ECO 209Y
Macroeconomic Theory and Policy

Lecture 9: Introduction to the AD-AS Model

DEMAND IN THE FIXED-PRICE MODEL

- Everything we have done in the **IS-LM** model has been in terms of ***demand***, where **AE** determined ***supply***
  - We assumed that the ***price level*** was ***fixed*** and, therefore, that firms were willing to supply all that was demanded at this given price level
- Therefore, the ***equilibrium*** determined in the **IS-LM** model was referring exclusively to the demand side of the economy
  - That is, it could be said that the **IS-LM** equilibrium indicated the ***real value*** of the quantity demanded of goods and services at the fixed price level

Demand in the Flexible-Price Model

- We will now allow the price level (**P**) to change and see how this affects the ***demand side*** of the economy
  - That is, how the **IS-LM** equilibrium changes as **P** changes
- Allowing **P** to change, we will construct the ***aggregate demand*** (**AD**) curve for the economy
  - We will do so while holding $\overline{\mathbf{AE}}$ and **M** constant
- The **AD** curve shows the ***real value*** of the quantity demanded of goods and services (**Y**) at each price level (**P**)
- Therefore, the **AD** curve maps out the combinations of **P** and **Y** at which the goods and assets markets are simultaneously in equilibrium (while still assuming that firms supply all that is demanded at each price level)

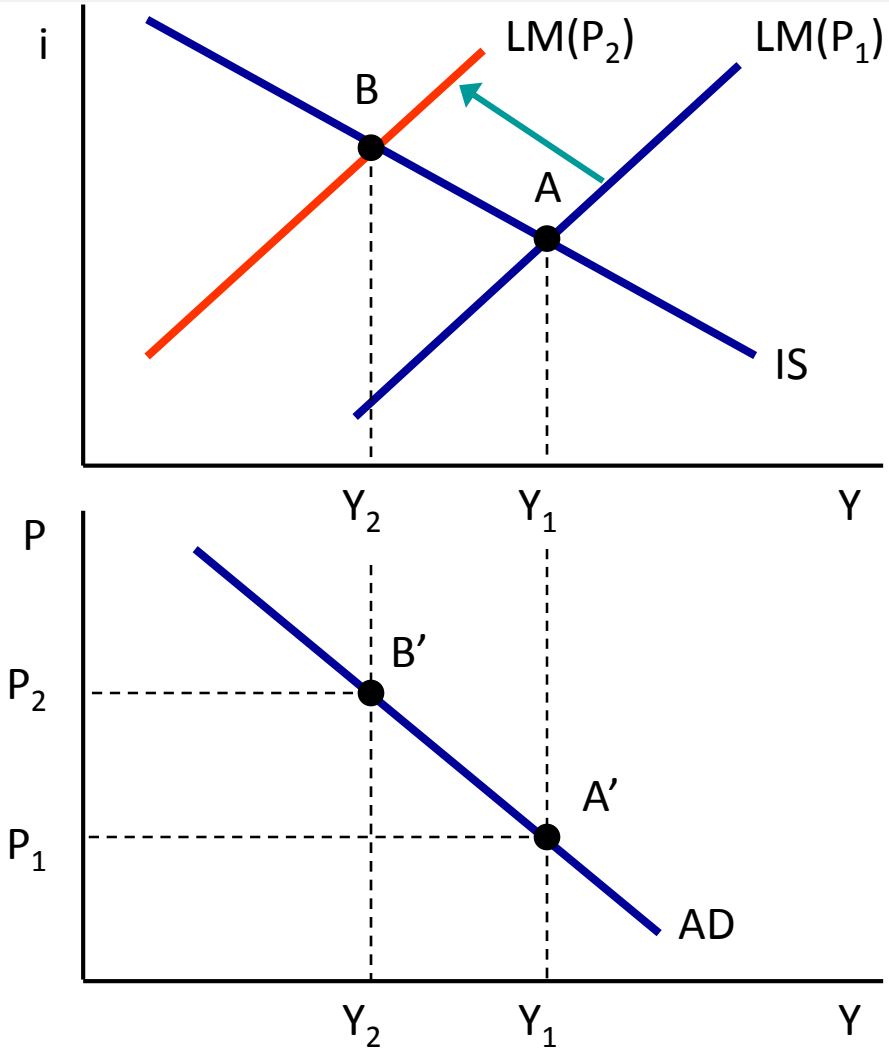
The Derivation of the AD Curve in a Closed Economy

