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EE312 Macroeconomics, 1/2015 (Sec. 046402)
Problem Sets 7
Solution

1. **In the Keynesian sticky-wage (IS-LM-AD-AS) model**, what are the effect of an increase in government spending on the real interest rate, employment, aggregate output, the real wage, consumption, investment, the price level and average labour productivity? [Self practice: If the country moves from closed-economy to free trade and free capital movement, what are the main differences from previous analysis. ? Hint : Follow the lectures and compare the key results. Try to do this part of the question, after we finish Chapter 10. International Macroeconomics.]

In the Keynesian sticky-wage (IS-LM-AD-AS) model, the assumption is that nominal wage is fixed above the equilibrium nominal wage rate. Therefore, there exists unemployment equilibrium. At the initial competitive equilibrium, intitial wage, initial employment, intitial real interest rate, initial current output and initial price level are at w_1, $N1$, $r1$, $Y1$ and $P1$ respectively. The effects of the increase in government spending are as follows.

- Government increases spending or decreases taxes (which increases consumption).
- **IS shifts right.**
- **The real interest rate is rising**.
- The higher P induces more labor demand.
- **The higher interest rate induces more labor supply. Labour supply shifts (right)**
- Full employment at N2.
- The higher price reduces more nominal money demand.
- LM shifts left; the interest rate rises further to equilibrium (r2).

Open economy case

- ΔG causes labor supply (and Y^s) to rise.
- ΔG also raises domestic demand and Y^d.
- Output increases with a smaller CA surplus.
- The rightward shift of Yd is also small because G rises but CA falls.
- The real interest rate is determined in the world credit market and does not change.
  - Yd and Ys shift right by the same distance.
- No crowding-out effect on C and I.
  - Investment does not fall (r is the same).
  - Consumption increases (larger Y and the same r).
  - Instead, a higher G crowds out net exports (CA).

Figure 1. ISLM (or you may just shift IS only)

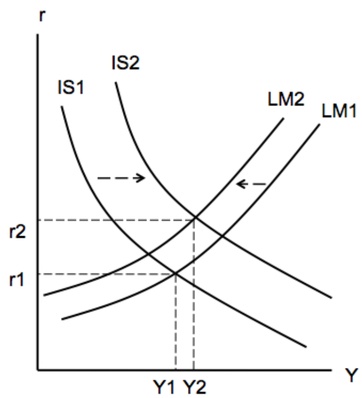


Figure 2. ADAS

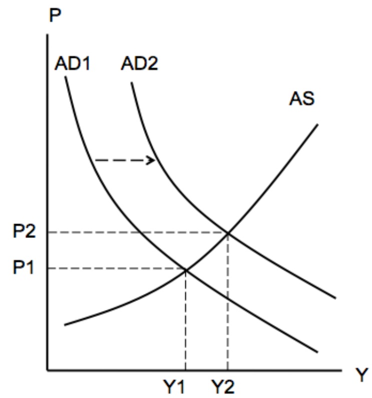


Figure 3. Money Market

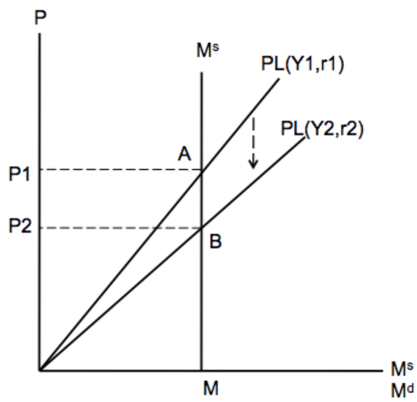
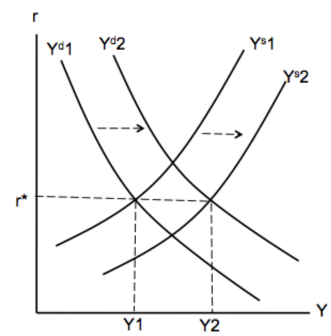


Figure 4. Open Economy



- ISLM (20 marks)
  - IS right (1) , G increases (1)
  - r increases (1)
  - AD right (1)
  - P increases (1)
  - NS right (1) , r increases, leisure (1)
  - N increases (1) because real wage decreases; move along labour demand function (1)
  - Unemployment reduces (1)
  - w decreases (1) because P increases (1)
  - C (1)
  - Average productitvity decreases (1)
  - four graphs, 4 marks, each.
  - discuss crowding out effect (3). I (1)
- 18 + 12 = 30
- Open Economy marks
  - ΔG causes labor supply (and Y^s) to rise. The PV of taxes increases; lifetime wealth decreases. Labor supply increases; Y^s shifts right. (3 marks)
  - Larger G causes Y^d to shift right. (2 marks)
  - Weaker effect on lifetime wealth and Ys as ΔG is temporary. (1 mark)
  - Domestic output increases less than domestic demand, the CA surplus decreases. (2 marks)
  - Output increases with a smaller CA surplus. (1 mark for output increases)
  - The rightward shift of Yd is also small because G rises but CA falls. (1 mark)
  - The real interest rate is determined in the world credit market and does not change. (1 mark)
    - Yd and Ys shift right by the same distance. (1 mark)
  - No crowding-out effect on C and I. (1 mark)
    - Investment does not fall (r is the same). (2 marks)
    - Consumption increases (larger Y and the same r). (2 marks)
    - Instead, a higher G crowds out net exports (CA). (1 mark)
  - Two graphes (4 marks + 2 marks)
  - Compare the main results; open economy faces with r*, closed economy interest rate rises - crowding out effect on C and I (1 mark)