ECO 209Y
Macroeconomic Theory and Policy

Lecture 8: Exogenous/Endogenous Money and the IS-LM Model

Keynesian Monetary Theory

Exogenous Money Supply

Keynesian Monetary Theory

- Keynes treated real ***money supply*** (**M^S**) as an ***exogenous*** variable determined by the central bank

$$M^S = M/P$$

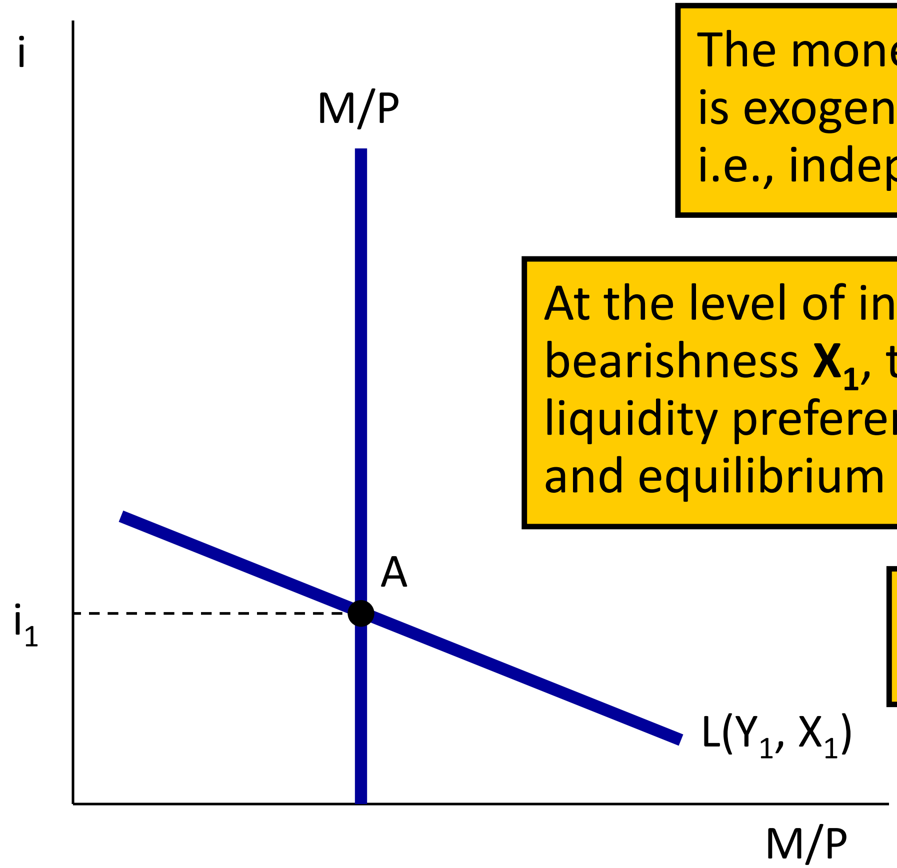
- For him, real ***money demand*** was determined by the nominal ***interest rate*** (***yield***) on bonds (**i**), the level of real ***income*** (**Y**), and the ***state of bearishness*** (**X**)

$$M^D = M\,(i, Y, X)$$

- For a given **Y** and **X**, **i** changes to equate the real money ***supply*** and the real money ***demand*** (or ***liquidity preference***)

