

Macroeconomic Model (Cont)

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Case2: Fixed but Adjustable Exchange Rate Regime with imperfect capital mobility

- Bretton Woods System (1946-73)- the post – World War II international monetary system.
- The decade of the 1930s was characterized by competitive devaluations.
- The system was designed to contain features that would help it avoid the cycles of competitive devaluation and trade restrictions.

- Since it was the post World War, the role of government was highlighted, (Keynesian perspective-Keynes, J.M. (1936) *General Theory of Employment, Interest, and Money*).
- The government bore an important responsibility for the performance of their domestic economies. Since price-wage flexibility could not be relied upon to keep economies at full employment, the system needed to allow for an appropriate preoccupation.

- The new system was asymmetric, treating the United States differently from the rest of the participating economies.
- The US undertook the obligation to exchange dollars for gold (gold-standard fashion) at the fixed price of \$ 35/ounce. Other countries fixed an exchange rate (known as a par value) against the US dollar, rather than against gold, with narrow fluctuation bands of 1 per cent on either side of the rate.

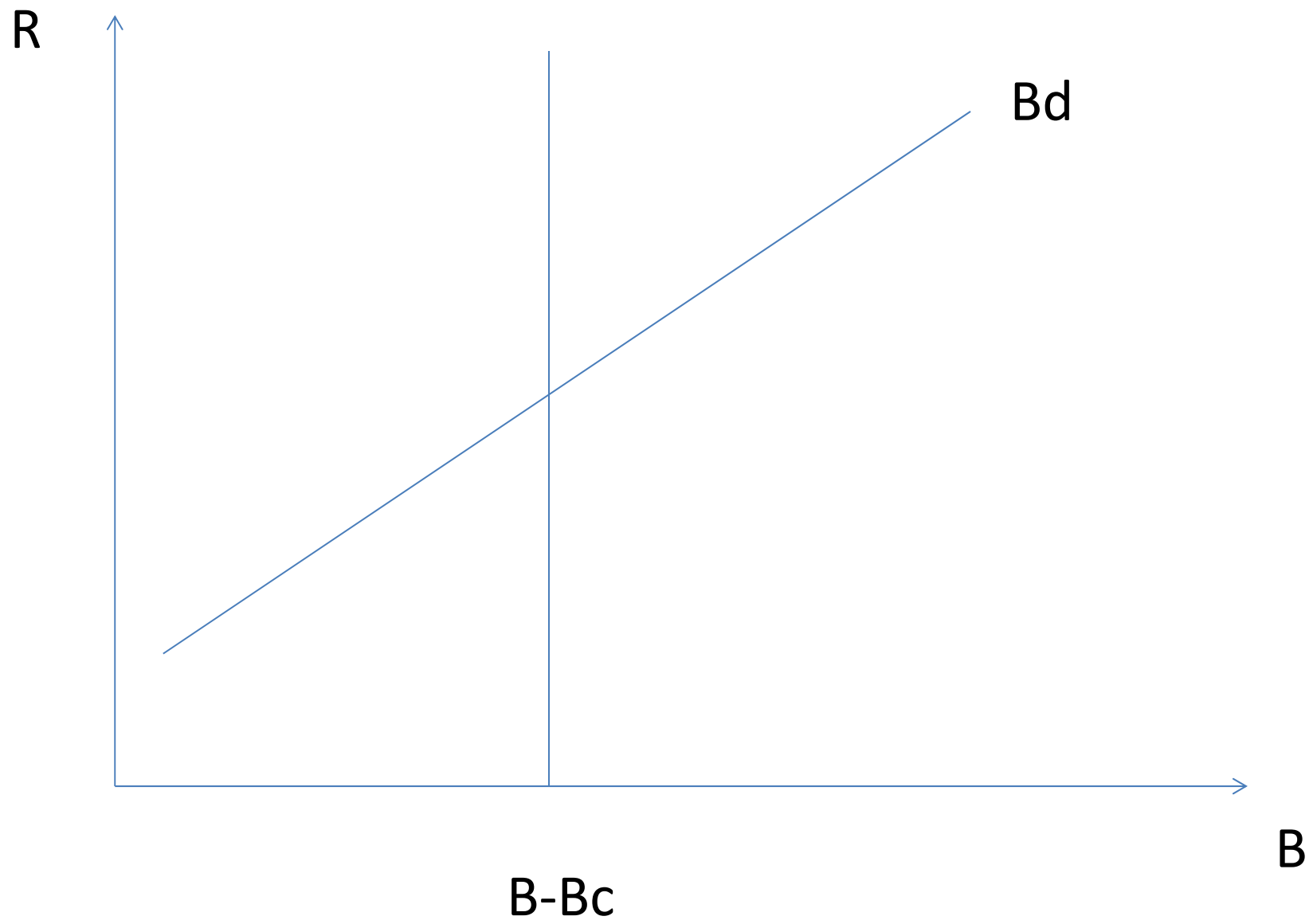
- Based on Impossible Trinity Theorem (when imperfect capital control), the central bank can alter money supply and influence economic activities.
- Bond Market Equilibrium;

