What is the long-run response to an increase in aggregate demand?

In the short run, the price level increases and output increases.

But in the new short-run equilibrium, $P > P^e$: the actual price level exceeds the expected price level.

Workers will recognize this discrepancy and adjust their expectations upwards: P^e will increase.

How does an increase in the expected price level shift the SRAS curve?

- Again, the equation of the SRAS curve is:

$$P = (1+\beta) \, P^e \, (1 - au + z)$$

- Holding P fixed (for the moment), if P^e increases, then u must increase for this equation to hold. $u \uparrow \Rightarrow Y \downarrow$, so an increase in P^e shifts the SRAS curve to the left : there is an decrease in aggregate supply at any price P.

- An increase in P^e increases the nominal wage (wage-setting relation). But if P is held fixed, the nominal wage can't move (price-setting relation). So u must increase to offset the increase in P^e in the wage-setting relation.

An increase in p^e shifts the SRAS curve to the left:
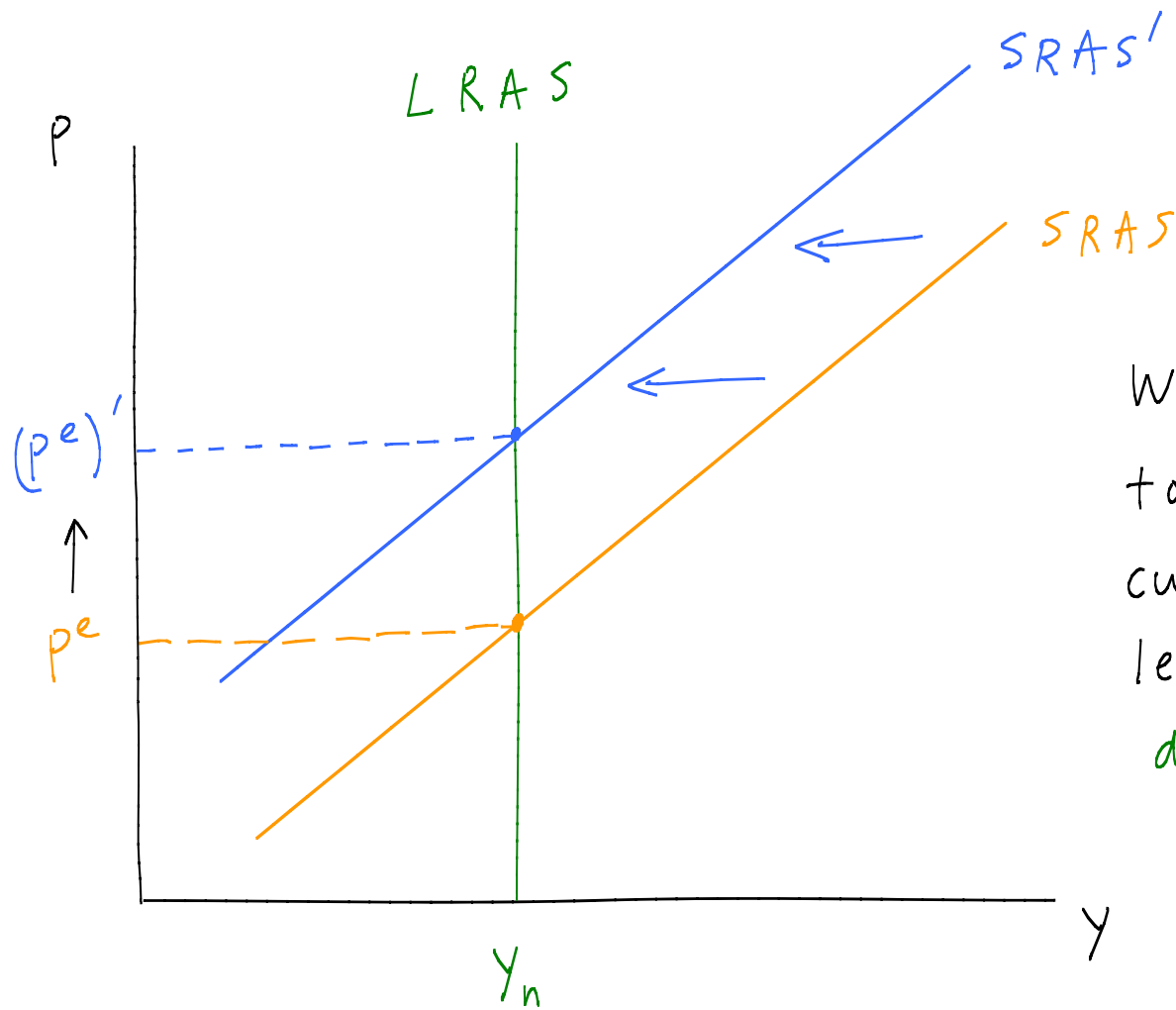
When p^e increases to $(p^e)'$, the SRAS curve shifts to the left (when p^e decreases, it shifts to the right).