$$M\,(i, Y_1, X_1) = L\,(Y_1, X_1) \qquad M/P = L\,(Y_1, X_1)$$

KEYNESIAN MONEY MARKET EQUILIBRIUM

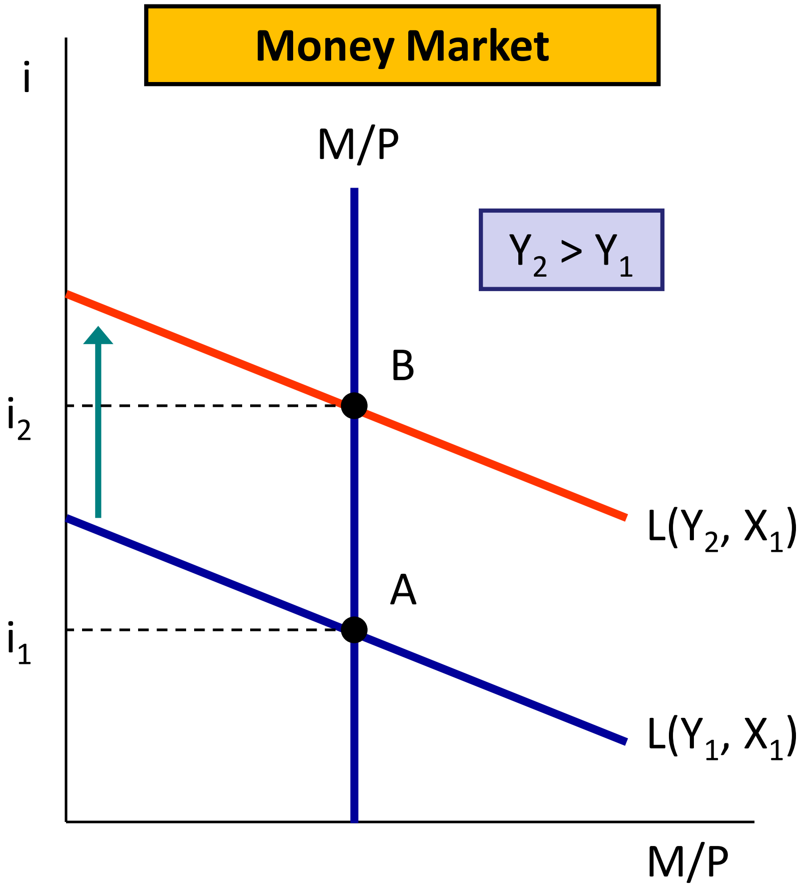


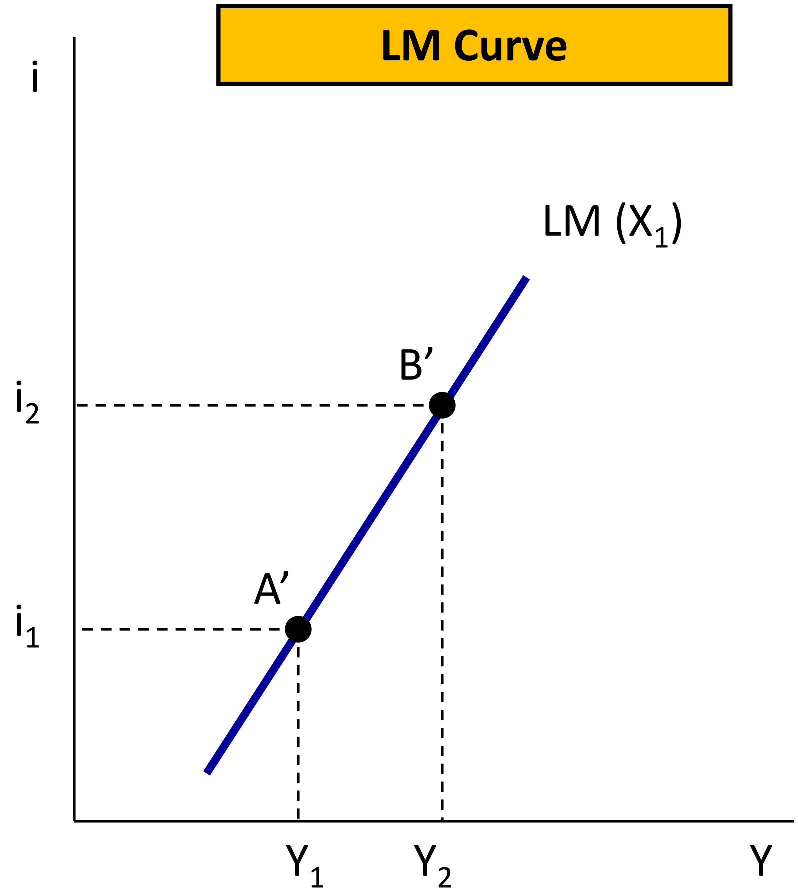
The money supply $\mathbf{M^S = M/P}$ is exogenously determined, i.e., independent of **i**, **Y** and **X**.

At the level of income $\mathbf{Y_1}$ and state of bearishness $\mathbf{X_1}$, the corresponding liquidity preference curve is $\mathbf{L(Y_1, X_1)}$ and equilibrium interest rate is $\mathbf{i_1}$.