- In order to derive the **AD** curve we must allow the price level to change and see how it affects the level of output in the **IS-LM** model of a closed economy
- As the price level increases, for instance, the real supply of money (**M/P**) decreases and the **LM** curves shifts upward
- Recall that the equation for the **LM** curve is given by

$$i = -(M/P)/h + (k/h)\,Y$$

  where **h** is the interest sensitivity of the demand for money and **k** is the income sensitivity of the demand for money
- As **P** increases, therefore, the **IS** and **LM** curve intersect at lower levels of income
  - Hence, the **AD** curve has a negative slope

The Derivation of the AD Curve



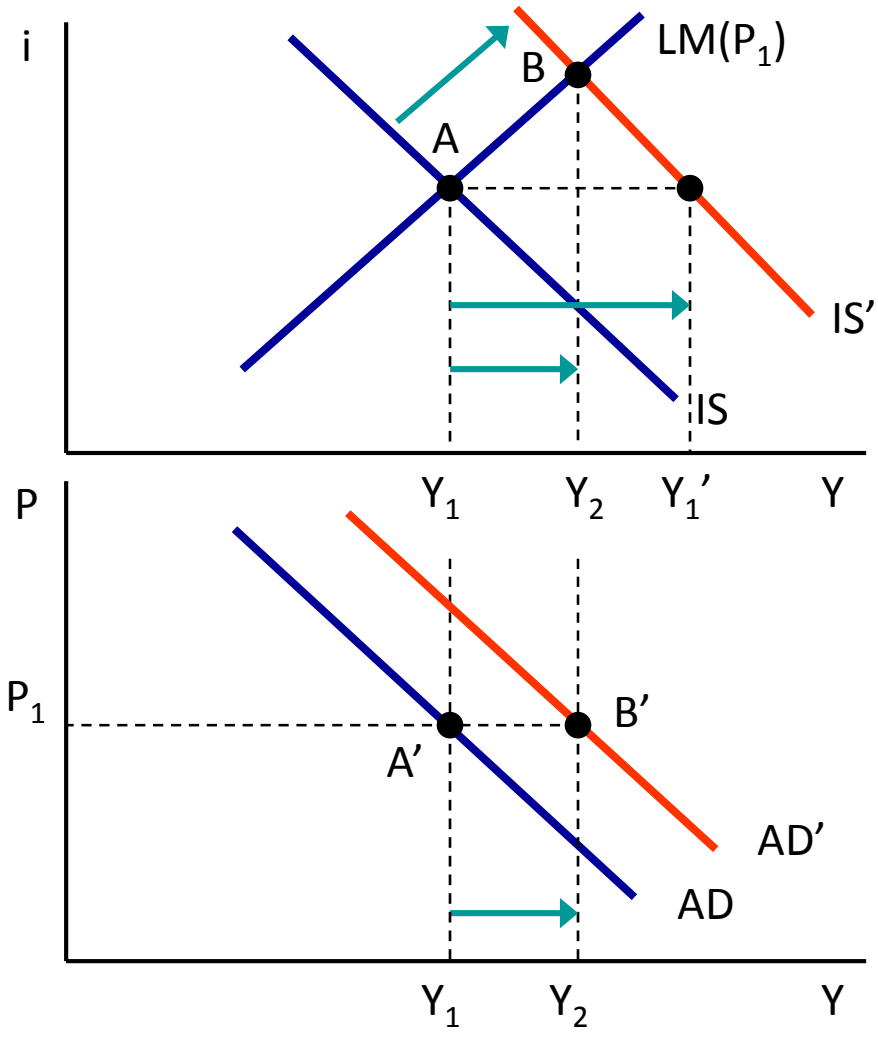
When the price level is P_1, the real money supply is $\overline{M}/P_1$ and the corresponding LM curve is LM(P_1).

When the price level is P_1, the goods and the money markets are in equilibrium at Y_1. This combination of P and Y is one point on the AD curve.

If the price level increases to P_2, the real money supply decreases and the LM curve shifts to LM(P_2).

When the price level is P_2, the goods and the money markets are in equilibrium at Y_2. This combination of P and Y is another point on the AD curve.

