**Exercise 7**

**AD-AS Model**

1. Explain why AD is downward-sloping (that is, how AD is derived), using the money market diagram and the IS-LM.

2. What is Sticky Wage Theory? Explain why SRAS is upward-sloping (that is, how SRAS is derived), using the sticky wage theory, labor demand diagram, and production function.

3. Explain why LRAS is vertical.

4. **Cetaris Paribus** (other things equal), how will each variable/event affect each curve – shift (to which direction?) or movement?

| Variable/Event | AD | SRAS | LRAS |
|---|---|---|---|
| P↑ | | | |
| G↓ | | | |
| T↓ | | | |
| Autonomous C↑ | | | |
| Autonomous I↓ | | | |
| M↓ | | | |
| i↑ | | | |
| Temporary epidemic (assuming AD unchanged) | No effect | | |
| Permanent increase in population growth rate (assuming AD unchanged) | No effect | | |
| W↑ | | | |
| Bad seasonal weather | | | |
| Permanent loss in agricultural land due to climate change | | | |
| Discovery of new technology | | | |
| Short-term worker training | | | |
| Permanent education reform | | | |

5. Suppose the economy faces a negative AD shock (e.g. loss in consumers' confidence).
   - What output gap do we have? Draw the AD-AS diagram to show the output gap at the new short-run equilibrium.

- If the government wants to correct such output gap, what policies can it implement? Give examples.
- If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

6. Suppose the economy faces a temporary, positive AS shock.
   - Give one example of a temporary, positive AS shock.
   - If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

7. Suppose the economy faces a permanent, negative AS shock.
   - Give one example of a permanent, negative AS shock.
   - If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

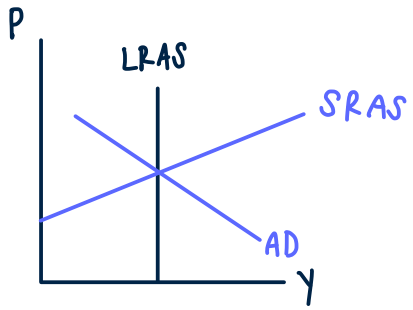
8. In macroeconomics, **Money Neutrality** is the idea that a change in the stock of money (M) does not affect real variables, like employment and real GDP. Is this true in the AD-AS model?
   (**Hint**: When the central bank changes money supply, M, does this affect output in the long run, i.e. full-employment Y?)

9. Based on Question 8 above, what can the government do to change output in the long run?
   (**Hint**: Monetary and Fiscal Policies are demand-side policies, but do we have other alternatives?)

10. Economists usually have macroeconomic goals of low employment and low inflation. It is also believed that economists face the trade-off between these goals, especially in short run. Use relevant diagrams to explain the trade-off. Why does the trade-off no longer exist in long run?

11. *** The IS-LM is for short-run analysis, while the AD-AS is for long-run analysis. Now, let's link them together. Suppose the government implements expansionary fiscal policy. Use the IS-LM and AD-AS models to show the policy effect in both short run and long run.
    (**Hint**: In long run, what happens to P in the AD-AS model? How will this change in P affect the IS-LM model?)

