

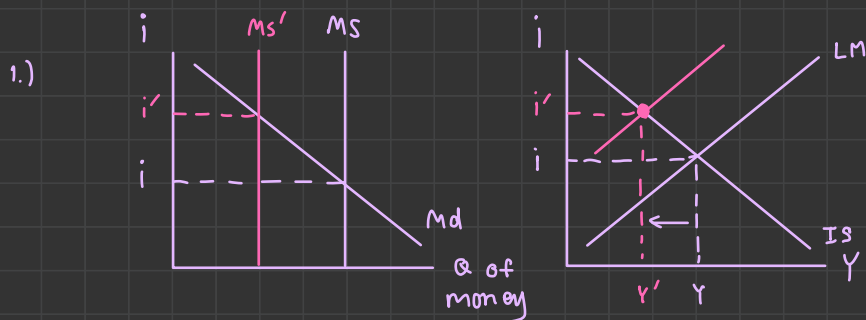
Exercise 7

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. **Ceteris 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		
G↓	shift ←		
T↓	shift →		
Autonomous C↑	shift →		
Autonomous I↓	shift ←		
M↓	shift ←		
i↑	shift ←		
Temporary epidemic (assuming AD unchanged)	No effect	shift ←	
Permanent increase in population growth rate (assuming AD unchanged)	No effect	shift →	shift →
W↑		shift ←	
Bad seasonal weather		shift ←	
Permanent loss in agricultural land due to climate change		shift ←	shift ←
Discovery of new technology		shift →	shift →
Short-term worker training		shift →	
Permanent education reform			shift →

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.



Ans one of explanation is the interest rate effect.

i links b/w two markets, makes AD down-ward sloping

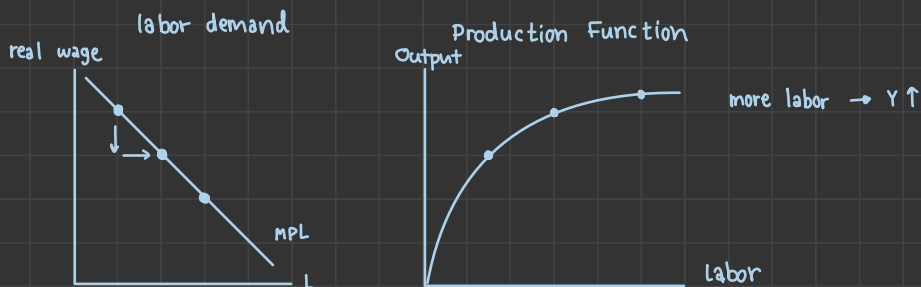
Ex. 1.) MM: $P \uparrow \rightarrow Ms \downarrow \rightarrow i \uparrow$

2.) MN: $i \uparrow \rightarrow I \downarrow \rightarrow AE \downarrow \rightarrow Y \downarrow$

$\hookrightarrow$ movement along IS, shift in LM

It's clear that AD has negative relationship b/w P, Y
 so, that's why AD has down-sloping

2.) Sticky wage theory is the theory used to explain why is SRAS is up-ward sloping. It state that wage is fixed in short-run b/c of labor contract. When $P \uparrow = \frac{\bar{w}}{P} \downarrow$. firms are happy b/c less cost of production can produce more output ($Y \uparrow$).

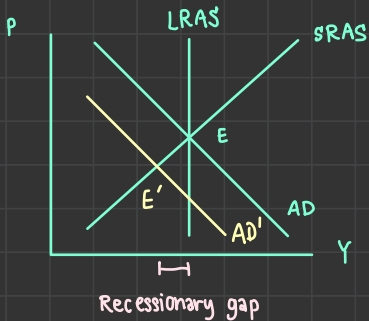


3.) LRAS = vertical b/c it doesn't depends on price level

even if the price change, LRAS still the same

- 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?)

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.

