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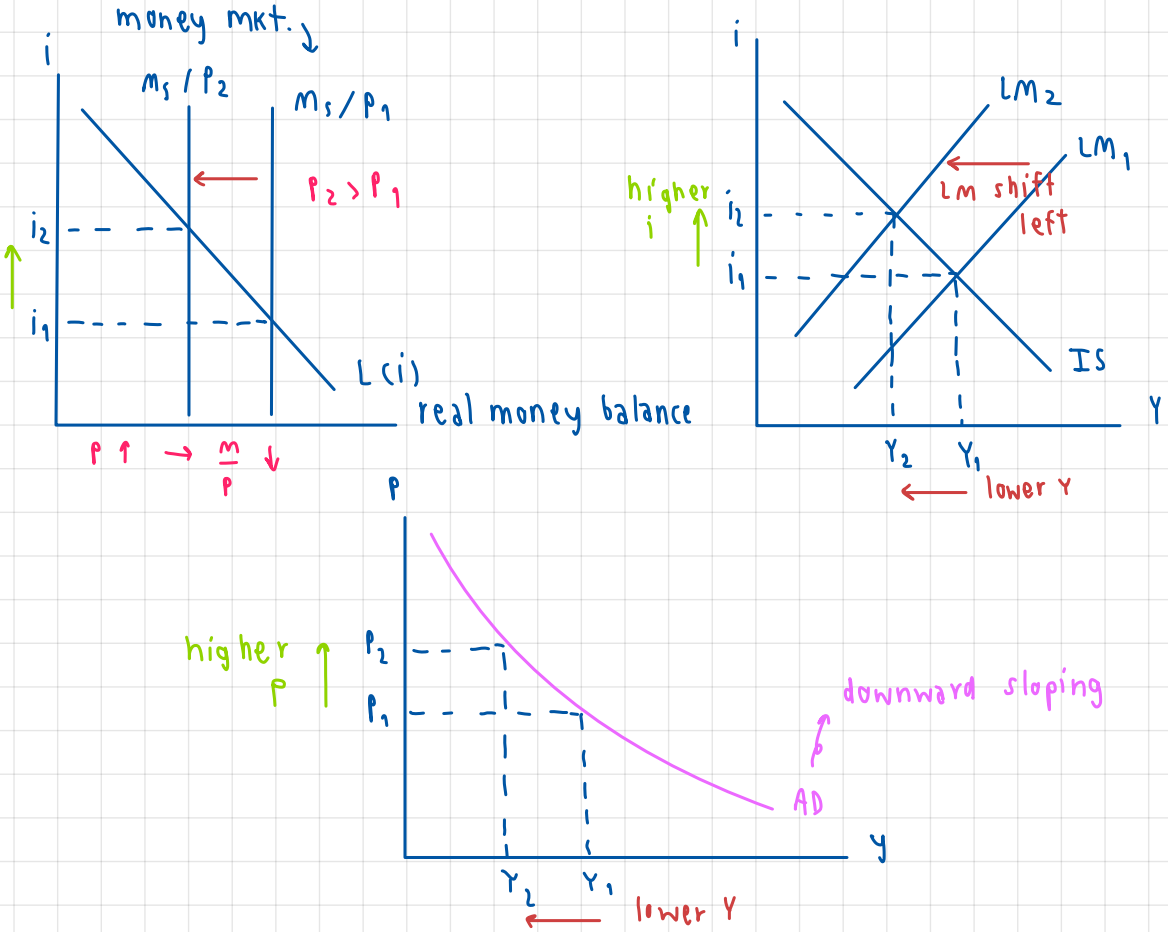
1. Explain why AD is downward-sloping (that is, how AD is derived), using the money market diagram and the IS-LM.