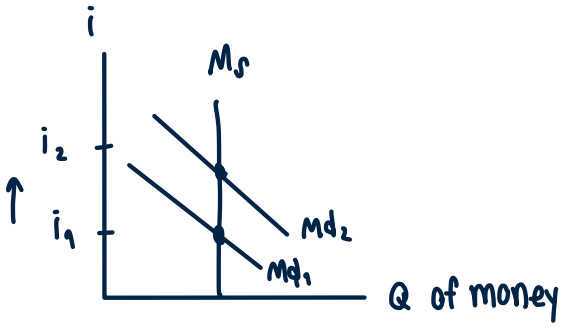
1. AD -AS



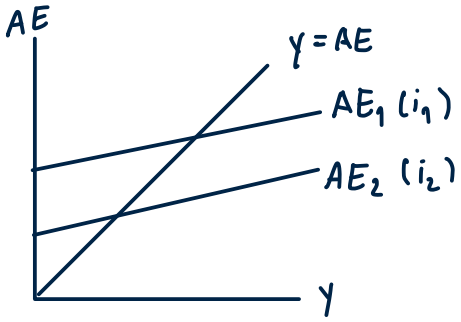

MM: P↑ → Md↑ → i↑

GM: i↑ → I↓ → AE↓ → Y↓

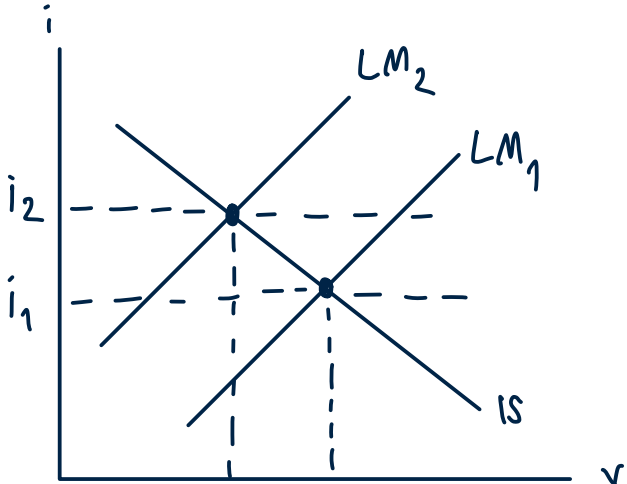
Money market




Goods market




IS - LM

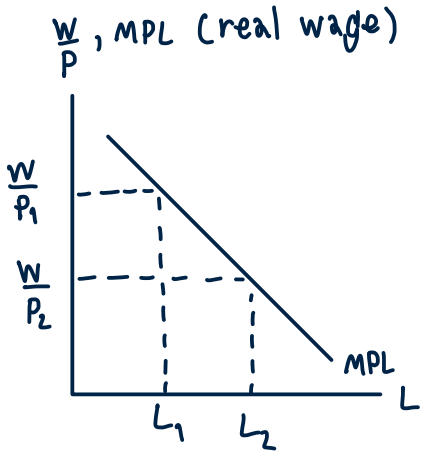



The price increas, people will demand more money so the i will be higher.

Those is cause of LM shift to the Left ($LM_1 \rightarrow LM_2$). The goods market, when i is higher the investors will decrease investment.

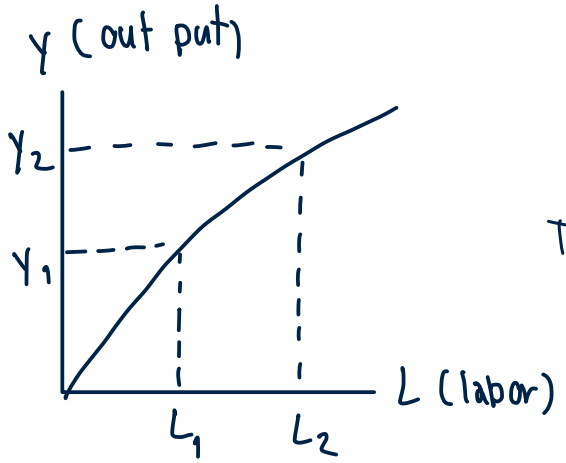
This effect to AE because income also decrease.

2. sticky wage theory is the labor not increase / decrease the wage due to the labor-contracts.



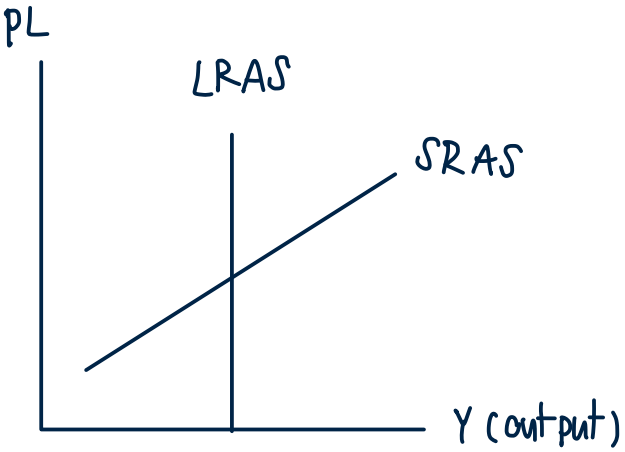

In sticky, price level ↑ but nominal wage constant so the firm will hire more workers