The Effect of Expansionary Fiscal Policy on the AD Curve



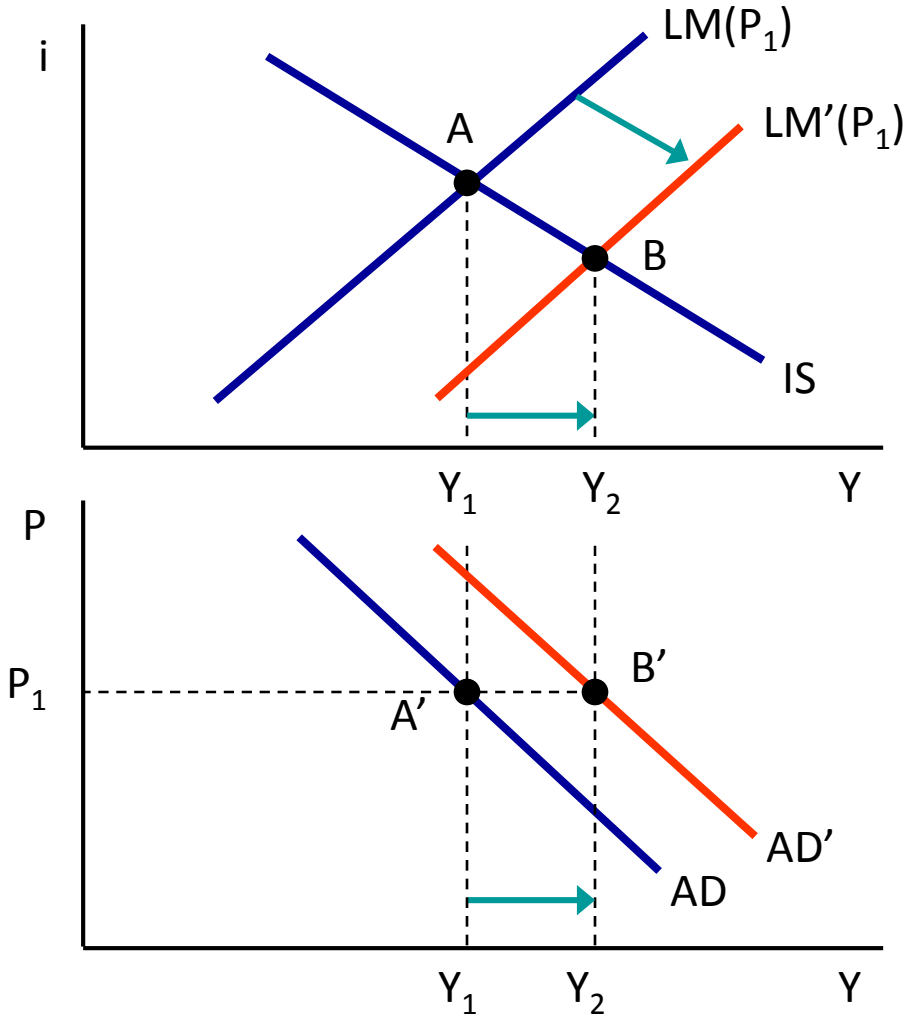
When the price level is P_1, the goods and money markets are in equilibrium at Y_1. This combination of P and Y is one point on the AD curve.

The horizontal shift of the IS curve is equal to $\alpha_{AE}\,\Delta\overline{G}$.

After the increase in G, and with no change in the price level, the goods and money markets would be in equilibrium at Y_2. This combination of P and Y is one point on a different AD curve.

The horizontal shift of the AD curve is equal to $\beta_{FP}\,\Delta\overline{G}$.

The Effect of Expansionary Monetary Policy on the AD Curve



When the price level is P_1, the goods and money markets are in equilibrium at Y_1. This combination of P and Y is one point on the AD Curve.

