

2. Consider the steady state of the Mortensen-Pissarides model given by:

$$p + \sigma \epsilon_d = b + (\beta c / (1 - \beta))(v / u) - \sigma \lambda \int_{\epsilon_d}^{\epsilon_u} (1 - F(x)) dx$$

$$q = (c / (1 - \beta))((r + \lambda) / (\sigma(\epsilon_u - \epsilon_d)))$$

$$u = \lambda F(\epsilon_d) / (\lambda F(\epsilon_d) + m((v / u), 1))$$

Where p is the aggregate productivity shock, σ is a positive parameter that governs the dispersion in idiosyncratic shocks, ϵ_d is the threshold value of ϵ such that values of ϵ below this threshold yield job destruction, b is the current flow of income for an unemployed worker, β is the share of the joint surplus that workers obtain, c is the flow cost of posting a vacancy, v is vacancies, u is unemployment, λ is the arrival rate of the Poisson process governing changes in the idiosyncratic shock for the match, ϵ_u is the upper bound of the idiosyncratic shock distribution (the productivity draw that all entrants have at entry), $F(\cdot)$ is the cumulative distribution function for the idiosyncratic shock distribution, q is the probability that a posted vacancy is filled ($q = m(v, u) / v$) where the matching function $m(v, u)$ exhibits constant returns to scale, and r is the discount rate.

Answer the following questions:

- a) Provide the intuition for each of the steady state conditions and diagram the steady state solution (Hint: Make the same assumptions as in Mortensen and Pissarides so that the Beveridge curve is downward sloping).
- b) Conduct comparative static exercises for changes in p , b and σ in terms of their impact on endogenous variables ϵ_d and (v/u) :
 - a. In your answer, provide both an analytic solution and show diagrammatically what happens with respect to these changes.
 - b. Discuss the economic intuition for your comparative static results and discuss the implications of these comparative statics for understanding the dynamics of reallocation over business cycles.
- c) Discuss the limitations of the model both in terms of assumptions and implications for the dynamics of the labor market.