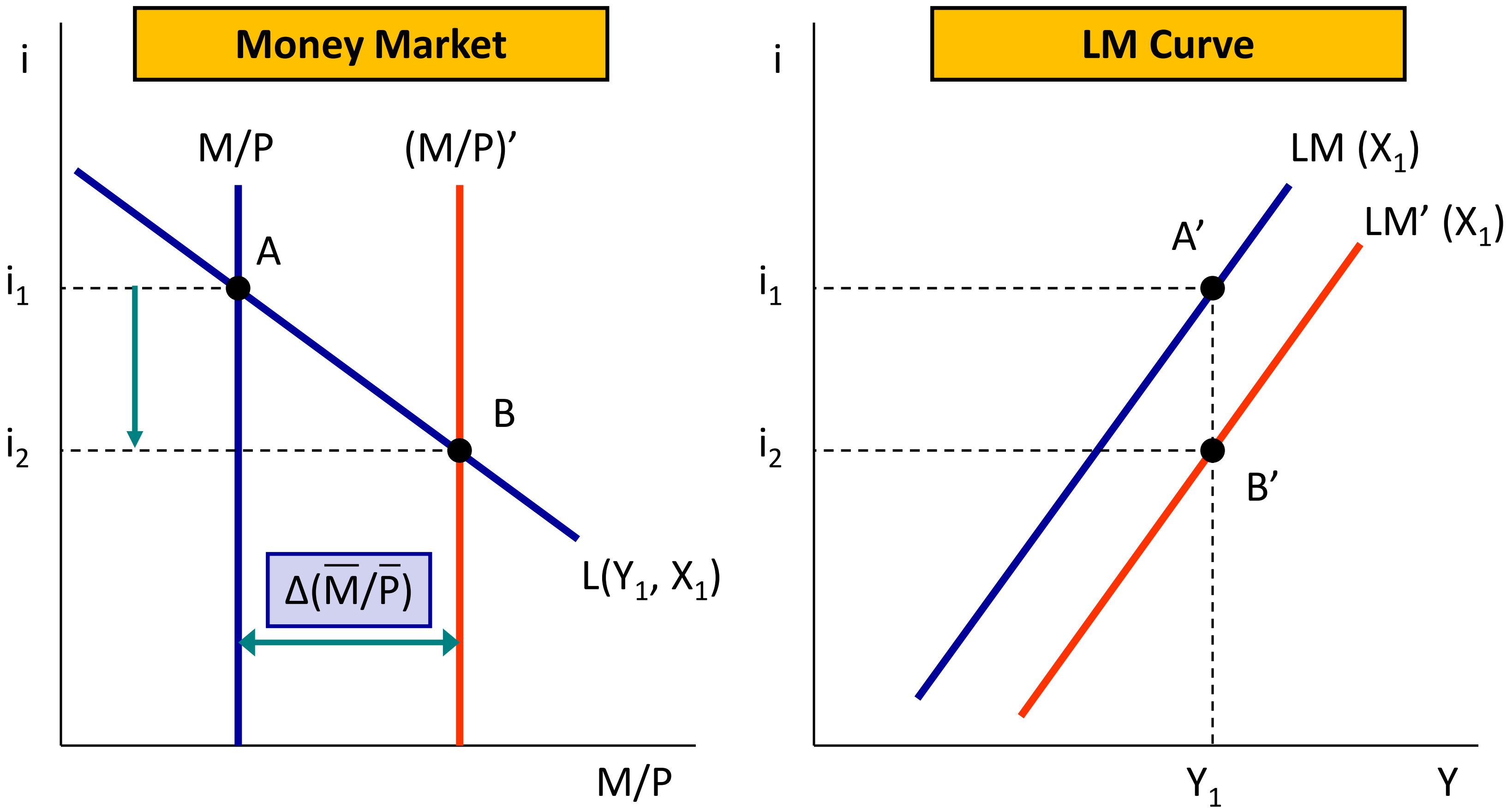
$$\mathbf{M^D = L\,(Y_1, X_1)}$$

Keynesian Money Market Equilibrium and the LM Curve

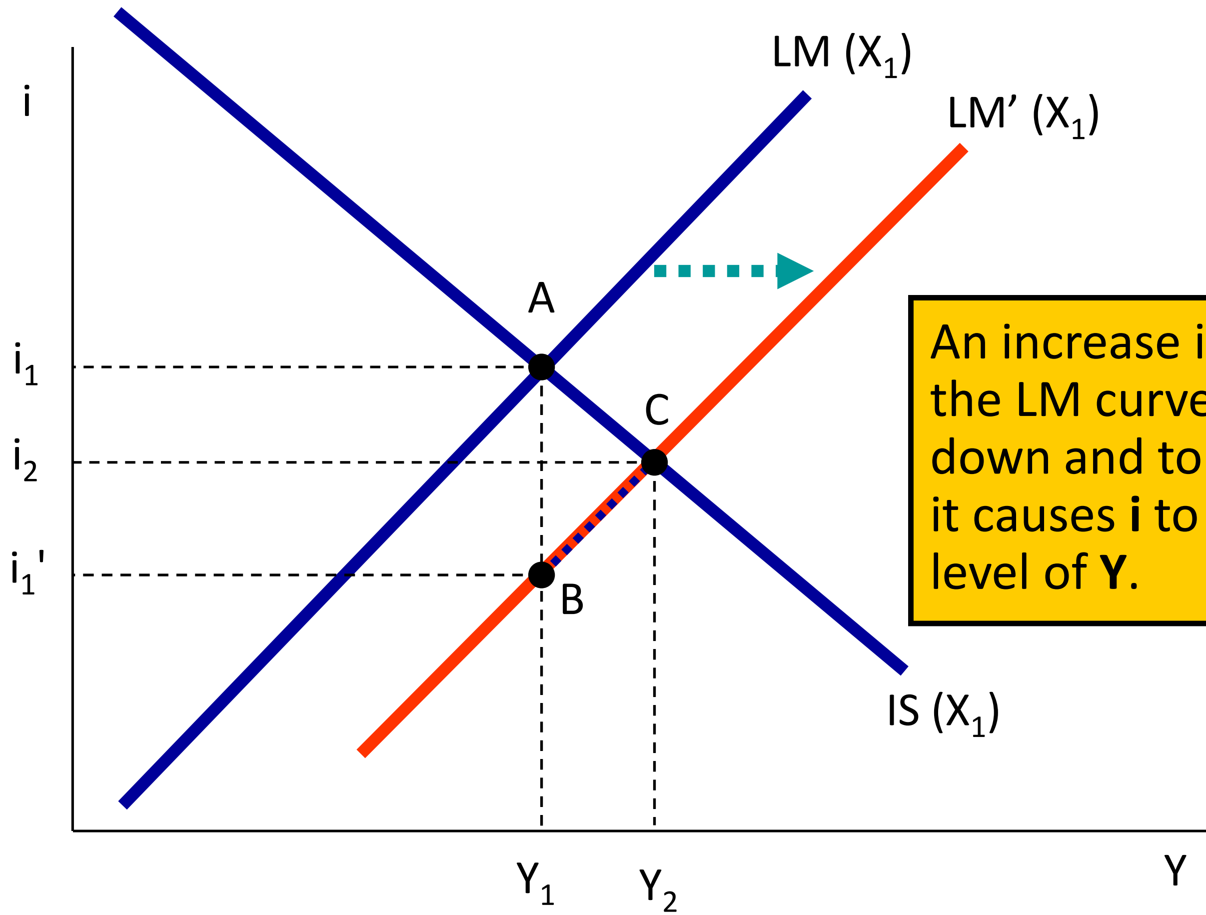