↳ interest rate effect ⇒ $P \uparrow \rightarrow \frac{M}{P} \downarrow \rightarrow i \uparrow$ (money market)

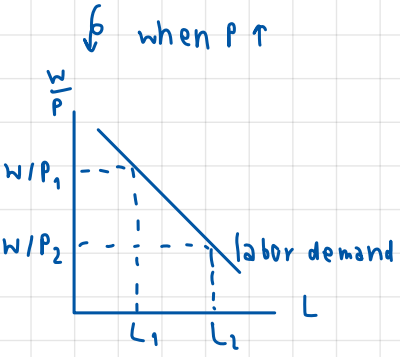
then $i \uparrow \rightarrow I \downarrow \rightarrow AE \downarrow \rightarrow Y \downarrow$ (goods market)

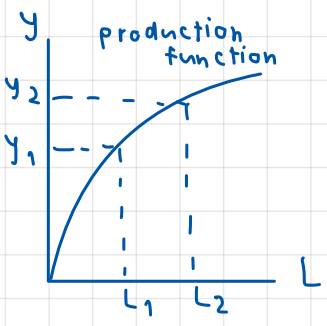


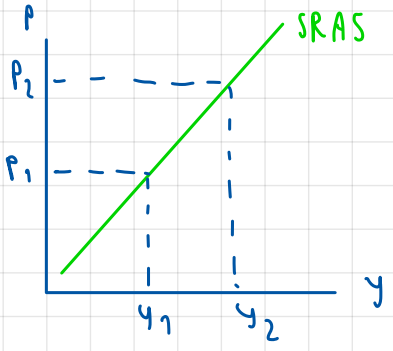
2. What is Sticky Wage Theory? Explain why SRAS is upward-sloping (that is, how SRAS is derived), using the sticky wage theory, labor demand diagram, and production function.

↳ sticky wage theory ⇒ In short run, wages are fixed. So, when $P \uparrow \rightarrow \frac{w}{P} \downarrow$. This make workers unhappy, but can't negotiate for higher wage because of labor contracts. On the other hand, firms are happy and hire more labor & produce more because of lower cost of production. (higher profit)

↳ when P ↑







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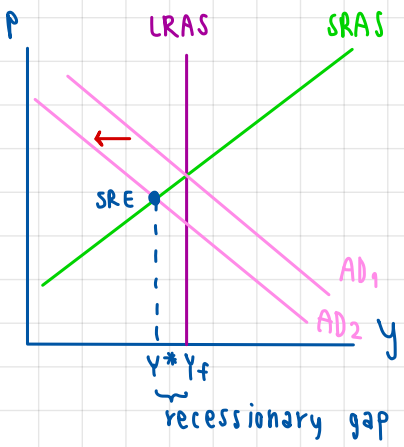
3. Explain why LRAS is vertical.

↳ In long run, output is at full employment level, and Y does not depend on P because the wage is no longer sticky. So, when P ↑ → workers can negotiate for higher wage. → labor demand unchanged & output remains the same.

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

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.



$Y^* < Y_f$ → recessionary gap

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

↳ use demand-side policies to shift AD ↑

expansionary fiscal policies => G↑ & T↓ → AE↑ → Y↑
expansionary monetary policies => increase M_S to reduce i → I↑ → AE↑ → Y↑

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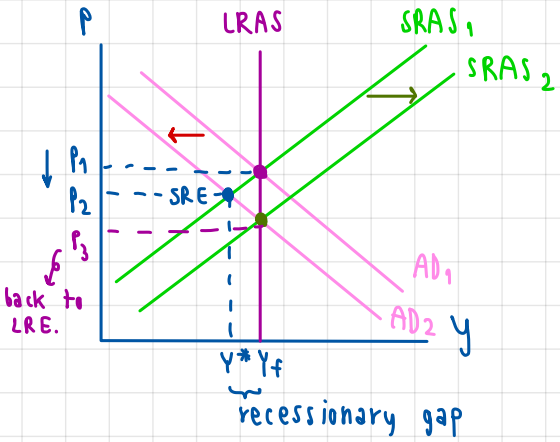
- If there is no government intervention, explain with the AD-AS diagram how the economy will return to the long-run equilibrium.