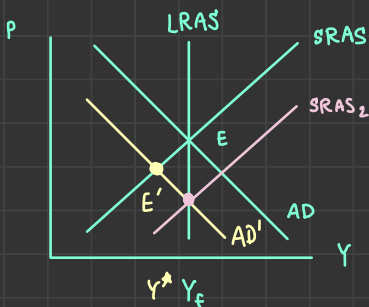


Due to negative AD shocks (customer lose their confidence), it makes AD shift left. E moves to E' at lower P, Y. After E change, Y is decreased and caused recessionary gap b/w E and E'.

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

Ans Gov. can use Expansionary Fiscal Policy to boost economy, Then $Y \uparrow$. So, AD shift right to the original position.

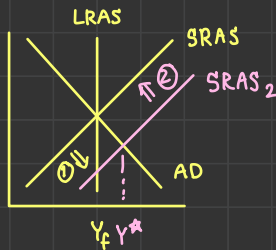
- If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.



In long-run, the economy will adjust itself to eqbm. This process called 'self-correcting'. SRAS will shift to the right b/c now wage is flexible in long run. pp. are willing to accept job at low price. So, firms hire more, output increase to Y_f .

6. Suppose the economy faces a temporary, positive AS shock.

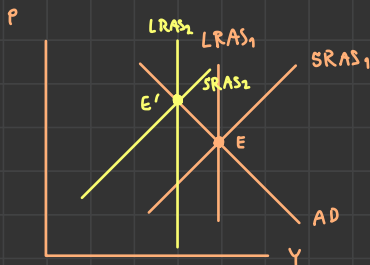
- Give one example of a temporary, positive AS shock.
- If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.



- Temporary positive AD shock Shift SRAS to the right such as gov. reduces company tax 1 year makes output increase to Y^*
- SRAS will shift back to the original position due to no longer use of gov. tax reduces in company policy. So, Y will decrease to Y_F

7. Suppose the economy faces a permanent, negative AS shock.

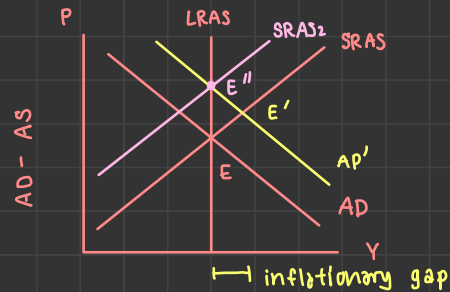
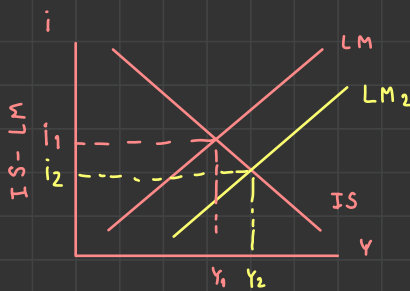
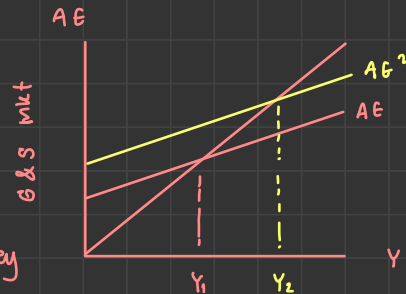
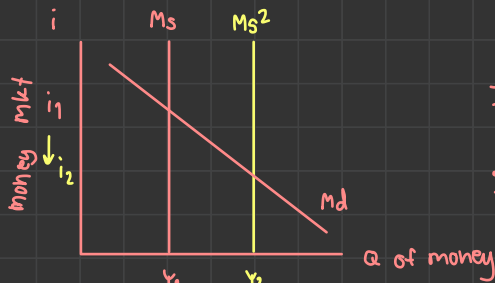
- Give one example of a permanent, negative AS shock.
- If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.



- one of the permanent negative AS shock is large natural resource is gone (oil).
- Permanent shock affect both LRAS, SRAS. In this case, it shift LRAS, SRAS to the left at higher price and output (shift to new LRE by self-correcting)

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 ?)