An Increase in Exogenous Money Supply and the LM Curve

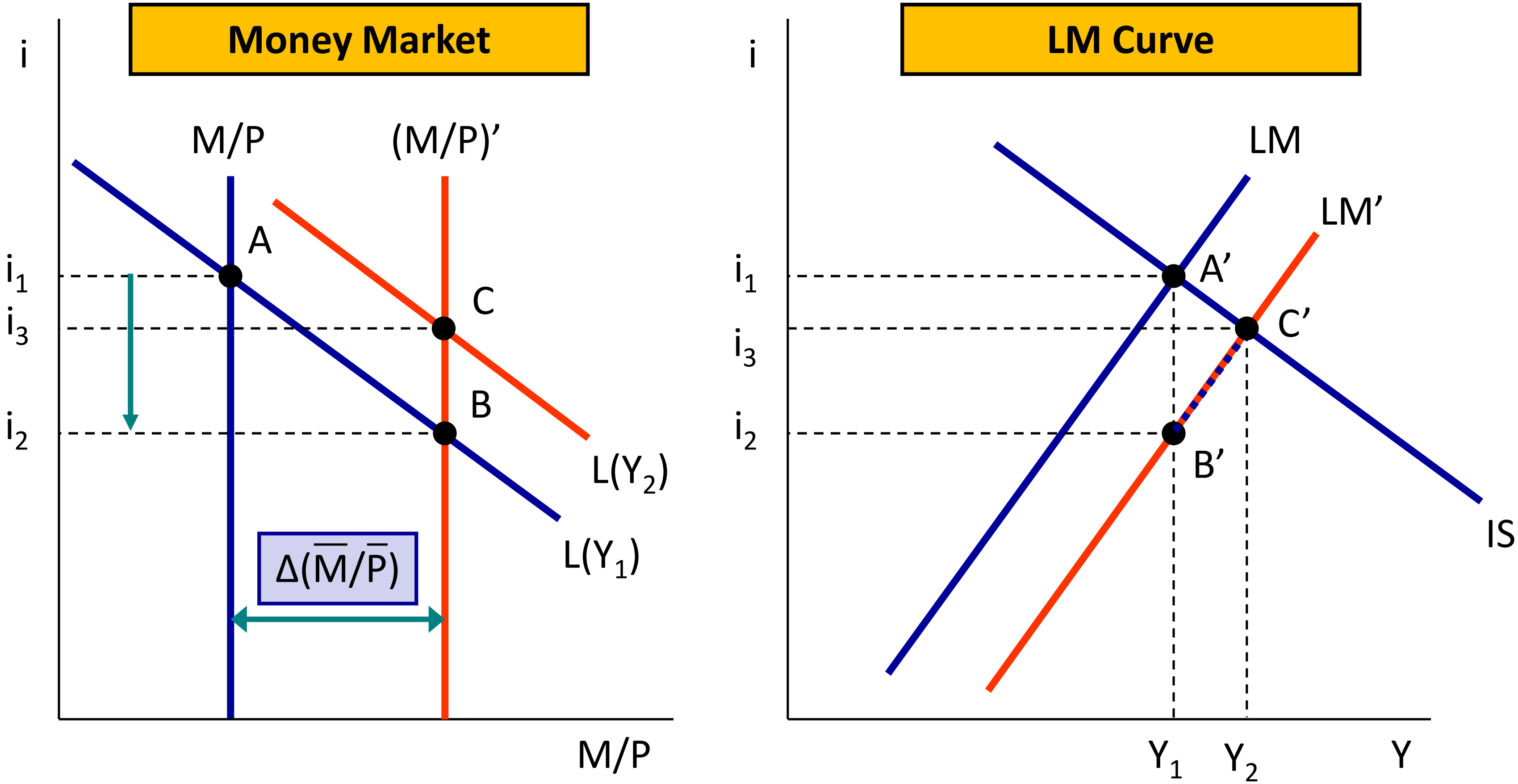


Impact of an Increase in Exogenous Money Supply



An increase in **M^S** causes the LM curve to shift down and to the right, i.e., it causes **i** to fall at each level of **Y**.

Impact of an Increase in Exogenous Money Supply (cont'd)