↳ The economy can slowly adjust itself, through shifts in SRAS.



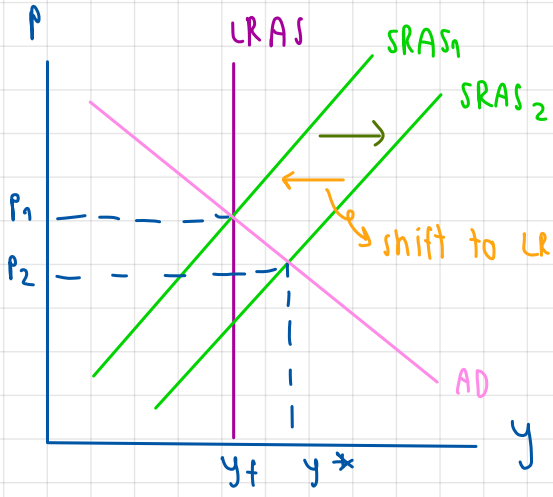
SRAS will slowly shift itself to the right because when AD curve shift to the left, it makes price level decrease, so the cost of production also decrease. As a result, the firms want to hire more labor, so the output will increase and the economy returns to LRE. at lower price.

SRAS shift right

6. Suppose the economy faces a temporary, positive AS shock.
   - Give one example of a temporary, positive AS shock.

↳ example => Good weather & Short-term change in regulations.

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



The temporary positive AS shock makes the SRAS shift to the right at lower price & higher output. Aftherwards, the shocks disappear (the SRAS move back to its original position / at LRE)

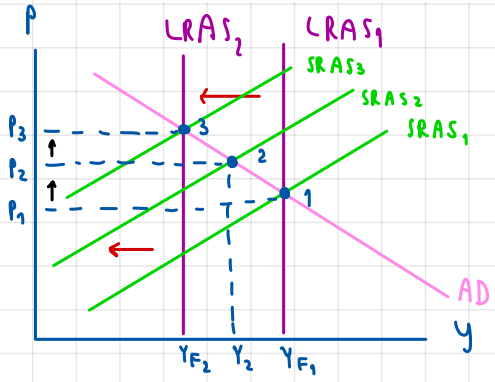
shift to LRE (original) itself

SRAS & LRAS shift left

7. Suppose the economy faces a permanent, negative AS shock.
   - Give one example of a permanent, negative AS shock.

↳ example => decreasing in population & global warming

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



A permanent negative AS shock make the LRAS & SRAS shift to the left and we have SRE at ②. As a result, the output (y) will be permanently lower. So, we will get into the LRE at ③ at the lower y & higher P which leads to inflation.