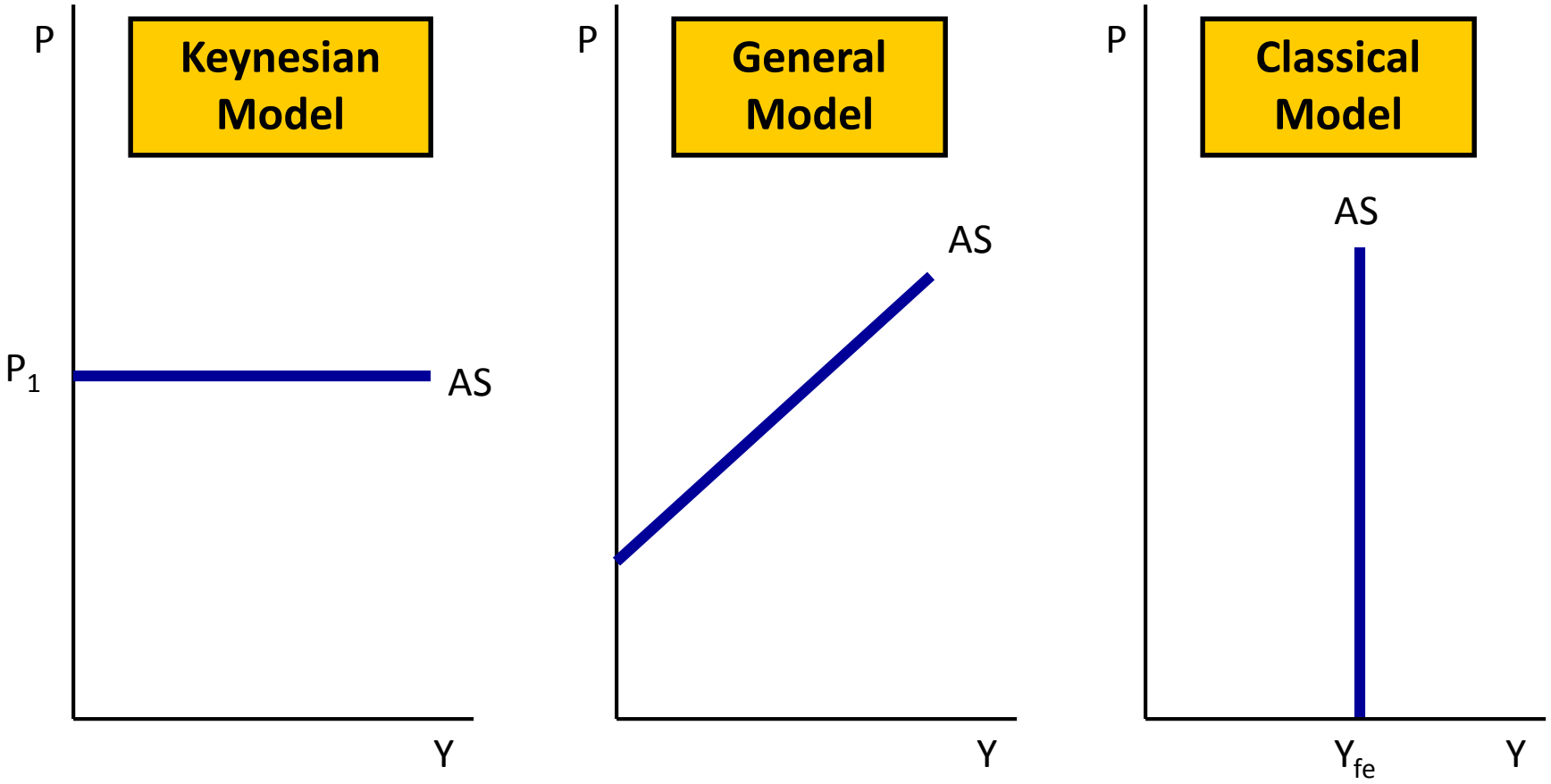
After the increase in M, and with no change in the price level, the goods and money markets would be in equilibrium at Y_2. This combination of P and Y is one point on a different AD Curve.

The horizontal shift of the AD curve is equal to $\beta_{MP}\ \Delta(M/P)$.

