Foundations of Modern Macroeconomics

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Problem set for Chapter 5

The questions with a star (★) are difficult.

Question 1

Consider the Barro-Grossman-Malinvaud (BGM) model of a closed economy which is discussed in detail in the book.

(a) Demonstrate (formally and graphically) and explain intuitively that demand policies do not affect employment if the economy finds itself in a situation of Classical Unemployment (CU).

(b) Show that a budgetary contraction and a monetary contraction both lead to lower goods sales and reduced employment in a situation of Keynesian Unemployment (KU). Explain the intuition behind these results.

(c) Show that a budgetary contraction and a monetary contraction both lead to higher employment and output in the regime of repressed inflation (RI). Explain the intuition behind these results.

(d) Show that real wage moderation is bad for employment in the KU regime but good for employment in the CU regime.

(e) Explain why goods inventories are required for the underconsumption (UC) regime to be possible in the Barro-Grossman-Malinvaud model.

Question 2

Consider the Barro-Grossman-Malinvaud model of a closed economy. Assume that the real wage rate and the price level react to disequilibria according to:

$$\Delta w = \lambda_1 EDL, \qquad \lambda_1 > 0, \tag{1}$$

$$\Delta P = \lambda_2 EDG, \qquad \lambda_2 > 0, \tag{2}$$

where EDL and EDG stand for, respectively, (effective) excess demand for labour and (effective) demand for goods. Assume that the economy is initially in the regime of classical unemployment (CU). Describe in detail how the economy moves towards the Walrasian equilibrium over time. Show what happens during transition to the real wage rate, the price level, unemployment, and aggregate output.

Question 3

[*The Dixit model*] Use the one-sector model of the small open economy developed by Dixit. Assume that the real wage is fixed.

(a) Why does Purchasing Power Parity (PPP) hold in this model?

(b) Derive an expression for the trade balance. Illustrate and interpret your expression with the aid of a diagram with the real wage on the vertical axis and the price level on the horizontal axis.

(c) Show that the economy is always on the effective goods market equilibrium (GME) locus if the exchange rate is flexible. Assume that the economy is initially in a point for which $X > 0$ and $N^S > N^D$. Explain how equilibrium is restored.

(d) Assume that the economy operates under a system of fixed exchange rates and features a surplus on the trade balance and excess demand for labour (EDL). Show what happens to employment and output over time. Explain the key effects.

(e) Show the effects of a negative productivity shock on employment and output under a regime of fixed exchange rates. Use the Cobb-Douglas production function to answer this question. Assume that the economy is initially in the Walrasian equilibrium.