Price Theory I TFUs
Practice Set 02

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1. A new technology that increases the amount of output per man hour in the U.S. electronics industry will increase production more when there is free trade (i.e. U.S. firms compete in a global market) than when there is no trade between countries due to tariff barriers. (3.2.1, GSB Final 1999)

   True. Now the demand is more elastic. Since $\Delta Y = \epsilon^D \Delta P$, the production will increase more.

2. *** Suppose that a successor to the Kyoto agreement requires that by 2025, every economy must cut its greenhouse gas emissions by 20%. This will increase the emissions of these gases in 2012. (3.4.2, Final 2011)

   Uncertain. Two ways to approach this question: (1) People anticipate a increase in demand for "green technology" in 2025. If the development of such green technology requires a lot of greenhoues gas input today, the emissions can increase; if not, then the emission will decrease. (2) Consider a generic durable good. Since prices will be higher in 2025, investment will increase now and thus emissions will temporarily rise.

3. A permanent decrease in the cost of producing gasoline will lead to a greater increase in gasoline sales in the long run than in the short run, but could increase car sales more in the short run than in the long run. (3.6.1, Final 1999)

   True. For any good, supply and demand is more elastic in the long-run, so the gasolien sales will increase more in the long-run. Since cars are durable goods, they may overshoot in the short-run and slowly converge into the steady state.

4. Holding the nominal income of each consumer constant, an increase in the price of one good holding the price of other goods constant will reduce the consumption of the good for which the price increased as long as that good is a normal good for each consumer.

   True. Substitution effect and income effect reinforce each other and reduce demand for this good.

5. If the firm is cost-minimizing and is at an optimum, the marginal cost is the same whether it changes only labor, only capital, or both. (4.2.1)

True. In the cost-minimization problem, λ is the cost to produce an extra unit of output using only one input. This is the same for labor and capital and thus holds for any linear combination of the two.

6. If there are a fixed number of firms in an industry and each firm has decreasing returns to scale, then capital and labor are more likely to be substitutes at the firm level than at the industry level. (4.4.1, Final 1999)

   False. Think the Leontief at firm-level which yields elastic supply at the industry level.

7. If a factor is inferior, then the factor demand may increase as the factor price increases. (4.6.1)

   False. This never happens at the production – there are no Giffen inputs.

8. * Suppose two countries, A and B. They have the same CRS aggregate production functions, and each country has a fixed capital stock. Initially A has lower wages than B, and no immigration is allowed. If B wants to maximize the per capita income of its natives, it should allow unlimited immigration from A. (4.8.1, Core 2008)

   False. Given immigration, $\Delta L_B > 0$ and thus $\Delta w_B < 0$. Intepreting per capita income as Y/L, we know $\Delta Y = S_L \Delta L + S_K \Delta K = s_L \Delta L$ by setting $\Delta K = 0$. Then we have

   $$\Delta Y - \Delta L = -s_K \Delta L < 0$$

   which means that the per capita income has in fact decreased.

9. If a monopolist produces two products, say computers and software, he would never sell one of them below its marginal cost if all consumers are identical and he does not price discriminate. (4.10.1, Core 1999)

   False. Argument via complements. Think printers and ink.