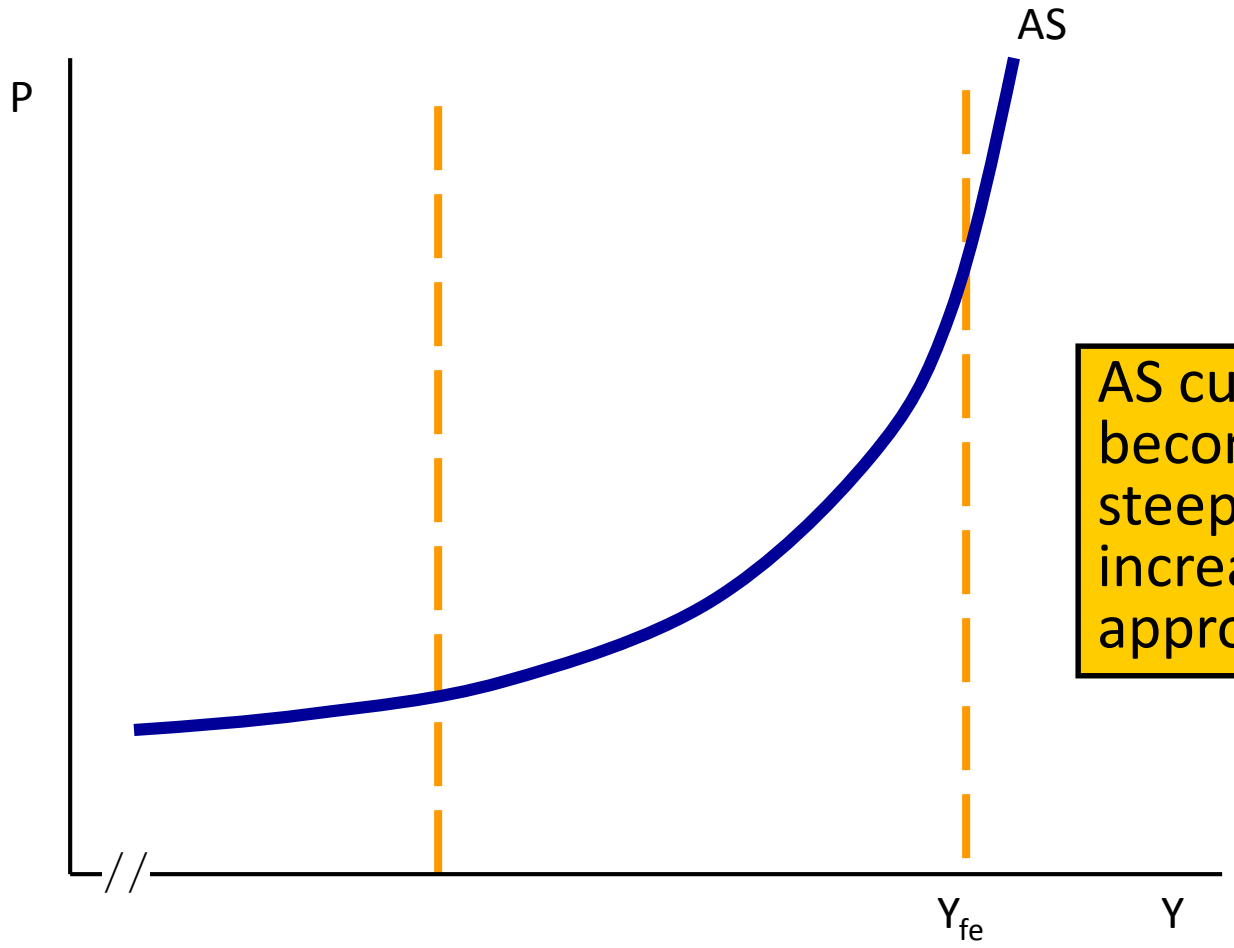
THE AGGREGATE SUPPLY CURVE

- The ***aggregate supply* (AS) *curve*** shows the relationship between the real value of output firms supply (**Y**) and the price level (**P**)
  - It shows how much output firms produce (supply) at each **P**
- Recall that any change in ***nominal* GDP** (Y_N) can be broken down into a change in ***real* GDP** (**Y**) and a change in ***price level*** (**P**)
  - $Y_N = P*Y \rightarrow \Delta Y_N = P\,\Delta Y + Y\,\Delta P$
- If there are many unemployed resources, an increase in Y_N will be the result mainly of an increase in **Y** since **ΔP** will be close to zero
  - At the extreme, the **AS** curve is horizontal at the fixed **P** → ***Keynesian model***
- If the economy is close to full employment, **Y** cannot be increased much and any increase in Y_N will be mostly due to an increase in **P**
  - At the extreme, the **AS** curve is vertical at Y_{fe} → ***Classical model***

