Lecture Notes
The $AS - AD$ Model

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Now, we have the full set of variables to characterize an economy. We have the goods market (IS relation), the money market (LM relation), and the labour market. The $AS - AD$ model offers you a basic understanding of an economy in motion.

1. The AS relation

`Output` $\Rightarrow$ `Price Level`

When output goes up, what happens to price level in the economy? Let's break this into a multi-stage process.

1 A rise in output leads to a rise in employment.

2 The rise in employment means a fall in the unemployment rate.

3 A fall in unemployment strengthens the bargaining power of the labour leading to a hike in nominal wage.

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4 Hike in nominal wage will eventually translate into higher price level.

When expected price level goes, up what happens to actual price level? [You need to think about the labour market.]
We now know that $\uparrow Y \Rightarrow \uparrow P$. Rising output puts an upward pressure on the price level. You can draw an upward sloping line in $P-Y$ plane to represent the AS curve.

2. The AD relation

`Price Level` $\Rightarrow$ `Output`

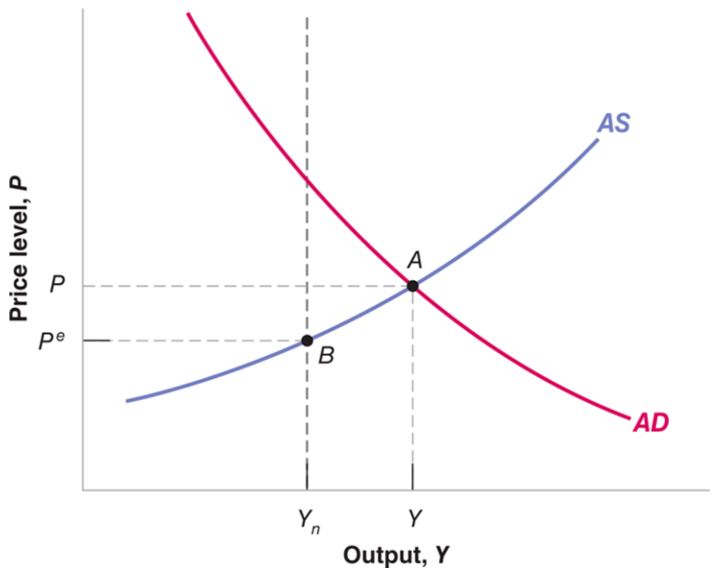
What happens to output when price level goes up? Summon the $IS-LM$ model.

$$IS: Y = C + I(Y,i) + G$$
$$LM: \frac{M}{P} = Y \cdot L(i)$$

The immediate effect of the rise in price level is on the money stock. Real money stock comes down. The LM curve moves UPWARDS leading to a rise in interest rate. This will eventually lead to lower investment level in the economy. The process stops at lower output.
We learn that $\uparrow P \Rightarrow \downarrow Y$. You can draw a nicely downwards sloping line to represent the AD curve. Note that any shift in the goods or the financial market will lead to shift in the AD curve. Guess what happens to the AD curve when the government decides to hike the taxes.

3. Equilibrium: Short versus Medium Run

The graph below shows the short run and the medium run equilbrium together. It is important to distinguish between the two. In short run, the $IS-LM$ model offers you the equilibrium. This equilibrium output may be higher (or lower, if you would like) than the medium run structural output.



3.1 From the Short Run to the Medium Run

Well, let's take the economy shown in the graph above, and start from the short run equilibrium.

Cookbook:

- At point A, $P > P^e$ leading to upward revision of wages.
- Higher wage bill will lead to higher costs for firms.
- AS curve will start moving UPWARDS.

- Equilibrium output will now start inching closer towards Y_n.
- The process stops when $Y = Y_n$.

4. Impact of Policy Changes

4.1 Monetary Expansion

What happens when the RBI decides to go for rate-cut? In the short run, we know the story. Monetary expansion leads to a rise in output, and a fall in interest rate. Now, what happens as time passes?
Cookbook:

- As output goes up, P goes up (AS shifts upwards).
- New medium run equilibrium price (higher than the original price).
  - See how this works in the $IS-LM$ framework.
- Medium run equilibrium output: Y_n.
- Bottomline: In the medium run: output does not change, but the economy faces inflationary pressure.

4.2 Deficit Reduction

Is deficit reduction all that a bad news as we had learnt in the $IS-LM$ framework? Let's see. In the short run, the AD curve moves to the $LEFT$ leading to contraction in output. What also happens, in due course, is that the price level

declines given that AS curve is currently fixed. Because $\downarrow P$, the real money stock increases, leading to a partially offsetting shift of the LM curve. This will boost investment in medium run, and the output will slowly move towards the structural output.
Cookbook:

- Bottomline: In the medium run: output does not change, but investment goes up.

4.3 Oil Shocks

How about oil shocks? Let's analyse the impact of oil shocks on the medium run output and price level. Cookbook:

- In the short run, the AS curve shifts UPWARDS. [Higher price, lower output]
- But something else is also afoot.
  - What happens to structural unemployment rate?
  - Because markup has to go up, the price setting curve will shiftDOWNWARDS.
  - We now will have a new higher structural unemployment rate (and lower Y_n).
- Bottomline: If the increase in the price of oil is permanent, then output is lower not only in the short run, but also in the medium run.