## Labor demand diagram

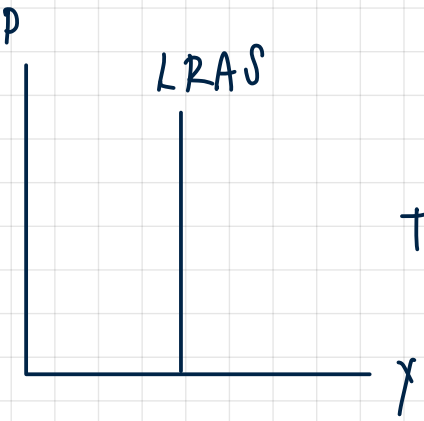



The more worker, the more output

## Production function



3.

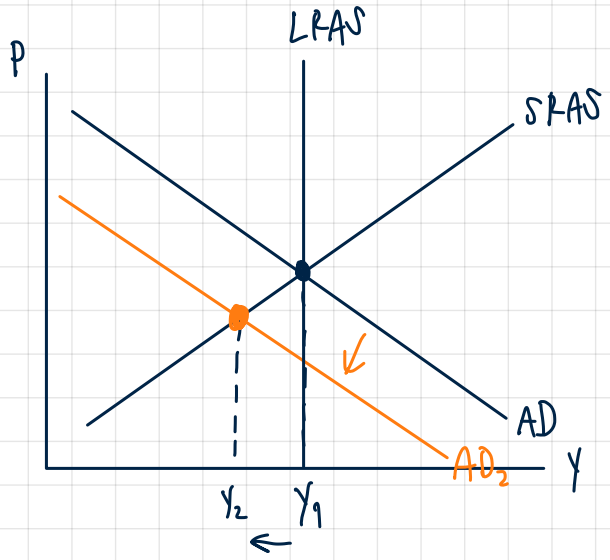



The price level does not affect LRAS.

4. **Cetaris Paribus** (other things equal), how will each variable/event affect each curve – shift (to which direction?) or movement?

| Variable/Event | AD | SRAS | LRAS |
|---|---|---|---|
| P↑ | movement | movemet | movement |
| G↓ | shift left | - | - |
| T↓ | shift right | | |
| Autonomous C↑ | shift right | | |
| Autonomous I↓ | shift left | | |
| M↓ | shift left | | |
| i↑ | shift left | | |
| Temporary epidemic (assuming AD unchanged) | No effect | shift left | – |
| Permanent increase in population growth rate (assuming AD unchanged) | No effect | shift right | shift right |
| W↑ | – | shift right | – |
| Bad seasonal weather | – | shift left | – |
| Permanent loss in agricultural land due to climate change | – | shift left | shift left |
| Discovery of new technology | – | shift right | shift right |
| Short-term worker training | – | shift right | – |
| Permanent education reform | – | shift right | shift right |

5. Suppose the economy faces a negative AD shock (e.g. loss in consumers' confidence). ↳ shift left
   - What output gap do we have? Draw the AD-AS diagram to show the output gap at the new short-run equilibrium.

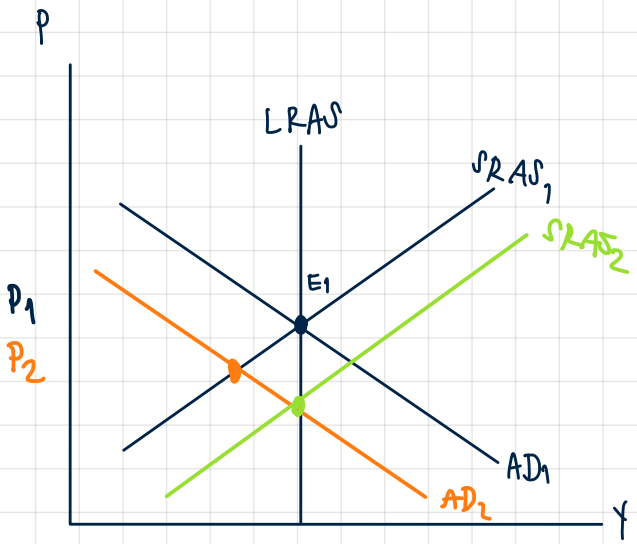



AD will shift left. After consumption decreasing is effect to output decrease

   - If the government wants to correct such output gap, what policies can it implement? Give examples.