$$B - B_c = H \left[R, \frac{(1 + R^*) S_{+1}^e}{S} - 1 \right] (W_P - PL) +$$

$$H^* \left[R, \frac{(1 + R^*) S_{+1}^e}{S} - 1 \right] (W_F^* - P^* L^*) S$$

$$B - B_c = H [R, R^*] (W_P - PL) + H^* [R, R^*] (W_F^* - P^* L^*) S$$

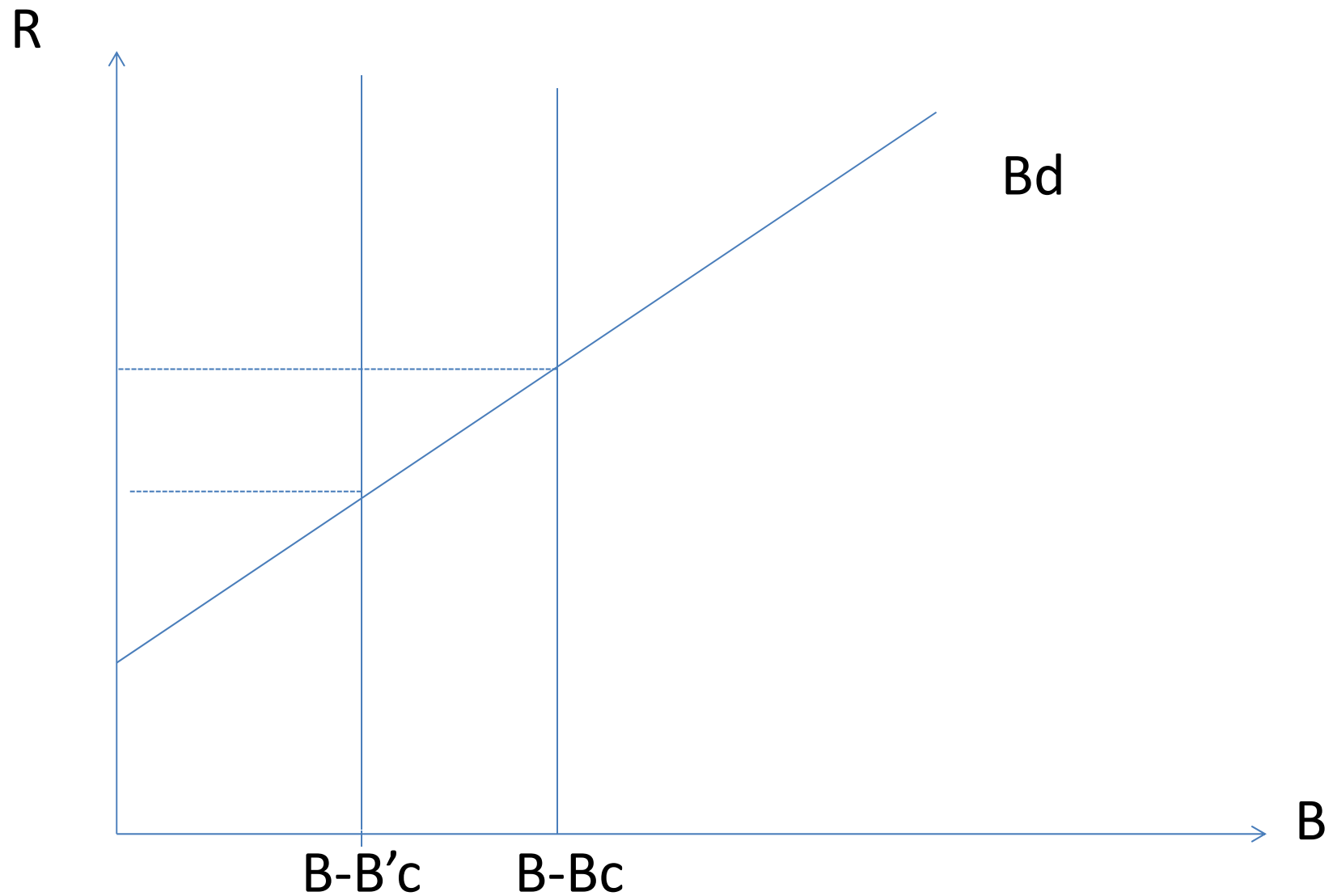
- Since capital cannot be moved freely across countries, domestic interest rate can differ from foreign/world interest rate. Hence, domestic interest rate is jointly determined with goods and money markets, i.e. endogenous variable.
- Amount of bonds held by the central bank would be another policy variable.