The AS Curve in the Keynesian, General, and Classical Models

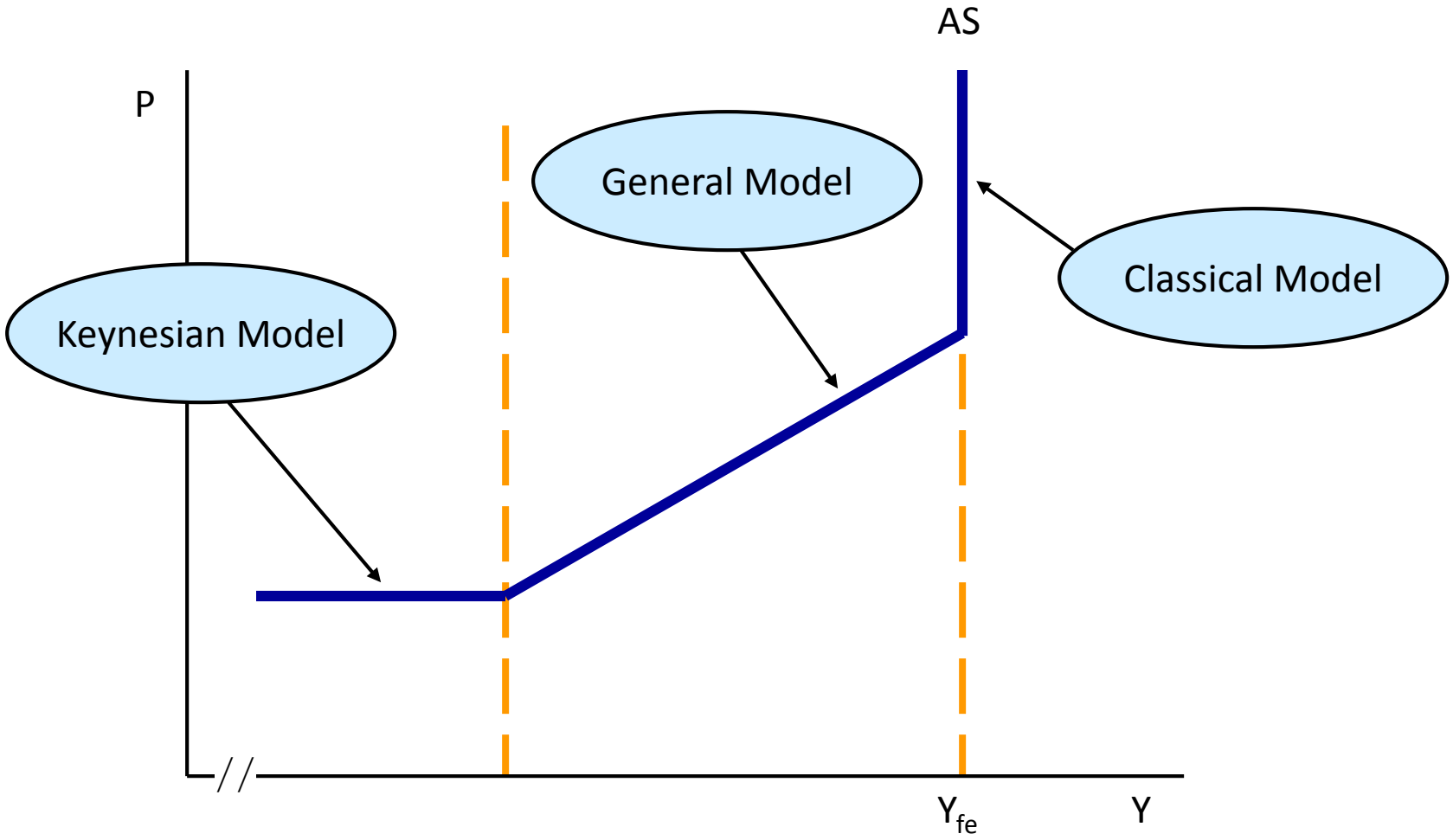


The AS Curve

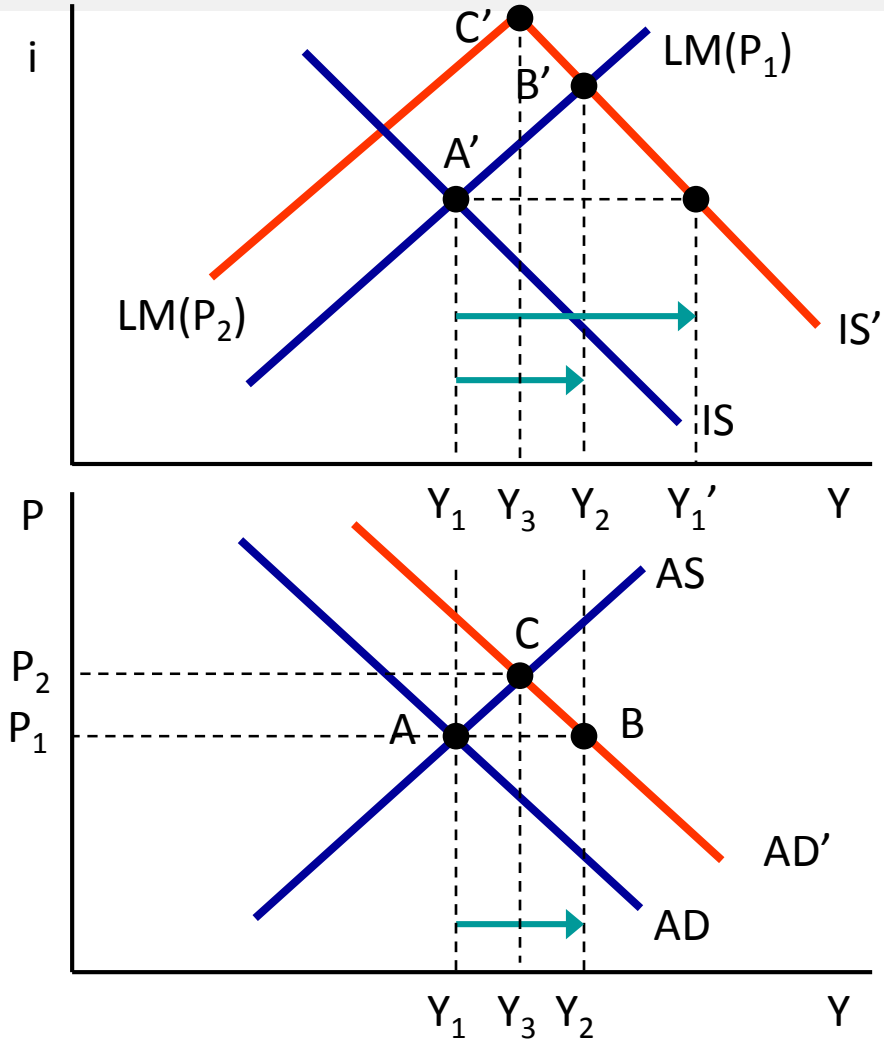


AS curve becomes steeper as Y increases and approaches Y_{fe}.

THE AS CURVE (CONT'D)



Expansionary Fiscal Policy in the General Model