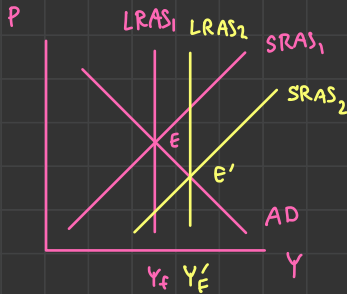


- In MM, $M_s \downarrow$ cause $i \downarrow$. However in GM, $i \downarrow$ encourage investor to invest more. Then $AE \uparrow \rightarrow Y \uparrow$
- In IS-LM, b/c $i \downarrow$ and $Y \uparrow$, LM shift right
- In AD-AS, Y increase. In short-run wage is sticky, so p still the same. So, AD shift to the right b/c Y increase, but p still the same. When compare E and E' , it will be inflationary gap.
- In AD-AS (long-run), economy will adjust itself by shift $SRAS$ left to $LRAS$ to create new eqbm at LRE . By wage is no longer sticky, wage goes up. Firms lay-off some labor and output are slowly decrease from Y^* to Y_f . At E''

To proof that Δ in M_s will affect an output.

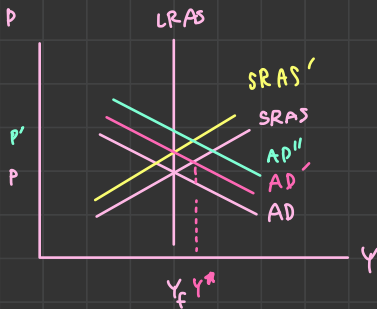
9. Based on Question 8 above, what can the government do to change output in the long run?

(Hint: Monetary and Fiscal Policies are demand-side policies, but do we have other alternatives?)



In long-run, gov. can use supply-side policy which is a permanent positive shock to increase Y and create new eqbm such as offer better education. Labor will have better quality and produce more. So, output increase. E will move to E' at lower P , Y

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?

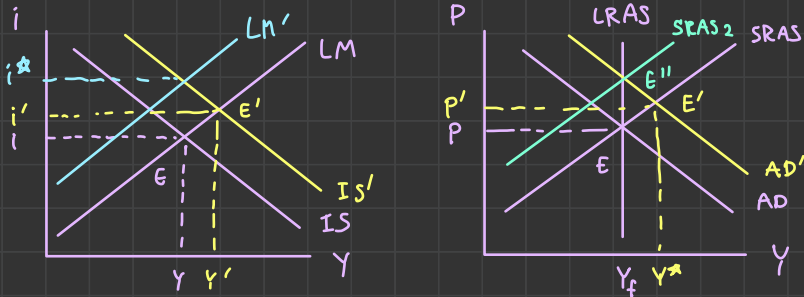


In short-run when $AD \uparrow$, it cause SRE in higher price level (inflation) and higher output (employment) b/c wage is fixed $\rightarrow$ firms pay less real wage $\rightarrow$ firm can hire more workers.

From this situation, better economy come from increase in demand for labor. So, it is trade-off for economist's goal.

In long-run, wage is flexible. Firm must pay higher wage for workers following the price-level. So, firm can't hire more labor due to real wage is same as before. Then, firm can produce output at same rate at Y_f and P increase to P'

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?)



- Expansionary Fiscal Policy ($G \uparrow, T \downarrow$) can increase out and shift IS to the right. Now, new eqbm is at E' with higher i and higher Y .
- In short-run, Y increase. P also increase follow Y by fix wage in short-run, firm can hire more worker, produce more $\rightarrow Y \uparrow$.
So, AD shift right and has new GRE at E' in AD-AS model
- In long-run, economy will self-correcting to new LRE by shift SRAS to the left. Because wage is now flexible, p will increase to reduce real wage $\rightarrow$ reduce labor demand $\rightarrow$ labor decrease $\rightarrow$ output decrease to LRE at E''
- in Money market, p increase leads to decreasing in $M^d \rightarrow$ LM shift left which cause higher interest rate and decreasing in output.