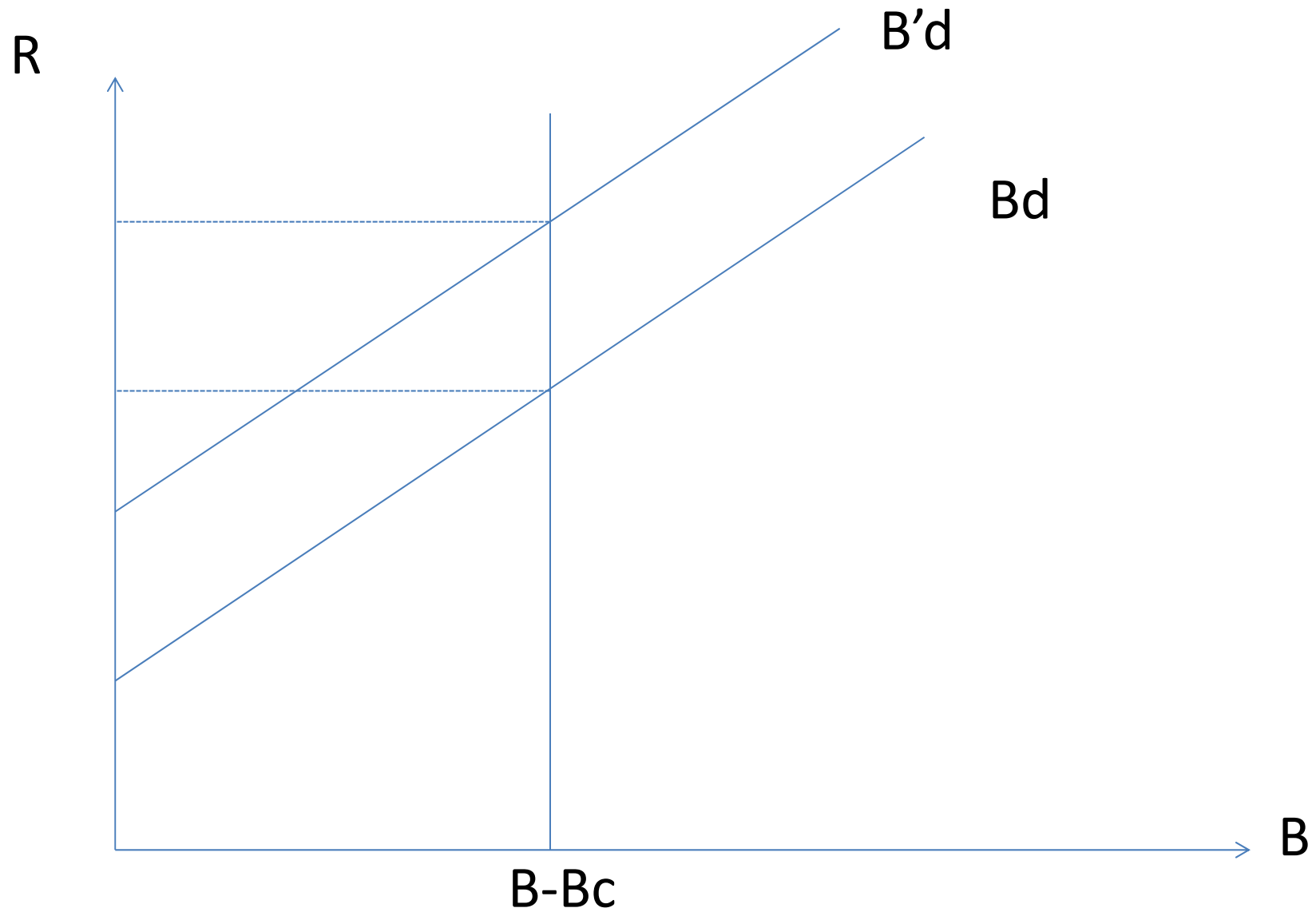
- Why does demand for domestic bond have positive slope with interest rate?
- Remind: Demand is the relationship between price and quantity. Interest is the price of holding money, not bond price!!
- Slope of B_d depends on how bond holders respond to interest rate changes, substitution between domestic and foreign bonds.