At the price level P_1, the economy is in equilibrium at Y_1.

The horizontal shift of the IS curve is equal to $\alpha_{AE}\,\Delta\bar{G}$.

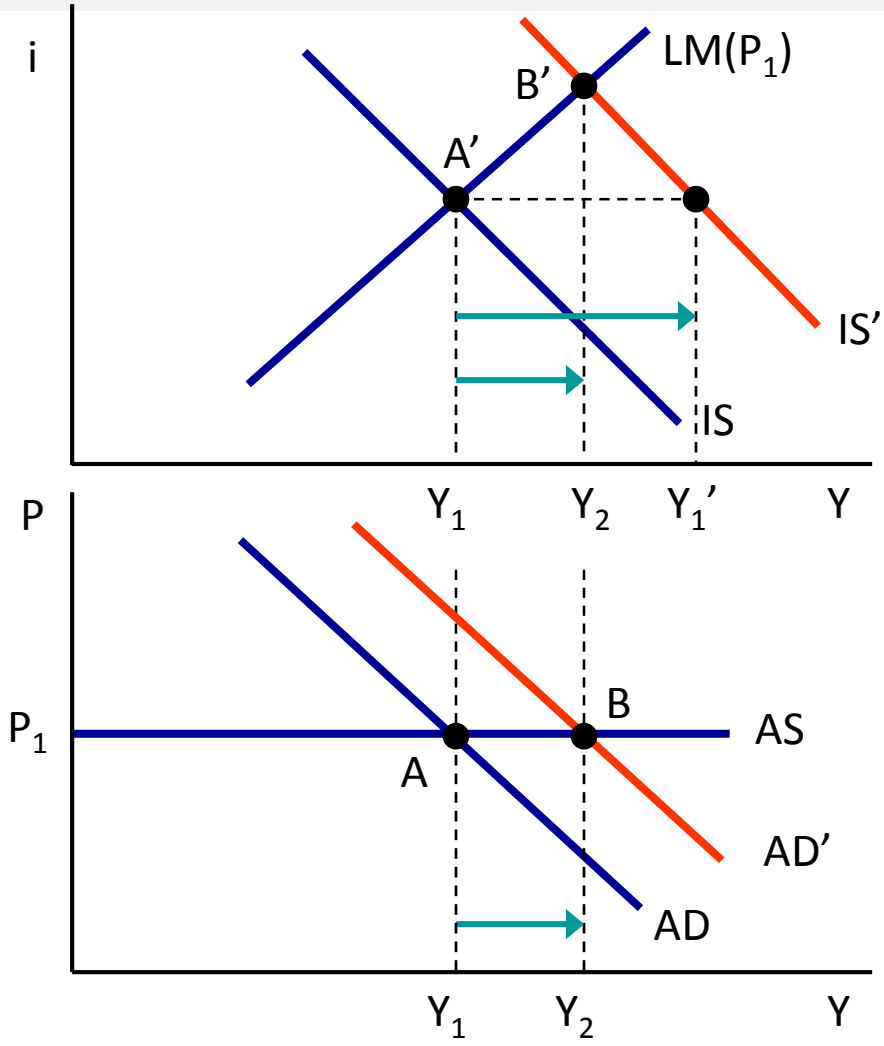
At the price level P_1 the quantity demanded increases to Y_2. This combination of P and Y is one point on a different AD curve.