Adjustment of price expectations

After a shock to aggregate demand or aggregate supply, the actual and expected price levels diverge temporarily.

But the expected price level adjusts in response to this discrepancy (between actual and expected price). Eventually, the economy returns to a long-run equilibrium in which $p = p^e$. In other words, eventually the economy returns to the point where the AD, SRAS, and LRAS curves all intersect.

Short-run and long-run responses to an increase in aggregate demand (i.e., a shift to the right of the AD curve).

P

SRAS'

LRAS

SRAS

D

C

B

AD'

A

AD

Y_n

Y
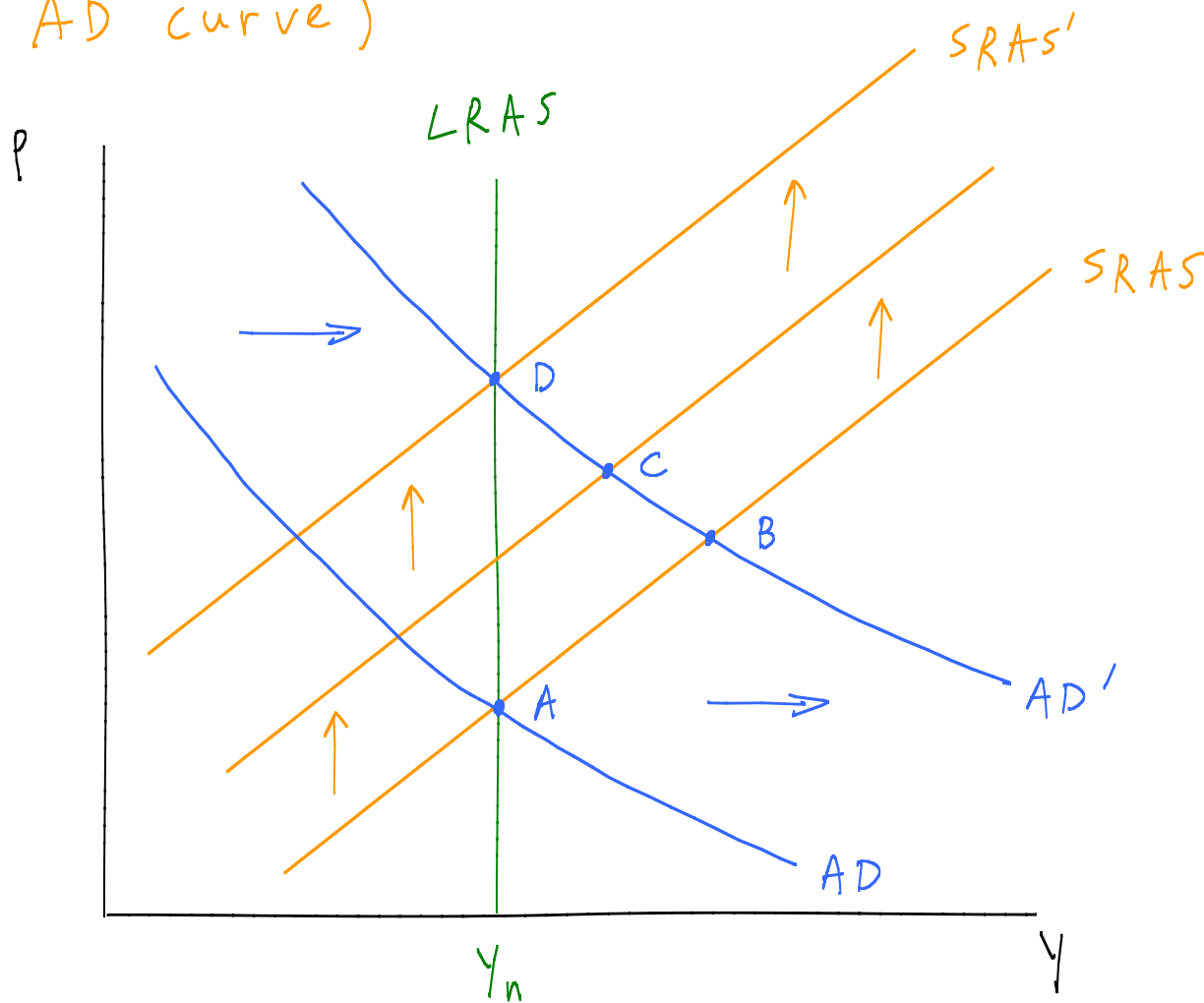
The economy starts at point A. When the AD curve shifts out, the economy moves to point B (P^e remains fixed at the initial price level). Because $P > P^e$ at point B, P^e increases, shifting the SRAS curve up. The economy moves to point C, where again $P > P^e$ (which remains fixed at the price associated with point B).