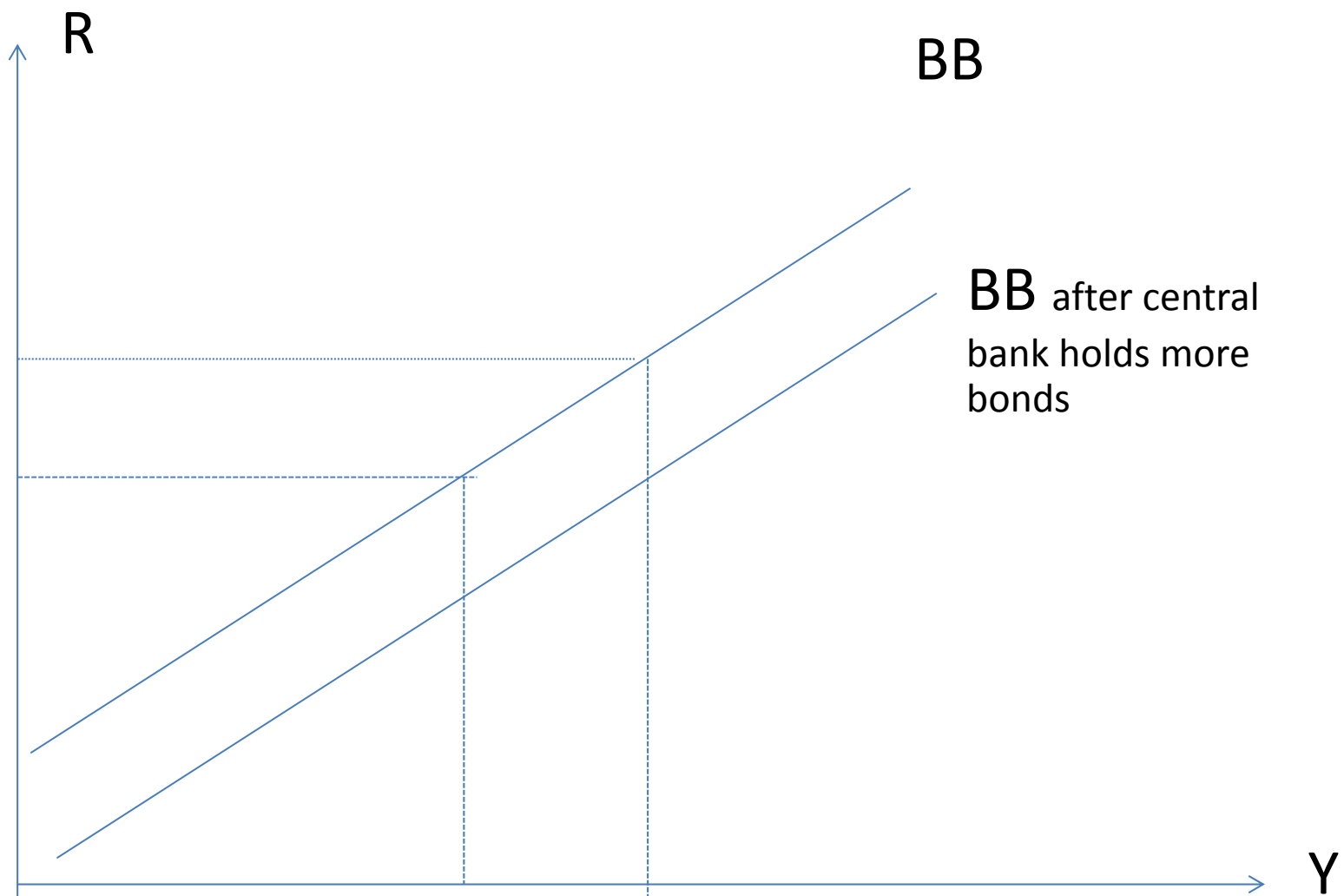
- B_c , amount of bonds held by the central bank, becomes a policy instrument.
- Let understand factors that shift the equilibrium in bond markets
 - What would happen when the central bank holds bonds more?
 - What would happen if the private sector income raises?
 - How can we incorporate bond market into the original general equilibrium (GM and MM)?

