

Q11P2: Since the utility function of Meredith is

$$u(F,C) = FC,$$

we have $MU_F = C$ and $MU_C = F$. That is

$$MRS = MU_F/MU_C = C/F.$$

At equilibrium, slope of the indifferent curve is equal to slope of the budget line

$$MRS = P_F/P_C.$$

In 1990, $P_F = P_C = 1$. Hence, we have

$$C^*/F^* = 1 \rightarrow C^* = F^*.$$

Since originally Meredith has total budget of \$1200, originally Meredith consumes $C^* = F^* = 600$ units. This gives utility of

$$u^* = 600(600) = 360,000.$$

Then, we can construct 1995 Laspeyres Price index, which is

$$[2(600) + 3(600)]*100/[1(600) + 1(600)] = 3,000/1,200 = 250.$$

In 1995, $P_F = 2$ and $P_C = 3$. We have

$$C^{**}/F^{**} = 2/3 \rightarrow C^{**} = 2F^{**}/3.$$

Given the new prices, at the original level of utility ($u^* = 360,000$), Meredith must consume at

$$(2F^{**}/3)F^{**} = 360,000 \rightarrow (F^{**})^2 = 540,000 \rightarrow F^{**} \approx 735,$$

and $C^{**} = 2(735)/3 = 490$. Hence, the ideal cost of living index is

$$[2(735) + 3(490)]*100/[1(600) + 1(600)] = 245.$$