EE212 Principles of Macroeconomics, 2/2015 (Sec. 046401)

Problem Sets 4 :

Chapter 6. ISLM Model and Chapter 7 AD-AS Model

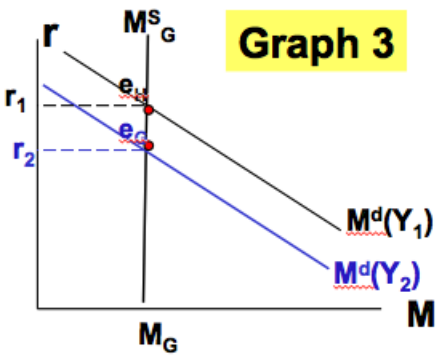
* Note that when there are many parts in one question, please **indicate clearly the part you are answering**. For example, **(a)** Answer. — **(b)** Answer. —. **Apply this way to exam as well.**

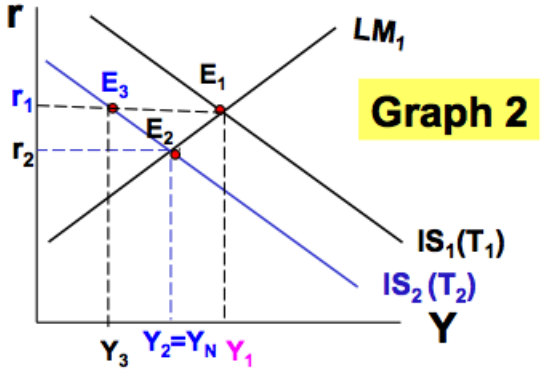
* **If the space provided is not enough, you may attach a separate sheet.**

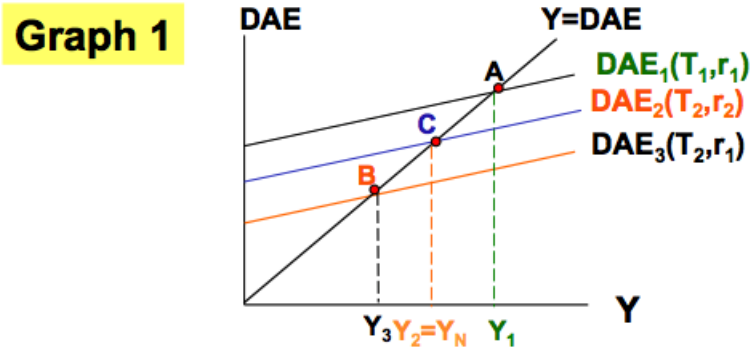
1. In case of inflationary economy, should government increase or decrease personal income tax rate to solve the problem? Use IS-LM model to explain your answer. Clearly demonstrate crowding-out effect situation and adjustment process in each market in the economy (supplement necessary diagrams to illustrate the explanation).

   Solution.

   - The economy is facing with **inflationary gap.** This **means that equilibrium output (Y^E) is greater than potential output** (Y_N).
   - Let the **initial equilibrium** is at point A in graph 1, point E1 in graph 2 and point e_H in graph 3.
   - Intital out put is Y_1 which is greater than potential output (Y_N). Initial interest rate is r_1.







   - To close the inflationary gap, the government should decrease desired aggregate expenditure.
   - Therefore, the government should use **contractionary fiscal policy**.
   - The government should **increase personal income tax rate. Tax increases from T_1 to T_2.**

- Increase personal income tax rate would reduces consumption **for all levels of income and interest rate**. **DAE shift down from DAE**(T_1, r_1) to DAE(T_2, r_1).
- As a result, **IS curve shift to the left** from IS_1 to IS_2.
- **Interest rate decreases f**rom r_1 to r_2 and output decreases from Y_1 to Y_2, which is equal to potential output (Y_N). Inflationary gap is closed.
  - The **adjustment to the new equilibrium** is as follows.
  - At the initial level of interest rate (r_1), DAE shifts down from $DAE(T_1, r_1)$ to $DAE(T_2, r_1)$ and output decreases from Y_1 to Y_3, which is the point E_3 in graph 2.
  - As tax decreases, **interest rate decreases from** r_1 **to** r_2 **, investment increases, DAE shifts up from** $DAE(T_2, r_1)$ **to** $DAE(T_2, r_2)$. This is **movement along the curve** IS from point E_3 to point E_2 in graph 2. Output increases from Y_3 to Y_2,
  - Expansionary fiscal policy that raises up interest rate and put pressure on private investment is called **"crowding out effect**".
  - In this case, contractionary fiscal policy **reduces interest rate and raises private investment**. **The size of crowding out effect is** Y_3Y_2 [movement from E_3 to E_2.]
- From graph 2, **output decrease**s from Y_1 to Y_2. Hence, money demand decreases from $M^d(Y_1)$ to $(M^d(Y_2)$.
- **Equilibrium interest rate decreases** from r_1 to r_2.

2. In short run

(a) If there is a big drought in agricultural production area in the northeastern part of Thailand, holding other things being equal what would be the effects on the economy overall price and national income based on the AD-AS model analysis?

