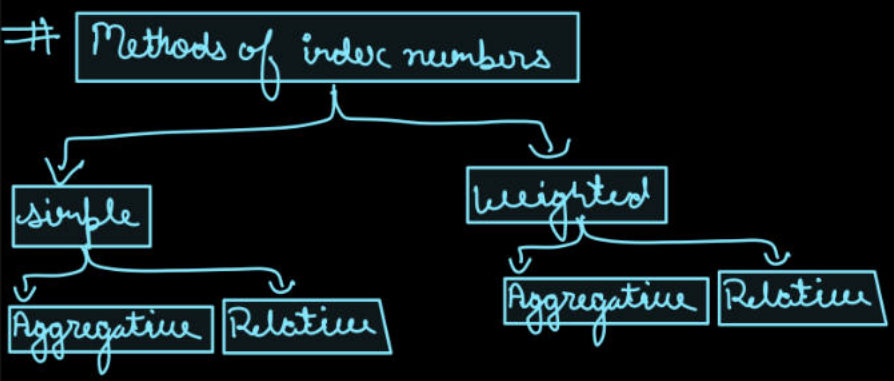
statistical tools

⇒ BASE YEAR = 100 set



Methods of index numbers



① simple aggregative method

$\Rightarrow P_{01} = \frac{\Sigma P_1}{\Sigma P_0} \times 100$

② simple relative method

$= P_{01} = \frac{\Sigma\left(\frac{P_1}{P_0} \times 100\right)}{N}$

③ Weighted aggregative method

- Laspeyre (P_{01}) $= \frac{\Sigma P_1 q_0}{\Sigma P_0 q_0} \times 100$
- Paasche (P_{01}) $= \frac{\Sigma P_1 q_1}{\Sigma P_0 q_1} \times 100$
- fishers (P_{01}) $= \sqrt{L \times P}$ (G.M) use
- Dorbish & Bowley (P_{01}) $= \frac{L+P}{2}$ (A.M) use
- Marshall & Edgeworth $= \frac{\Sigma P_1 q_0 + \Sigma P_1 q_1}{\Sigma P_0 q_0 + \Sigma P_0 q_1} \times 100$

④ Weighted Relative Method

$\Rightarrow P_{01} = \frac{\Sigma W\left(\frac{P_1}{P_0} \times 100\right)}{\Sigma W}$

Quantity index (Volume) (Q_{01})

① Simple aggregative method

$= Q_{01} = \frac{\Sigma q_1}{\Sigma q_0} \times 100$

② simple relative

$= Q_{01} = \frac{\Sigma\left(\frac{q_1}{q_0} \times 100\right)}{N}$

③ Weighted aggregative

* Laspeyre (Q_{01}) $= \frac{\Sigma p_0 q_1}{\Sigma p_0 q_0} \times 100$
* Paasche (Q_{01}) $= \frac{\Sigma p_1 q_1}{\Sigma p_1 q_0} \times 100$
* fisher $= \sqrt{L \times P}$
* Dorbish & Bowley (P_{01}) $= \frac{L+P}{2}$

④ Weighted relative

$\Rightarrow Q_{01} = \frac{\Sigma W\left(\frac{q_1}{q_0} \times 100\right)}{\Sigma W}$

Value index

$\Rightarrow V_{01} = \frac{\Sigma p_1 q_1}{\Sigma p_0 q_0} \times 100$

spliced index

$\Rightarrow \frac{\text{Revised price index (FIRST)}}{\text{old price index (C.Y)}} \times \text{old price index (P.Y)}$

shifting price index

$\Rightarrow \frac{\text{original price index}}{\text{Price index of shifted year}} \times 100$

link relative & chain Base index

link relative $= \frac{\text{Price in Current period}}{\text{Price in previous period}} \times 100$

chain index = link relative of PREVIOUS year $\times$ link relative of C.Y (%)

Deflated Value $= \frac{\text{Current Value}}{\text{price index of current year}} \times 100$

Purchasing power of money $= \frac{1}{\text{Price index}}$

Consumer price index (cost of living index)

Aggregate exp method

$CPI = \frac{\Sigma p_1 q_0}{\Sigma p_0 q_0} \times 100$

Family Budget method

$CPI = \frac{\Sigma W_i \left(\frac{p_1}{p_0} \times 100\right)}{\Sigma W}$

$CPI = \frac{\Sigma W_i I_i}{\Sigma W_i}$

I_i = index

DOUBT IN THIS FORMULA

eg ⇒

	I	Wi	WiIi
Rent	140	50	7000
food	130	20	2600
Ent	160	30	4800
		100	14400

$CPI \Rightarrow \frac{14400}{100} \Rightarrow 144$

$\frac{800}{x} = \frac{160}{200}$

$\frac{160000}{160} = x$

$x = 1,000 - 800 = 200$ Δ

specific type of questions pyq

Test of adequacy of index number

Unit test

passes everything except

- Simple aggregative method.

Time reversal Test

passes only

- Fisher's method
- simple geometric mean price relative
- Weighted geometric mean price relative
- Marshall edgeworth.

#PTR

① $P_{01} \times P_{10} = 1$

factor reversal test

passes only

- fisher's method

#PTR

① $P_{01} \times g_{01} = V_{01}$ or $\frac{\Sigma p_1 q_1}{\Sigma p_0 q_0}$

Circular Test

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extention of Time reversal test

- simple geometric mean price relative
- Weighted aggregative with fixed weight.

PTR

① $P_{01} \times P_{12} \times P_{20} = 1$