Neo-Keynesian Monetary Theory

Money Supply Rule

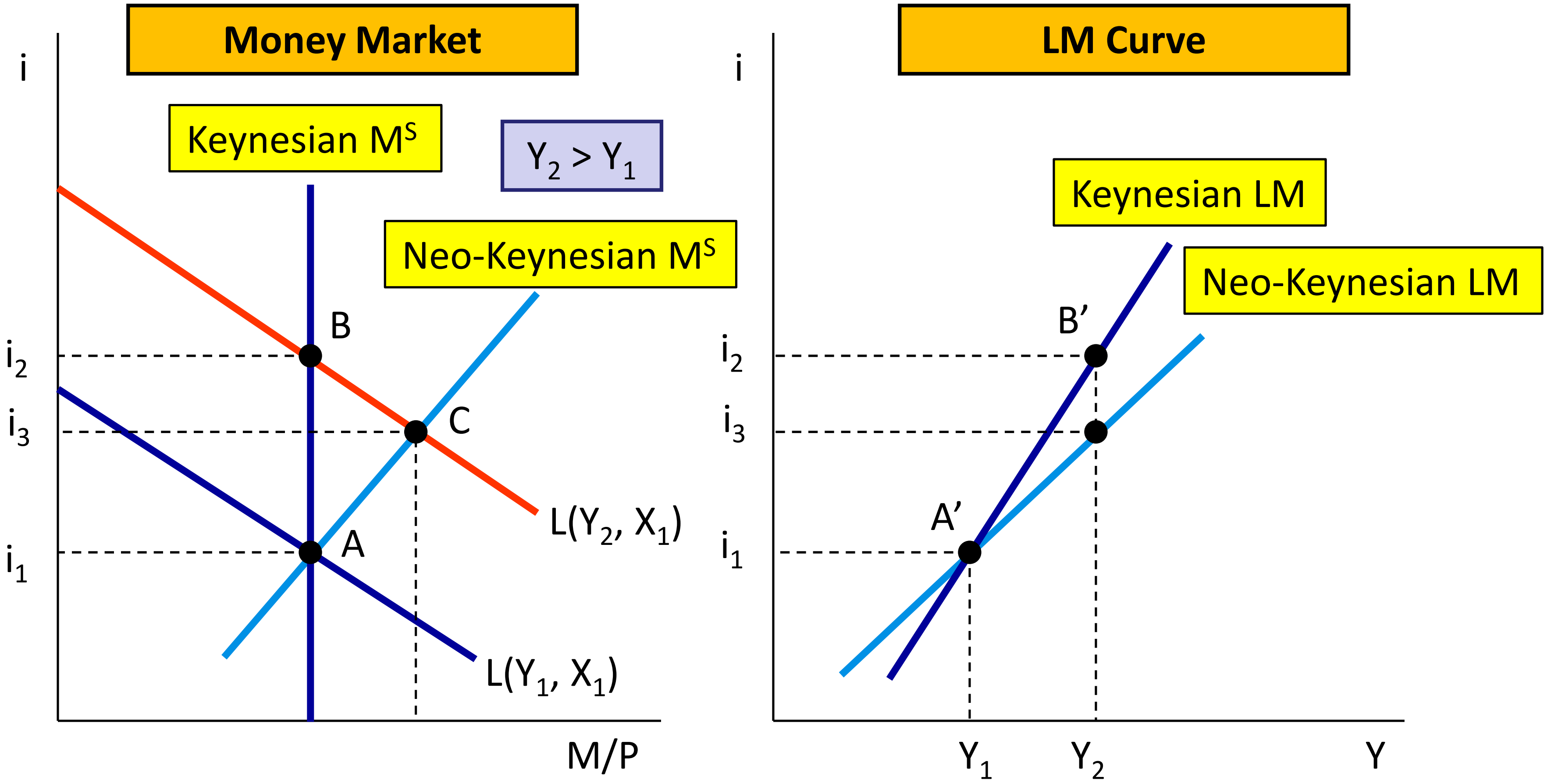
Neo-Keynesian Model with Money Supply Rule

- The ***Bank of Canada*** controls the stock of ***high-powered money*** or ***monetary base*** (**B**) but ***not*** the ***money supply***
- The ***money supply*** (M^S) is determined by the ***monetary base*** (**B**) and the ***money multiplier*** (**mm**)