The government should use both expansionary monetrary policy & fiscal policy because if we use expansionary policy, IS and LM will shift right. As a result, AD will shift right as well, so the output will increase.

   - If there is no government intervention, explain <u>with the AD-AS diagram</u> how the economy will return to the long-run equilibrium.

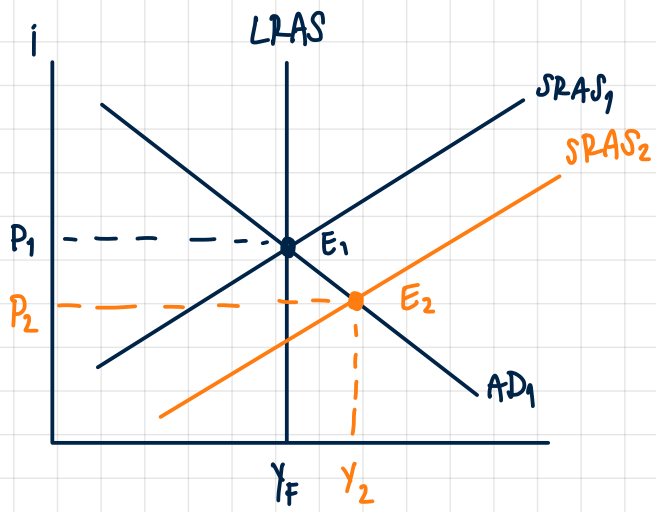



when price level decrease, workers are willing to accept lower wage, so cost of production fall and firms want to produce more. As a result, SRAS shift right

6. Suppose the economy faces a temporary, positive AS shock.
   - Give one example of a temporary, positive AS shock.
   - If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

6.1) new technology

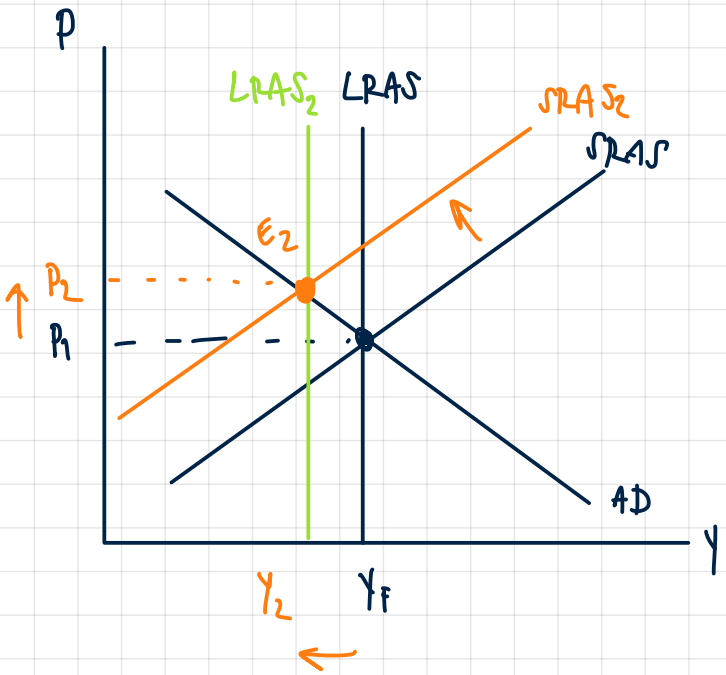
6.2)



7. Suppose the economy faces a permanent, negative AS shock.
   - Give one example of a permanent, negative AS shock.
   - If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

7.1) birth rate.