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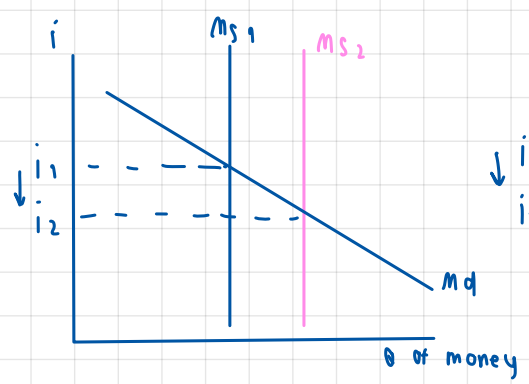
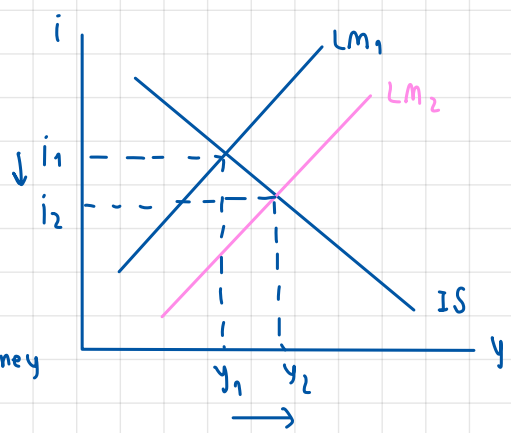
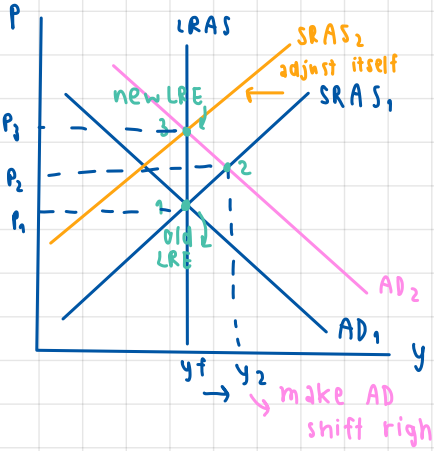
8. In macroeconomics, **Money Neutrality** is the idea that a change in the stock of money (M) does not affect real variables, like employment and real GDP. Is this true in the AD-AS model?
(**Hint**: When the central bank changes money supply, M, does this affect output in the long run, i.e. full-employment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



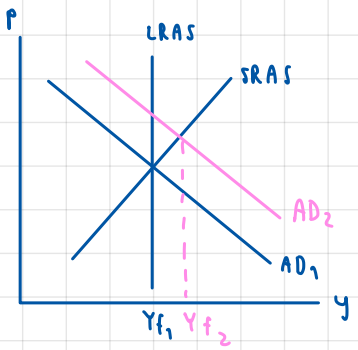


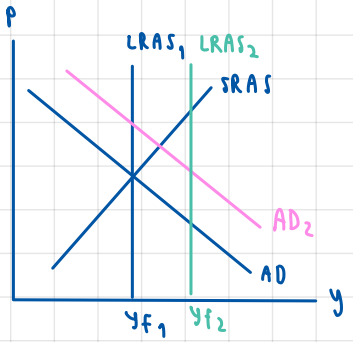


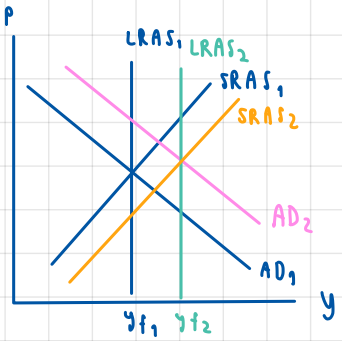
↳ Suppose the CB ↑ M_S, so M_S curve shift right → make i ↓ → I_0 ↑

↳ higher y → AD shift right at SRE ② (higher P) → firms hire more labor because they want to sell more output and in SR, wage is sticky, so firms are happy & want to produce more. So, yf increase to y_2. One the other hand, in LR, wage is flexible so the labors will ask for higher wage. This makes firms unhappy and produce less, so the SRAS shift left to new LRE.

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?)







The government use expansionary fiscal policy to shift AD curve. AD curve will shift right from AD_1 to AD_2. On the other hand, when we want to change AS, we must use supply-side policies such as change in productivity of labor. In this case, we must have better tech. or better education for labor in order to shift LRAS from $LRAS_1$ to $LRAS_2$ and also to shift SRAS from $SRAS_1$ to $SRAS_2$ as well. Finally, we will return to new LRE at higher yf.

