

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

We can derive AD curve from LM curve

- $\frac{M}{P} = L(i, Y)$
- Money supply = Money demand
- When price level increase it reduce money supply
- Smaller money supply will drive up interest rate
- Higher interest rate discourage investment
- Lower investment reduce output (Y)

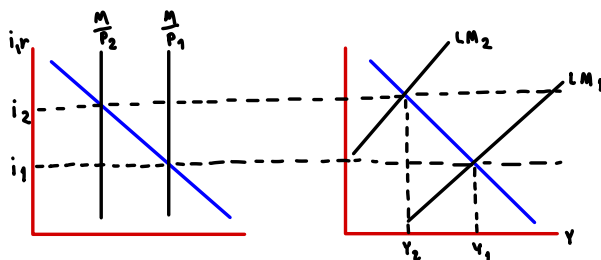
$\therefore$ AD relationship $\rightarrow P \uparrow Y \downarrow$

Increase in P is similar to contractionary monetary policy

in money market = $\frac{M}{P}$ When $P \uparrow i \uparrow$, In goods and services

market: when $i \uparrow$, $I \downarrow$. So $AE \downarrow Y \downarrow$ and this shows

negative relationship between price level and output.

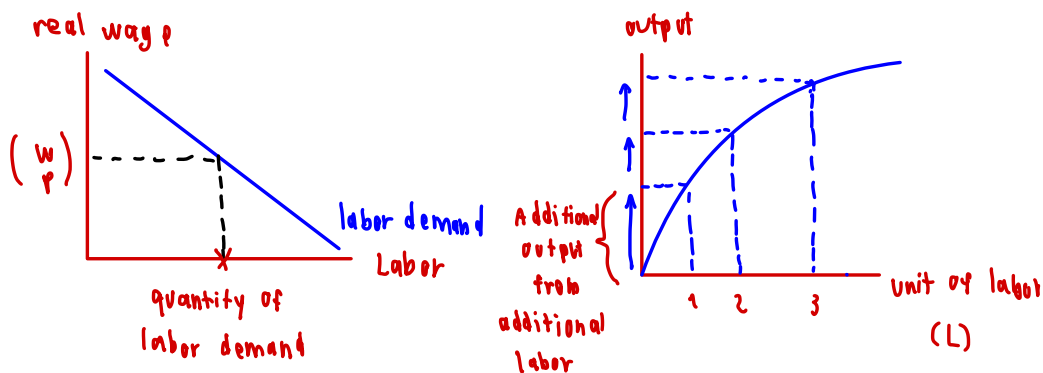


2. What is Sticky Wage Theory? Explain why SRAS is upward-sloping (that is, how SRAS is derived), using the sticky wage theory, labor demand diagram, and production function.

In SR, nominal wage is sticky due to labor contract and there is unemployment.

As price $\uparrow$, wage $\downarrow$ so firm want to hire more labor, it cause labor increase more output

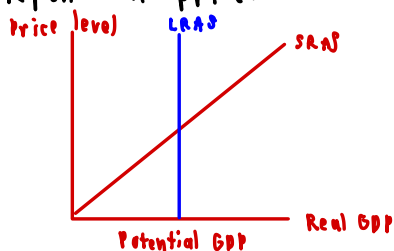
$P \uparrow \rightarrow \frac{M}{P} \downarrow \rightarrow \text{labor demand} \uparrow \rightarrow \text{labor} \uparrow \rightarrow Y \uparrow$



3. Explain why LRAS is vertical.

In LR is at full employment level.

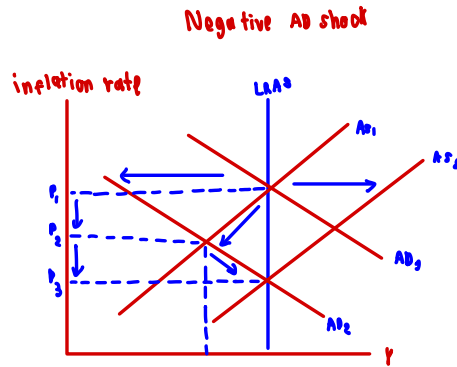
LRAS does not depend on price. So it be a vertical.



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

5)



- 1) AD shift left makes output and inflation decrease
- 2) AS will shift to right until
- 3) The economy return to LRE with inflation permanent lower, we have recessionary gap.

