Economics 301
Problem Set due October 8, 2021   Upload your answers to canvas

1) Here we look at the determinants of inflation using the three-good version of the basic consumer theory. The goods are leisure, food, and "money." To limit the substitution possibilities, we assume that the non-satiable convex preferences for these three goods can be represented by an additively separable utility function.

Money is in fixed supply and everyone is endowed with an equal share of the total. Normalize its equilibrium price to one. Consumers also have a fixed time endowment which they can use for leisure or supply to firms that produce food from labor with a linear technology.

   a) In this model, can leisure, food, or money be an inferior good? Can more than one of them be an inferior good?

   b) Do the equilibrium amounts of leisure or food depend on the size of the time endowment? Do their prices? If so, how?

   c) Do the equilibrium amounts of leisure or food depend on the supply of money? Do their prices? If so, how?

   d) Now we want to consider regulations that set the money wage rate above the equilibrium level. Is this model adequate? If not, how could you modify it?

   e) Do you expect the minimum wage to affect the price of food?

   f) With the minimum wage in place, do the equilibrium amounts of leisure or food depend on the supply of money? If so, how?

   g) Instead of a regulated wage, there is a program in which all citizens are required to devote part of their time endowment to produce food, which is given to people for the duration of time than anyone is not working. The amount of food given per unit time is set in terms of dollars. E.g., $15 worth of food per hour out of work. How is this policy different from a wage regulation?

2) Here we consider two state-level policies intended to discourage youth ("teen") drinking of alcoholic beverages ("alcohol"). One is setting a legal drinking age, thereby prohibiting sales to persons under that age. Another is an excise tax on all sales of alcoholic beverages.

Both the drinking age and the local excise tax can be avoided by paying a fixed travel cost to a state with different alcohol taxes and regulations. The drinking age can also be avoided with other fixed costs such as fake IDs, searching out weak points in sellers' enforcement protocols, or establishing a relationship with surrogate purchasers of legal age.

a) Could the establishment of a legal drinking age affect the marginal price that teens pay for alcohol? Why, and in what direction?

   Henceforth, assume that the legal drinking age has only the fixed-cost effect.

b) Empirical studies find that excise taxes reduce alcohol consumption by teens. Can you infer that teens are "rational" when it comes to their decisions about alcohol consumption?

c) How does the establishment of a legal drinking age affect the amount that teens spend on alcohol consumption? Interpret spending broadly to include the time and hassle costs, fixed and marginal costs.

d) How does it affect the amount of labor employed, including time and hassle of the consumers themselves, in the sales and distribution of alcohol? Relate you answer to "Marshall's Laws".

e) The intensity of drinking varies across persons and situations (e.g., weekdays vs. weekends). Do a drinking age or an excise tax affect the composition of drinking? In the same way?

f) Could an excise tax increase drinking?

g) Draw the aggregate teen demand for alcohol versus their state's excise tax rate, holding constant the tax rates in neighboring states. Explain its relationship with the "Laffer curve" from the theory of taxation. Relate your answers to (e) and (f) to locations on this curve.