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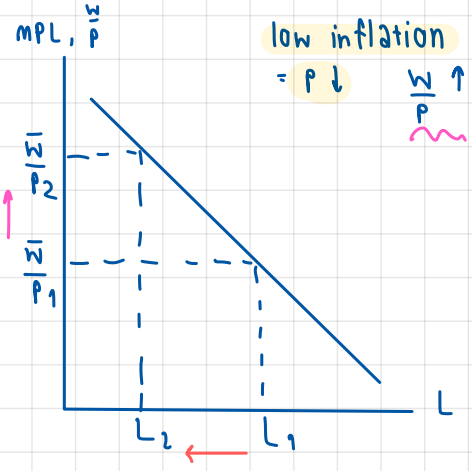
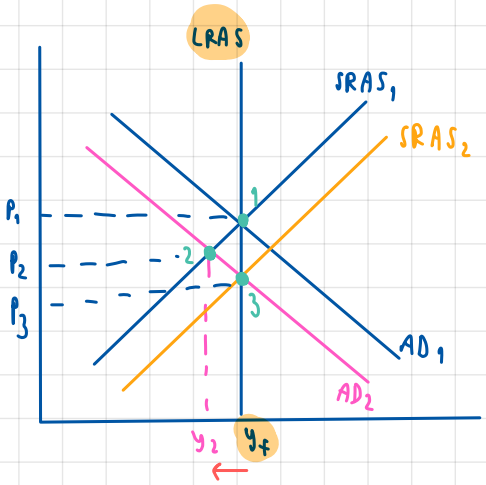
10. Economists usually have macroeconomic goals of low employment and low inflation. It is also believed that economists face the trade-off between these goals, especially in short run. Use relevant diagrams to explain the trade-off. Why does the trade-off no longer exist in long run?



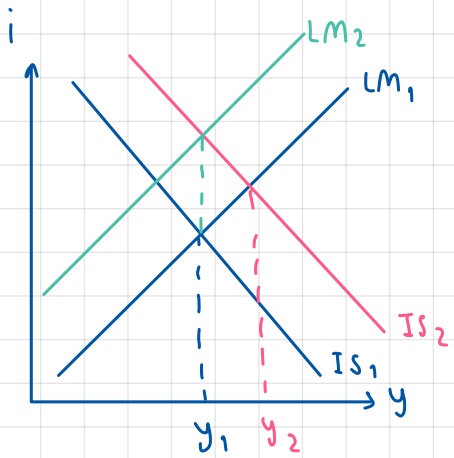


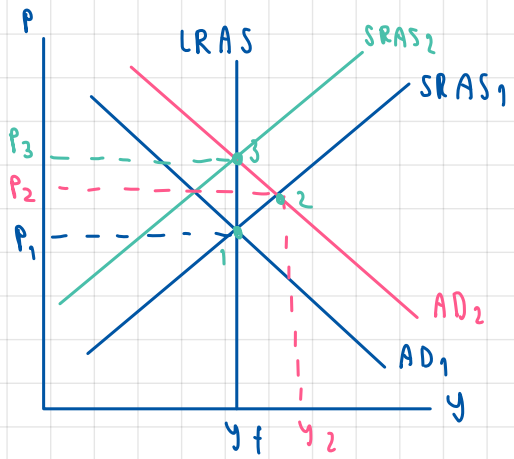
low inflation rate = P ↓ → W/P ↑, firms hire less labor, so employment rate is low. (↳ Y low)
So, AD shift left from AD_1 to AD_2. (↑ because)

In SR, low inflation rate leads to low employment. But in LR, wage is flexible (adjust to price level). So, firms can hire more labor & produce more because lower cost of production.

As a result, SRAS shift right and the economy return to LRE with lower price level but same output. To conclude, Trade-off is no longer exist in LR.

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?)
(G ↑, T ↓)





Expansionary fiscal policy → G ↑, T ↓ → IS shifts right → AD shifts right (higher P)

In LR, when P ↑ & wage can adjust, labors negotiate for higher wage so, firms hire less labors & produce less

SRAS shift left from $SRAS_1$ to $SRAS_2$ (back at LRE ③ with higher P)

↳ M/P ↓ → M_s ↓ → LM shifts left with same amount of y.