Eventually, the economy reaches point D, where $P = P^e$.

Summary of responses to an increase in aggregate demand

1. Short run (points B and C): $Y\uparrow$ $P\uparrow$ $u\downarrow$ (because $Y\uparrow$).

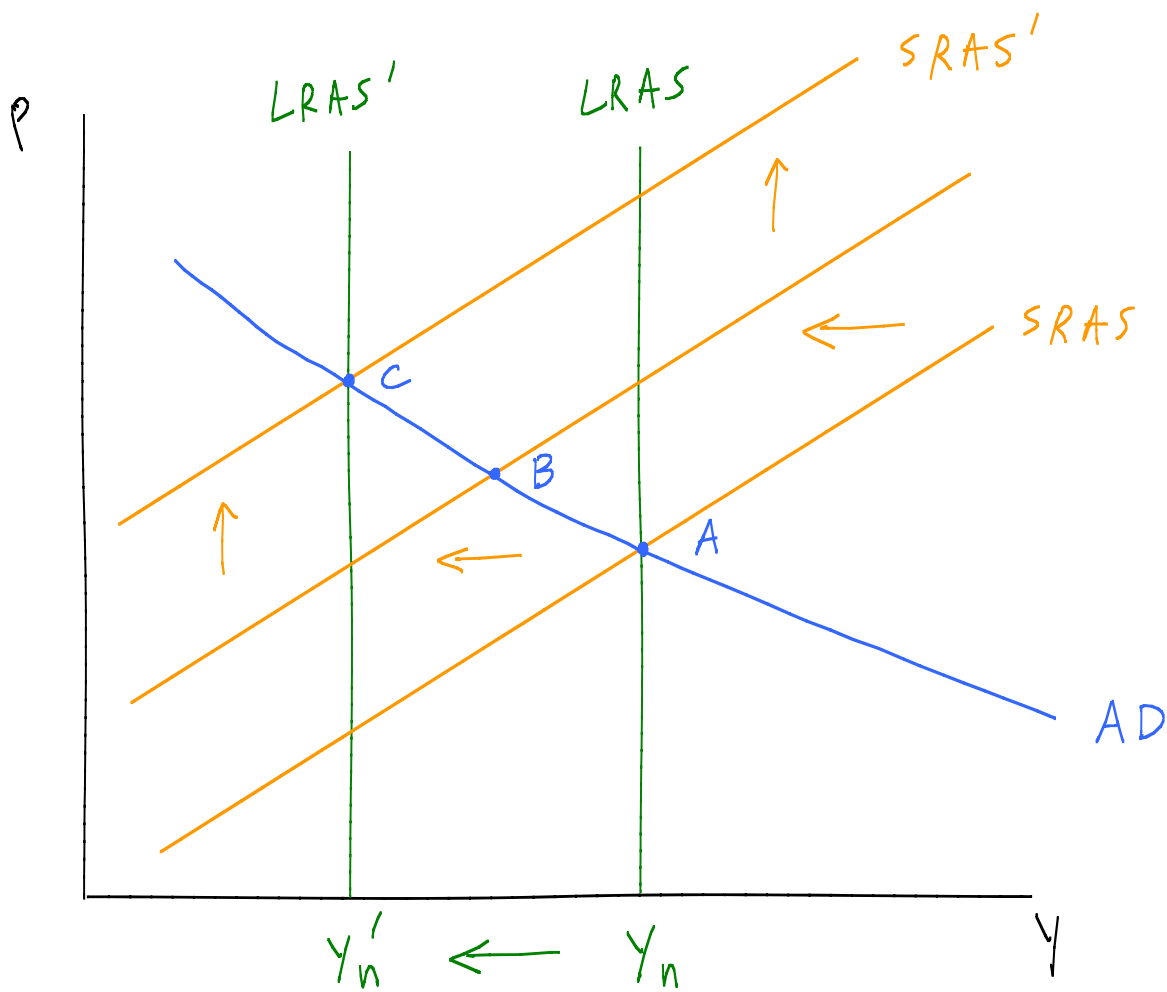$$\frac{W}{P} = \frac{1}{1+\beta}$$ unchanged (no change in β).

$w\uparrow$ because $P\uparrow$ and $\frac{W}{P}$ is unchanged.

2. Long run (point D): $P\uparrow$ but no change in either Y or u
(Y returns to Y_n and u returns to u_n).

$$\frac{W}{P} = \frac{1}{1+\beta}$$ unchanged.

$w\uparrow$ because $P\uparrow$ and $\frac{W}{P}$ is unchanged.

Short-run and long-run responses to a decrease in aggregate supply (i.e., a shift to the left of the SRAS curve, thanks to an increase in the markup β)

The economy begins at point A. When β increases, the SRAS curve shifts to the left, and the economy moves to point B (p^e remains fixed at the initial price level). Because $p > p^e$ at point B, p^e increases, shifting the SRAS curve upwards. Eventually, the economy reaches point C, where $p = p^e$. Remember that the increase in β also reduces Y_n (and increases u_n), shifting the LRAS curve to the left.

Summary of responses to an increase in the markup β

1. Short run (point B): $Y\downarrow$, $P\uparrow$, $u\uparrow$ (because $Y\downarrow$).

$$\frac{W}{P} = \frac{1}{1+\beta} \quad \downarrow \text{ (because } \beta\uparrow).$$

$W = P^e(1 - au + z)$, so $W\downarrow$ because $u\uparrow$ and P^e has not (yet) adjusted.

2. Long run (point C): $Y = Y_n' < Y_n$: Y falls because the increase in β increases u_n.

Similarly, $u = u_n' > u_n$: u increases.

$P\uparrow$. $\quad \frac{W}{P} = \frac{1}{1+\beta}$, so $\frac{W}{P}$ falls.

Not clear (without a more detailed analysis) what happens to $W = P(1 - au + z)$: $P\uparrow$ and $u\uparrow$ have opposite effects on the nominal wage.