Central bank holds more bonds issued by the government



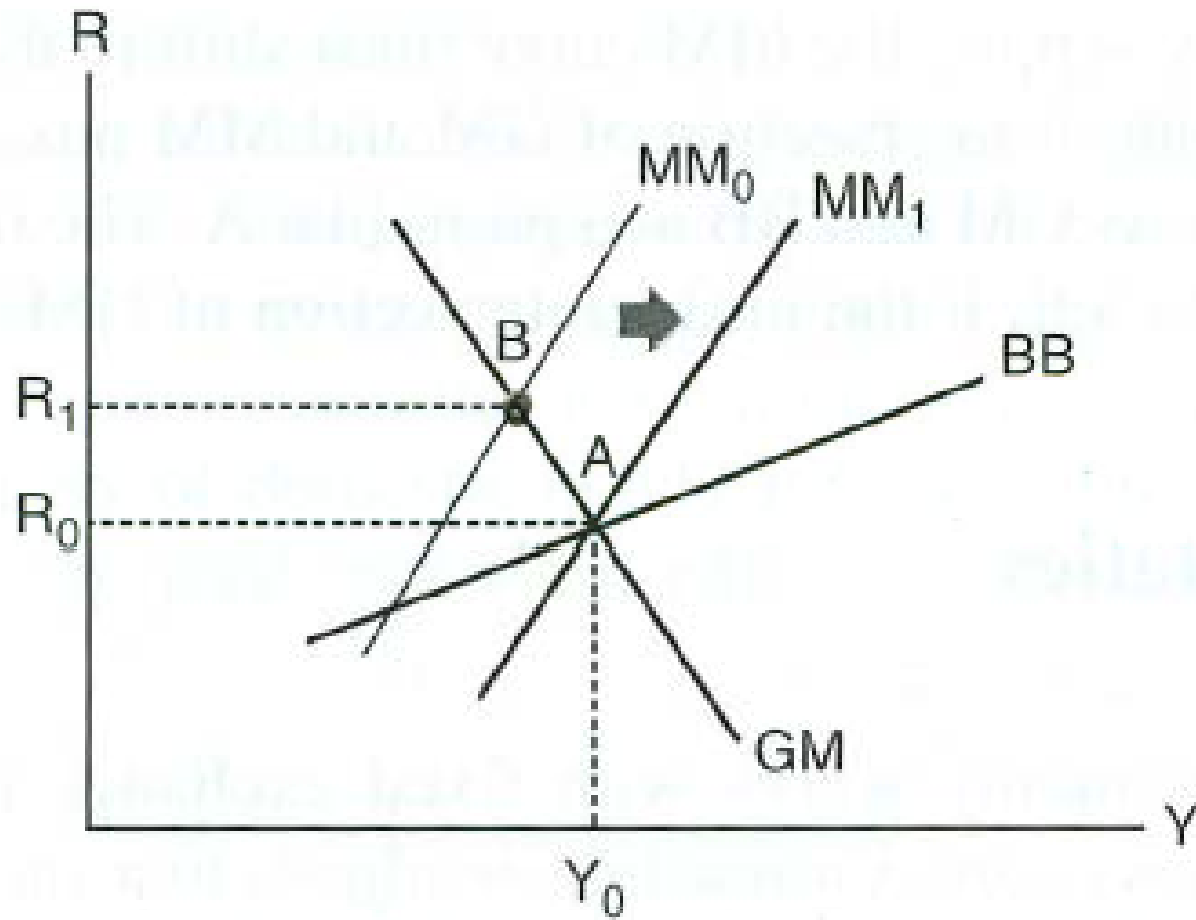