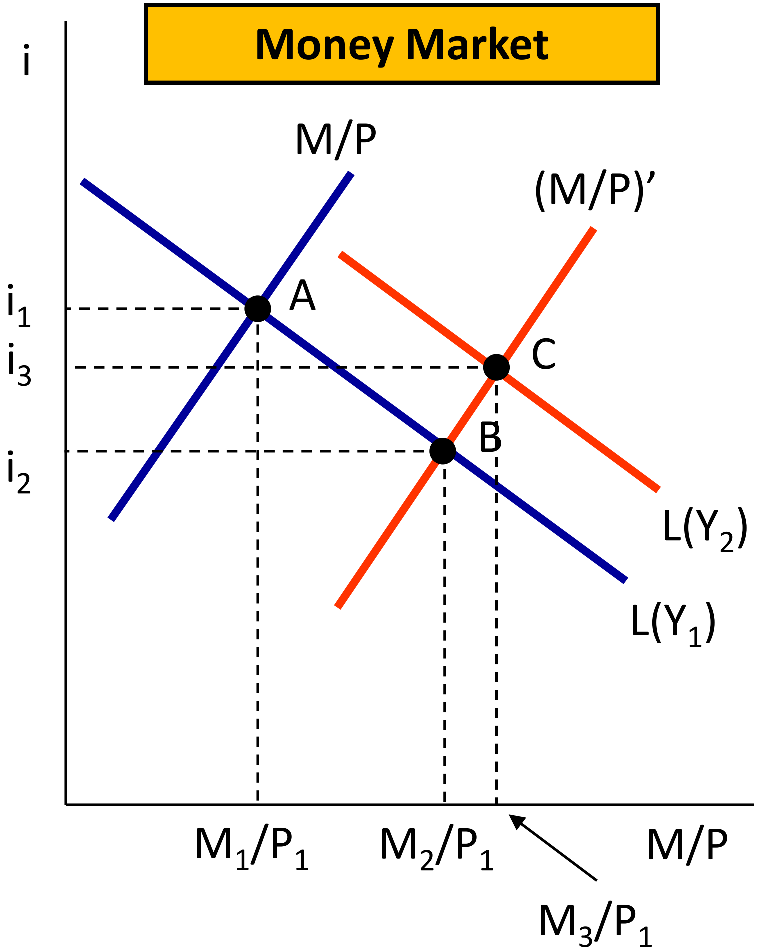
$$\boxed{M^S = mm\ B}$$

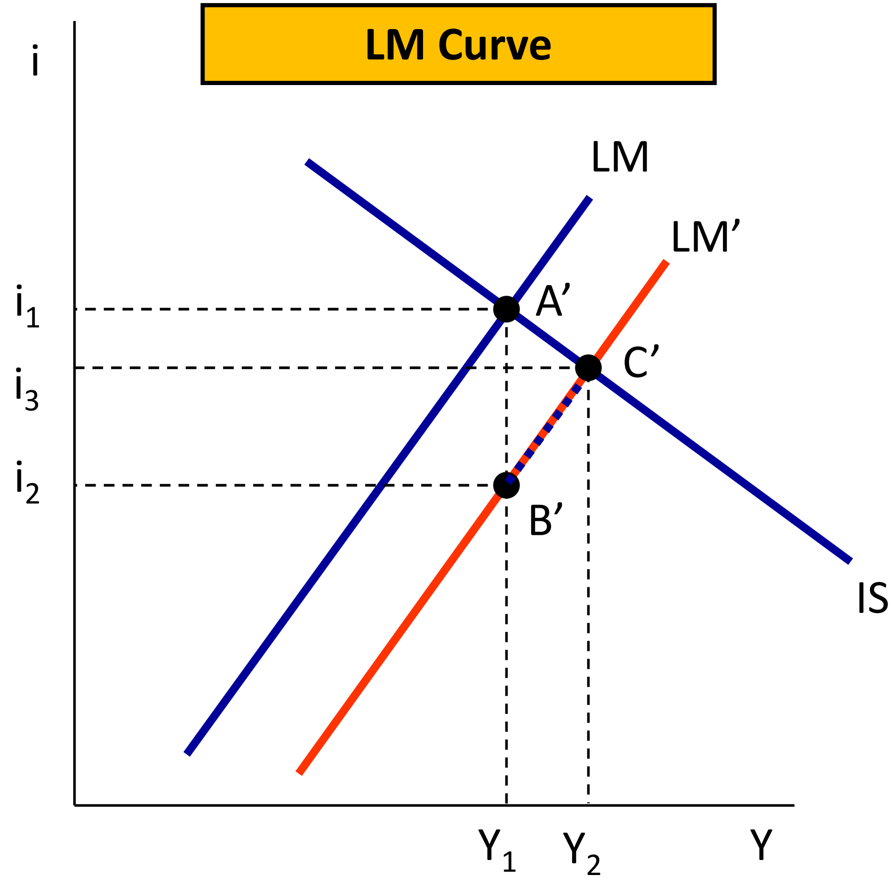
- **B** is considered ***exogenous*** but **mm** is ***endogenous***
  - **mm** depends on the desired ***cash-reserve*** ratio (**re**) and the desired ***currency-deposit*** ratio (**cu**)
  - For a given **B**, as the **rate of interest** rises (**i**), banks provide more risky loans and **re** falls and **mm** increases
- Therefore, the real ***supply of money*** (M^S) increases with the ***interest rate*** (**i**), i.e., **B** is ***exogenous*** but M^S is ***endogenous***