- The government should use expansionary fiscal/monetary policy $G \uparrow \rightarrow T \downarrow \rightarrow M \uparrow$

- The economy can slowly adjust itself.

$P \downarrow \rightarrow W \downarrow \rightarrow \text{labor demand} \uparrow \rightarrow L \uparrow \rightarrow Y \uparrow \rightarrow \text{SRAS shift right}$

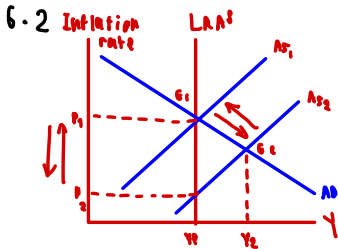
6. Suppose the economy faces a temporary, positive AS shock.

- 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) - Short term worker training

- The economy can adjust itself

Temporary, positive AS shock.



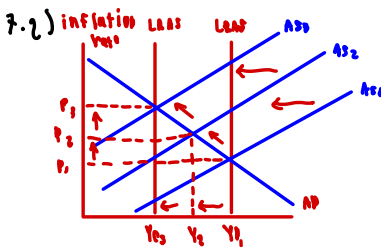
Overtime, AS_2 will shift back to AS_1

- Y_2 will move to Y_f
- P_2 will increase to P_1
- the economy will return to equilibrium at LRAS.

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 decrease permanent



- The economy can adjust itself slowly

P_1 increase to P_3 , Y_{f1} decrease to Y_{f3}

- Permanent negative AS shock cause LRAS shift left, lead to AS shift as well.

- The economy will return to LRE with output permanent decrease, permanent increase

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?)

$$M \uparrow \rightarrow i \downarrow \rightarrow I \uparrow \rightarrow Y \uparrow$$

$$Y \uparrow \rightarrow M_d \uparrow \rightarrow i \downarrow$$

$$i \uparrow \rightarrow I \downarrow \rightarrow Y \downarrow$$

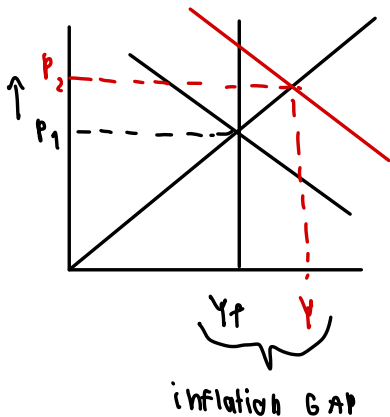
9. Based on Question 8 above, what can the government do to change output in the long run?

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

$$G \uparrow \rightarrow AE \downarrow \rightarrow Y \uparrow$$

$$Y \uparrow \rightarrow i \uparrow \rightarrow I \downarrow \rightarrow Y \downarrow$$

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?

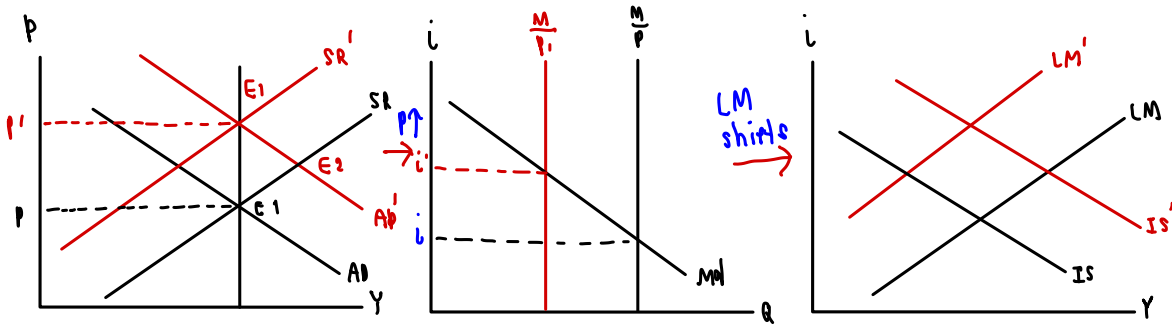


- P is increase from P_1 to P_2 , this make we have inflation here.

- when it's in inflation, $Y > Y_f$ or $U < U_n$, this shows that we have lower unemployment and this can be called trade off.

- In LR, wage is flexible so market is in full employment this make trade off 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?)



Expansionary fiscal policy $\rightarrow$ increase AD (shift AD) $\rightarrow$

Market adjusts to New LR Equilibrium E_3 .