HOMEWORK 2

Due: Friday, December 6

1. Consider an infinitely-lived worker with linear utility and time discount rate r who is searching for jobs with wages drawn from a distribution $F(\omega)$. Offers drawn from F materialize at a flow rate λ and the worker can choose whether to accept or reject any offer given. Upon separating from a job (no matter why the separation occurs), the worker receives an unemployment benefit b_u; however, with a flow rate ρ, the worker loses this benefit and only receives social assistance, b_s, with $b_s < b_u$. (Thus, the duration of unemployment benefits, conditional on continuing unemployment, is $1/\rho$.) Unemployed workers—whether on social assistance or on unemployment benefits—receive offers at the same rate and draw wages from the same distribution. When employed, workers are randomly kicked out of jobs at a flow rate σ, but workers can also voluntarily quit (think about when it might be in their interest to do so).

   (a) State the flow value equations for employed workers, for unemployed workers receiving unemployment benefits, and for unemployed workers on social assistance (denote the values $W(\omega)$, U, and S, respectively).

   (b) Solve the model down to one equation in one unknown: the reservation wage used by the unemployed workers receiving unemployment benefits.

   (c) Compare to the case with $\rho = 0$: is the comparative statics made simpler or harder, and why? What is the effect of social assistance on the minimum wage, and on the duration of unemployment, in this model?

   (d) Describe how you would calibrate the parameters of the model using a log-normal function for F.

2. Consider the same type of worker as above, with the following changes: the distribution F has all its mass on one point (there is a unique wage ω), $\rho = 0$, and workers can exert effort, at a cost, to increase their chances of obtaining a job offer. In particular, the flow cost of effort is quadratic and equals $Ae^2/2$, and the probability of obtaining a job offer is λe, where A and λ are exogenous parameters.

   (a) State the flow value equations.

   (b) Solve the model down to one equation in one unknown: the effort level.

   (c) Perform comparative statics with respect to all the model parameters. In each case, interpret.

3. Consider the same type of worker as in the first question of this homework, with the following changes: $\rho = 0$ and the unemployment insurance is a fixed percentage ("replacement rate") θ of the most recent wage of the worker.

(a) State the flow value equations.

(b) Derive an equation determining the reservation wage of a worker with previous wage ω (with no other endogenous variables present).

(c) Is the observed distribution of accepted wages from a model of this sort equal to a truncated (scaled-up) version of F? (Or if not, describe how the observed distribution would relate to F.)