Neo-Keynesian Money Supply Rule and the LM Curve

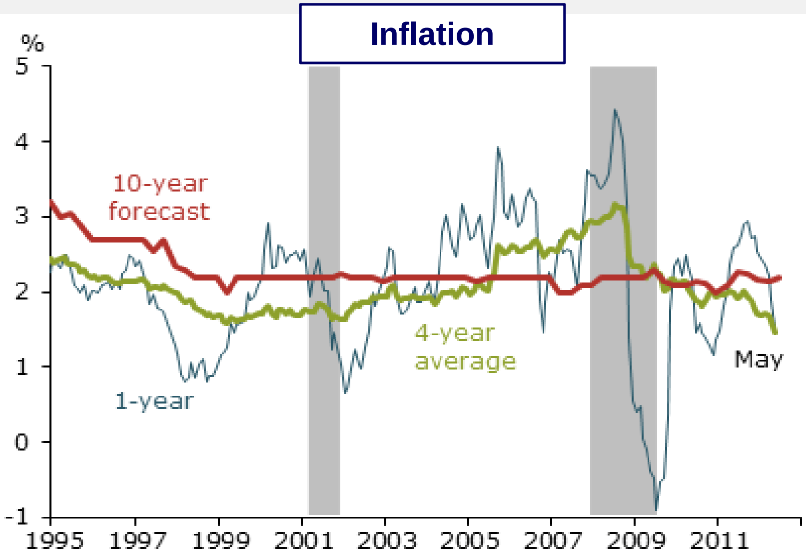


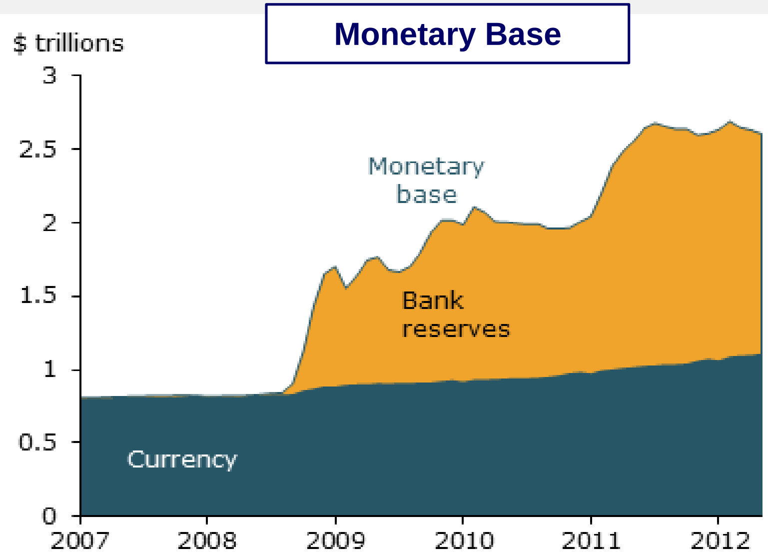
Impact of an Increase in Endogenous Money Supply

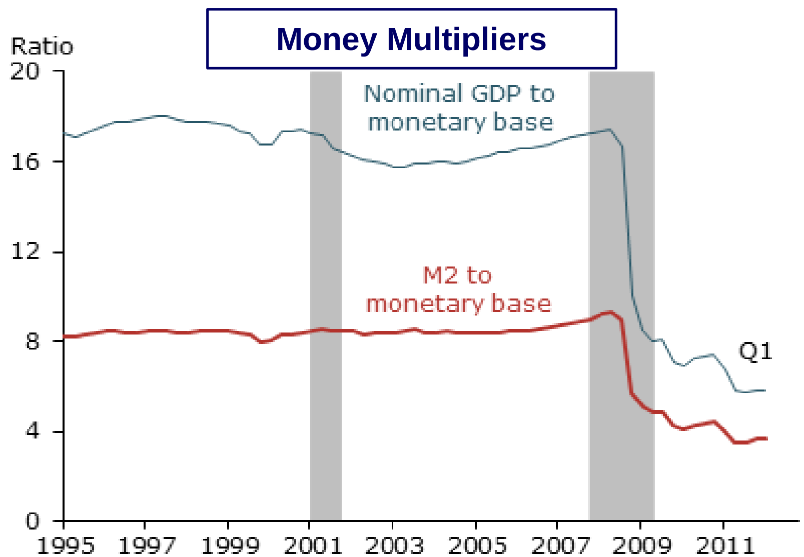




THE MONETARY BASE AND THE MULTIPLIER







Period 2008-2012

- Average rate of inflation below 2%
- Monetary base tripled
- Money multipliers plummeted

Source: John C. Williams, "Monetary Policy, Money, and Inflation," FRBSF Economic Letter 2012-21, 9 July 2012.

Neo-Keynesian Monetary Theory

Interest Rate Rule

Neo-Keynesian Model with Interest Rate Rule

- In this case the ***Bank of Canada*** targets the ***rate of interest*** (not the ***money supply***)
- The ***money supply*** (M^S) is assumed horizontal at the target ***interest rate*** (i_1)

$$\boxed{i = i_1}$$

- The real ***money stock*** is thus determined by the real ***money demand***
- The Bank of Canada must change the ***monetary base*** as needed to keep the ***rate of interest*** at its target
  - Thus the ***monetary base*** becomes ***endogenous***

Neo-Keynesian Interest Rate Rule and the LM Curve