7.2)

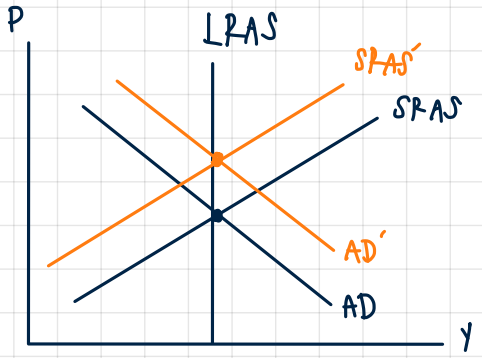



a permanent negative AS shock affect both SRAS and LRAS.

LRAS move to $E_2$ ($E_1 \rightarrow E_2$)

so the price level is higher now and full employment output is lower.

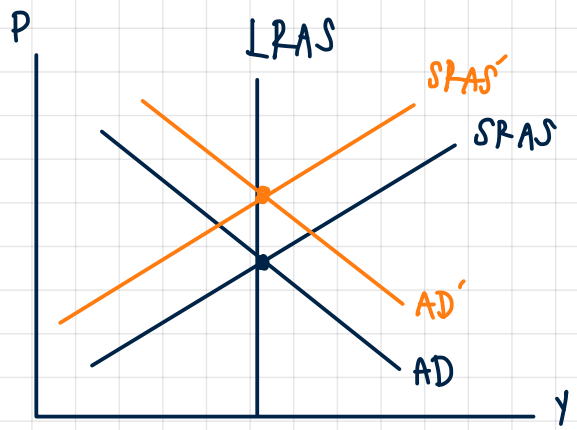
8. In macroeconomics, **Money Neutrality** is the idea that a change in the stock of money (M) does not affect real variables, like employment and real GDP. Is this true in the AD-AS model?
(**Hint**: When the central bank changes money supply, M, does this affect output in the long run, i.e. full-employment Y?)




9. The government can change LRAS by increasing quality & quantity of FOP such as well-education, infrastructure or limited / increase the birth rate by the law.

10. In SRAS, the firm hire more workevs because the wage is sticky. So this make lower unemployment rate but the price level will increase due to inflation

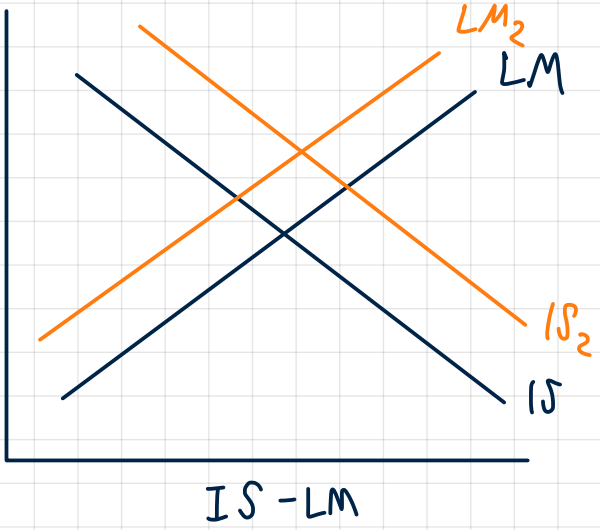
In LRAS, when the price level higher the employee can ask for more wage so the firm will not hire more workers. The unemployment rate rise.



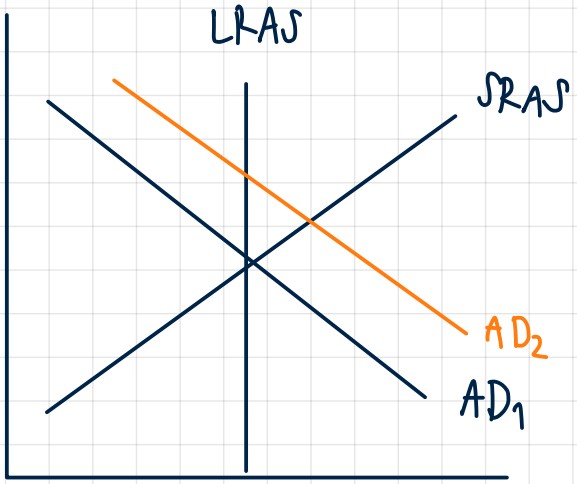
11. when G↑

GM: G↑ → AE↑ → Y↑ → IS shift to the right → ∴ AD shift right

MM: Y↑ → Md↑ → i↑




IS - LM




AD - AS