

## Exercise 7

### AD-AS Model

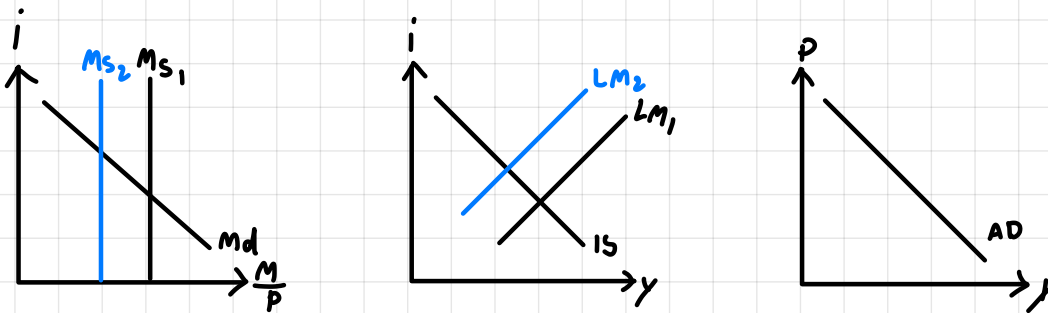
1. Explain why AD is downward-sloping (that is, how AD is derived), using the money market diagram and the IS-LM.
2. What is Sticky Wage Theory? Explain why SRAS is upward-sloping (that is, how SRAS is derived), using the sticky wage theory, labor demand diagram, and production function.
3. Explain why 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↑			
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?)

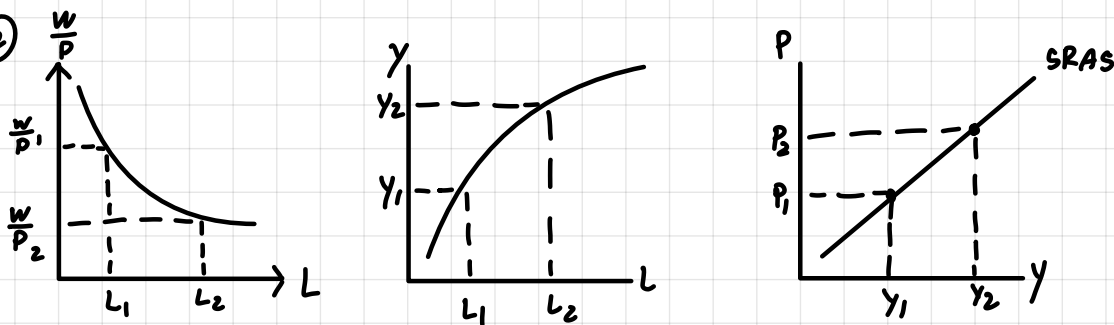
①



When price level increased in the money market it will directly decrease in the real money supply ( $M_s = \frac{M}{P}$ ) and increasing the interest rate, due to the increasing of the interest rate it discourage the investors.

As AE fall & output fall the AD has downward sloping to the negative relationship between the price level and the output.

②



Norminal wage is sticky due to the labor contract.

The reason why SRAS is an upward-sloping is because of when the price increase, wage become cheaper.

So the firms going to demand more labor, the labor increase also the production. Hence, it leads to an increasing in the output.

In conclude, when the price increase, also the output.

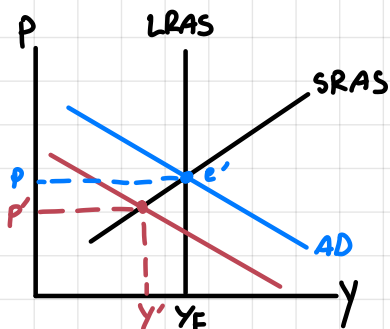
③

LRAS is vertical because of in the long run when the price increase, employee can negotiate for more higher wage, were the real wage and labor demand stayed unchanged. Even the firm didn't hire more labor, output say the same. The price doesn't effect the output.

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
$P \uparrow$	movement	movement	—
$G \downarrow$	left	—	—
$T \downarrow$	right	—	—
Autonomous $C \uparrow$	right	—	—
Autonomous $I \downarrow$	left	—	—
$M \downarrow$	—	—	—
$i \uparrow$	left	—	—
Temporary epidemic (assuming AD unchanged)	No effect	left	—
Permanent increase in population growth rate (assuming AD unchanged)	No effect	no effect	right
$W \uparrow$	—	left	no effect
Bad seasonal weather	—	left	no effect
Permanent loss in agricultural land due to climate change	—	left	left
Discovery of new technology	—	right	right
Short-term worker training	—	right	no effect
Permanent education reform	—	right	right

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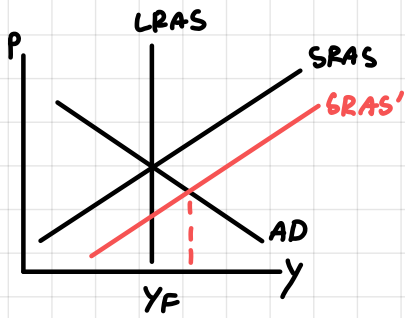


: negative AD shock, AD curve shift to the left.  
 → price & output decrease.  
 The new equilibrium ( $Y'$ ) is less than the full-employment output ( $Y_F$ ) which leads to the recessionary gap.

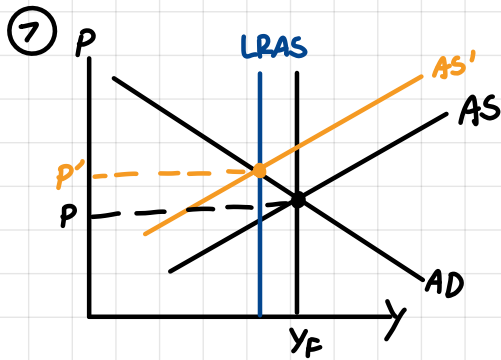
- If the government wants to correct this recessionary gap, the expansionary fiscal policy and expansionary monetary policy can be applied e.g. lower tax, increase government spending or lower the interest rate.
- If there is no government intervention, the economy will adjust by itself. AS AD shift left, there is lower price and lower output. Which means that the cost of production which the wage is low. Therefore, the firms demand more labor. So it create growth of output. As a result it move back to the long-run equilibrium.

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⑥ One examples of a temporary, positive AS shock is high-season of the weather.



As there is a positive AS shock, it shifts AS to the right and cause higher output and lower price. When the shock disappears AS will adjust to the original equilibrium by itself.



Example of a permanent negative AS shock is the higher death rate.

This will make AS shift to the left, hence it create less output. So if there is no government intervention, higher death rate, the population size become smaller. Therefore, LRAS will shift to the left as well.

As a result it will adjust to the long-run equilibrium with higher price and less output.