The horizontal shift of the AD curve is equal to $\beta_{FP}\,\Delta\bar{G}$.

As P increases to P_2, quantity supplied increases from Y_1 to Y_3.

As P increases to P_2, quantity demanded decreases from Y_2 to Y_3.

Expansionary Fiscal Policy in the Keynesian Model



At the price level P_1, the economy is in equilibrium at Y_1.

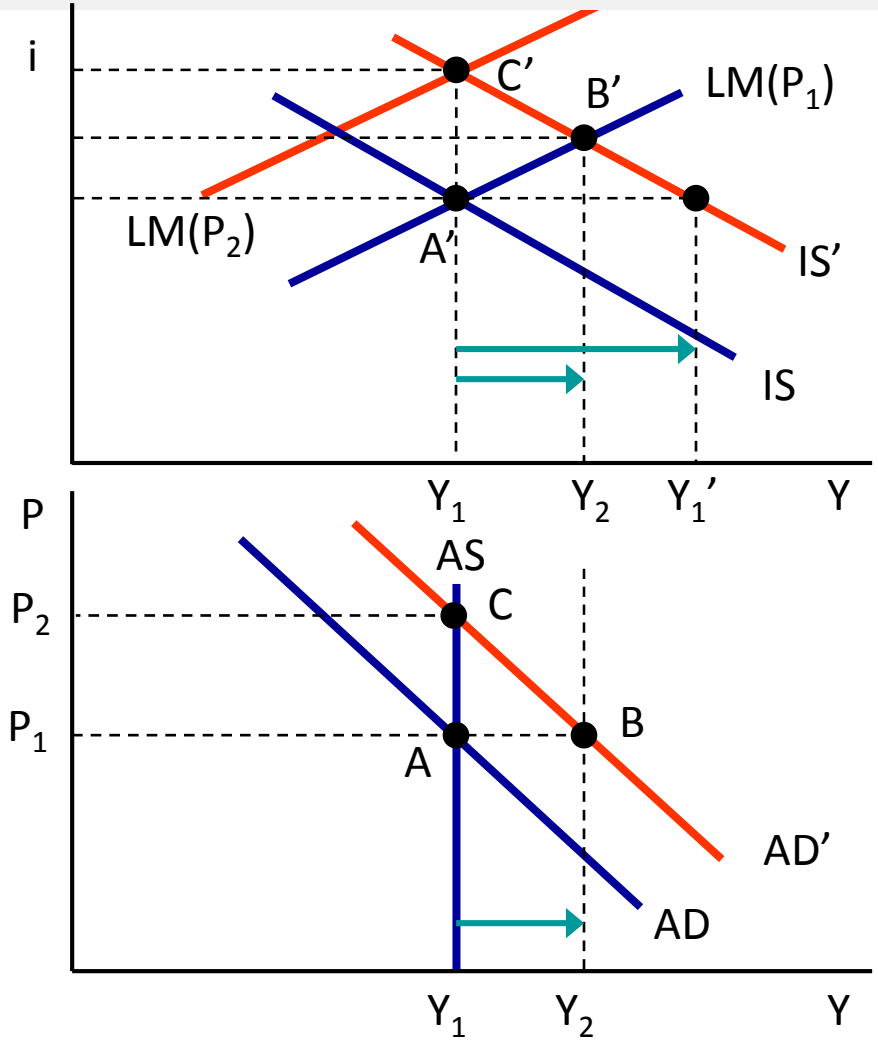
The horizontal shift of the IS curve is equal to $\alpha_{AE}\,\Delta\bar{G}$.

At the price level P_1 the quantity demanded increases to Y_2. This combination of P and Y is one point on a different AD curve.

The horizontal shift of the AD curve is equal to $\beta_{FP}\,\Delta\bar{G}$.

Due to excess capacity and high unemployment, quantity supplied increases from Y_1 to Y_2 but P remains unchanged at P_1.

Expansionary Fiscal Policy in the Classical Model



At the price level P_1, the economy is in equilibrium at Y_1.

The horizontal shift of the IS curve is equal to $\alpha_{AE}\,\Delta\bar{G}$.

At the price level P_1 the quantity demanded increases to Y_2. This combination of P and Y is one point on a different AD curve.

The horizontal shift of the AD curve is equal to $\beta_{FP}\,\Delta\bar{G}$.

Quantity supplied doesn't change but the quantity demanded decreases from Y_2 to Y_1 as P rises from P_1 to P_2.