Problem Set 4

1.) Consider an economy with a labor force comprising 40% females and 60% males. Assume that both female and male employees lose their jobs at an annual rate of 5%. Also unemployed males find a new job with probability 50% per year and unemployed females with probability 30% per year. Assume that these rates are the same among males and females, respectively, in the labor force.

a) Calculate the unemployment rates separately for males and females as well as for the entire labor force. If necessary, make further reasonable assumptions.

b) Describe roughly the trend and the cyclical movement of these rates (both levels and transition rates) for West Germany since 1980.

2.) Assume that a monopoly union faces a linear labor demand schedule

\[ E^d = a - c \cdot w \ . \]

a) Determine the wage and the employment level in the case of a Stone–Geary function representing the union’s utility

\[ U(E, w) = E^\theta \cdot (w - b)^{1-\theta} \ , \]

where \( b \) denotes the alternative income level when unemployed. What are plausible values for \( \theta \)?

b) Determine and discuss the comparative static effects of

- an increase in \( a \)
- a reduction in \( c \)
- a reduction in \( \theta \)
- an increase in \( b \)

on the wage and the employment level?
3.) Why are some firms more likely to pay their factory workers according to a time rate, but more likely to pay their salespeople at a piece rate?

4.) Consider three firms identical in all aspects (including the probability with which they discover a shirker), except that monitoring costs vary across the firms. Monitoring workers is very expensive at firm A, less expensive at firm B, and cheapest at firm C. If all three firms pay efficiency wages to keep their workers from shirking, which firm will pay the largest efficiency wage? Which firm will pay the smallest efficiency wage? How do the effort functions differ across firms?