Price Theory I TFUs
Practice Set 07

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1. Suppose there are l identical leaders (L) and f identical followers (F) consuming a fashion good X where $l < f$. If given the price of X, the demand for X by the L falls when consumption of X by the Fs rises, but the demand by the F rises when the consumption of X by the L rises, then the demand for X by L would fall when the price of X fell. (3.3.4, Core 2012)

   True. When price of X falls, substitution effect implies that the demand for X will initially increase. The second-order effect here is that the demand by the Ls decreases while the demand by Fs will increase. Therefore, the effect is ambiguous and depends on the elasticity of each group.

2. Suppose I take cream with tea and with coffee, although I use less cream per cup of coffee than per cup of tea. Still, cream is complementary with both tea and coffee. Yet a reduction in the price of coffee could reduce my demand for cream. (3.5.8, Core 2004)

   Uncertain. SE and IE reinforce each other to lead to an increased consumption of coffee. SE and IE make the direction ambiguous for the consumption of tea. Therefore, direction for the demand for cream is also ambiguous.

3. Improvements in the quality of life (that raise the utility of each life year) will raise the willingness to pay for life extension (i.e. the value of a life year). (3.7.5, Core 2012)

   False. What matters for demand is marginal utility, not the level of utility. Intuitively, we are comparing someone's marginal utility of consuming high-quality life given that he was already consuming high-quality life, versus someone's marginal utility of consuming low-quality life given that he was already consuming low-quality life. Then we need to compare the curvature of the utility curve to be able to make a statement.

4. Selling overhead bin space for carry-on baggage to passengers is efficient if different airline passengers have different values of time. (3.11.1, Core 2000)

   False. It depends on how the prices are set. Assuming there is not enough overhead bin space for everyone, and that the only reason people want overhead bins is so to save time (and not because of e.g. the risk of lost luggage), then efficiency would imply that bins should go to those people with the highest value of time. Then creating a market for overhead bin space would be more efficient than no market. However, if airlines set monopoly prices for

the overhead bins, instead of the competitive price, then there is some deadweight loss and full efficiency is not achieved.

5. ** If all household production functions are CRS Cobb-Douglas, with household labor shares equal to 2/3 and goods shares of 1/3, a rise in full income by 2% (or example, wage rates rise by 2%, and no other sources of income) would increase real full income by 0.67 percent. (3.17.3, Final 2008)

   True We can apply the magic equation here: $\Delta\Pi = S_L\Delta W + S_G\Delta P = (2/3)(2\%) + (1/3)(0\%) = (4/3)\%$. So the real fulle income changes by $\Delta W - \Delta\Pi = (2/3)\%$.

6. The marginal cost of producing a product is lower in the long-run than in the short-run because there are more options for how to produce that marginal unit in the long-run. (4.2.3, Core 2012)

   False The main reason marginal costs are lower in the long-run is because fixed costs can be amortized over time. Fixed factors are expensive to use over short periods, but cheap over long periods because the costs of hiring and installing, etc. are spread over a longer period. In other words, every input becomes variable in the long-run.

7. ** A union of coal miners that raises the wage rate of miners will lower the profits of mining companies in the short run if this is a competitive industry. (4.5.4, Core 2001)

   False Higher wage rate increase the marginal cost. In the short-run, given the inelastic demand and fixed capital, the higher price will increase the profits of mining companies in the short-run.

8. With constant returns to scale, the rate of growth of labor productivity will exceed the rate of growth of total factor productivity when the capital output ratio is rising. (4.7.5, Core 2001)

   True Recall that in the magic equation, we have

   $$\Delta Y = S_L\Delta L + S_K\Delta K + \Delta TFP$$

   Interpreting labor productivity as $\Delta Y/L$ and rising capital output ratio to mean $\Delta K > \Delta Y$, we have

   $$\Delta TFP = \Delta Y - S_L\Delta L - S_K\Delta K < (1 - S_K)\Delta Y - S_L\Delta L = S_L\left(\Delta Y - \Delta L\right)$$

9. *All else equal, the current rental rate will be higher when computer prices are declining more rapidly. (4.22.3, Final 2000)

   True Note that

   $$P_t = R_t + \frac{P_{t+1}(1-\delta)}{1+r} \Rightarrow R_t = P_t - \frac{P_{t+1}(1-\delta)}{1+r}$$

   Since P_{t+1} is much lower than P_t , the rental rate is higher.