(b) If central bank of the country wants to restore the original price level (before the big drought), explain possible monetary policy tools (four measures) that can stabilize the economy in terms of price level (diagram is not necessary).

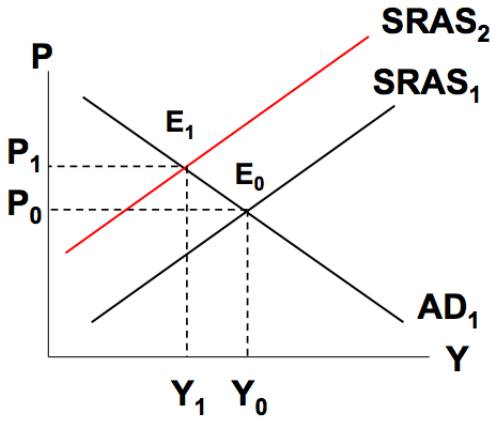
(c) Based on monetary policy tools chosen in part (b), what would be the effects of the policy (on the economy price level, national income and interest rate). Explain and provide necessary diagrams [regarding, relevant market(s), IS-LM Model and AD-AS Model] to supplement your explanation.

Answer

(a) If there is a big drought in agricultural production area in the northeastern part of Thailand, holding other things being equal what would be the effects on the economy overall price and national income based on the AD-AS model analysis?

Answer.

- The big drought in agricultural production area in the northeastern part of Thailand would reduce Thailand **productivity, capacity to produce, availability of resources**.
- **Aggregate supply reduces for all levels of price. Short-run aggregate supply curve shifts to the left.**



- At the original price, there is excess demand. **Price level increases** from P_0 to P_1
- **Output decreases from Y_0 to Y_1.**
- Such increase in price is **cost push inflation**.
- The situation where output decreases and inflation increases is called **stagflation.**

(b) If central bank of the country wants to restore the original price level (before the big drought), explain possible monetary policy tools (four measures) that can stabilize the economy in terms of price level (diagram is not necessary).

Answer.

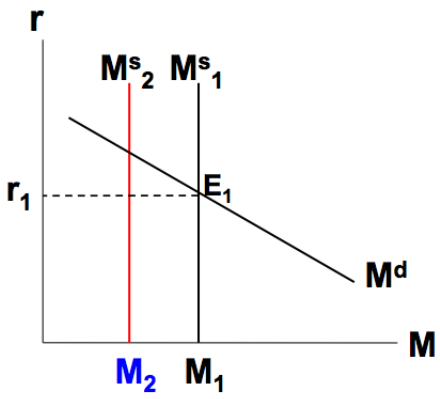
- If central bank wants to restore the orignal price P_0. The central bank need to **reduces aggregate demand.**
- To decrease aggregate demand the central bank need to apply contractionary monetary policy, **reduce money supply by**
  i. open market operation : sell government bonds
  ii. increase bank rate
  iii. increase minimum reserve requirement
  iv. print less money

(c) Based on monetary policy tools chosen in part (b), what would be the effects of the policy (on the economy price level, national income and interest rate). Explain and provide necessary diagrams [regarding, relevant market(s), IS-LM Model and AD-AS Model] to supplement your explanation.

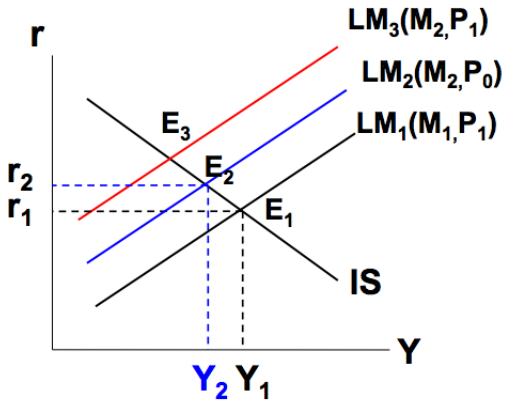
Answer.

- From question (a) and question (b), **initial equilibrium** in ADAS model is now at point E_1 in graph 3. In the ISLM model, initial equilibrium is point E_1 in graph 2. In the Money market, the initial equilibrium is point E_1 in graph 1.
- Base on monetary policy tools chosen in part (b), **central bank reduces money supply.**
- Central bank reduces money supply, **money supply shifts to the left** from M_1^S to M_2^S in graph 1.
- Since money supply decreases, **LM curve shift to the left** from $LM_1(M_1, P_1)$to $LM_3(M_2, P_1)$.
- **Output decreases for all levels of interest rates and prices**.
- **Aggregate demand curve shifts to the left f**rom AD_1 to AD_2 in graph 3.
- **Output decreases** from Y_1 to Y_2.
- **Price level decreases** from P_1 to P_0, back to the original price level.
- **Since price level decreases rom P_1 to P_0, real money supply increases. LM shift to the right** from $LM_3(M_2, P_1)$ to $LM_2(M_2, P_0)$.
- Overall, **the decrease in money supply causes interest rate to increases** (from r_1 to r_2). **Output to decreases** (from Y_1 to Y_2) and price level to decrease from P_1 to P_0, back to the original price level.

Graph 1



Graph 2



Graph 3