Suggested Supervision: New Keynesian Economics

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Problem

Consider the following macroeconomic model of imperfect competition. Aggregate demand Y is given by $Y = M/P$, where M is the money supply and P the aggregate price level. Each firm i faces the following downward sloping demand curve:

$$Q_i^D = Y\left(\frac{P_i}{P}\right)^{-2},$$

where P_i is the price charged by firm i. Firm i produces Q_i unit of goods using L_i units of labour only, and it is assumed that all firms behave identically. Labour supply is assumed to be a simple increasing function of the real wage:

$$L^S = \frac{W}{P}$$

1. Compute the optimal real price charged by any firm i, P_i/P, as a function of the real wage W/P, and comment briefly on the resulting pricing policy.

2. Using the equilibrium condition on the market for goods, find the equilibrium real wage W/P as a function of M and P. Use this relation to compute the optimal pricing policy of a typical firm, P_i^*, as a function of M.

3. From now onwards, natural logarithms, denoted by lower case letters, should be used. Compute p^* (the aggregate price level under flexible prices), y^* (output under flexible prices), and comment briefly on their properties.

4. Suppose now that, following a monetary shock, a share $1-\lambda$ of firms are prevented from changing their price and keep them at some pre-determined price level $\bar{p}$. The price index after the monetary shock is therefore $p = \lambda p^* + (1-\lambda)\bar{p}$. Express p and y as functions of m, and use these relations to compute the proportional change in P and Y following a 1% increase in M. Check that your answer in 3. is a limiting case of that in 4.

Essay question

"To what extent are the assumptions of imperfect competition and price rigidities substitutes or complements in generating New Keynesian results?" [Tripos 2004]

Reading list

- DK Backus and P.J. Kehoe (1992), "International evidence on the historical properties of business cycles", *American Economic Review* 82(4), September, pp. 864-888.
- L. Ball and D. Romer (1990), "Real rigidities and the non-neutrality of money", *Review of Economic Studies* 57, pp. 183-203.
- K. Blackburn and M.O. Ravn (1992), "Business cycles in the United Kingdom: Facts and fictions", *Economica* 59, pp. 383-401.
- N.G. Mankiw (1985), "Small menu costs and large business cycle: a macroeconomic model of monopoly", *Quarterly Journal of Economics* 100, May, pp. 529-539.
- N.G. Mankiw (1988), "Imperfect competition and the Keynesian cross", *Economics Letters* 28, pp. 7-14.
- D. Romer (2001), *Advanced Macroeconomics*, McGrawHill (ch. 6).
- D. Romer (1993), "The New-Keynesian synthesis", *Journal of Economic Perspectives* 7, Winter, pp. 5-22.