Private sector has income increases

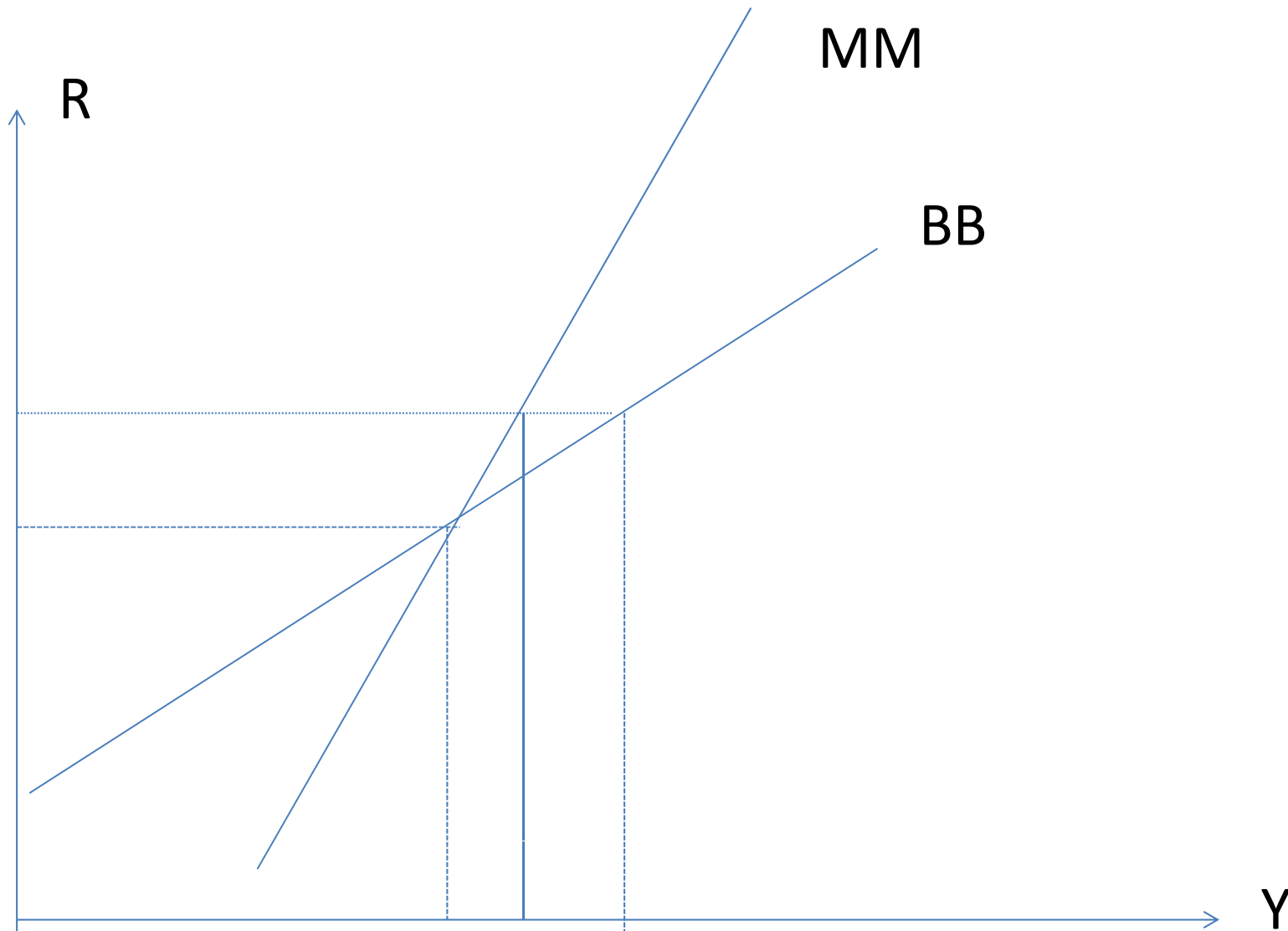




General Equilibrium

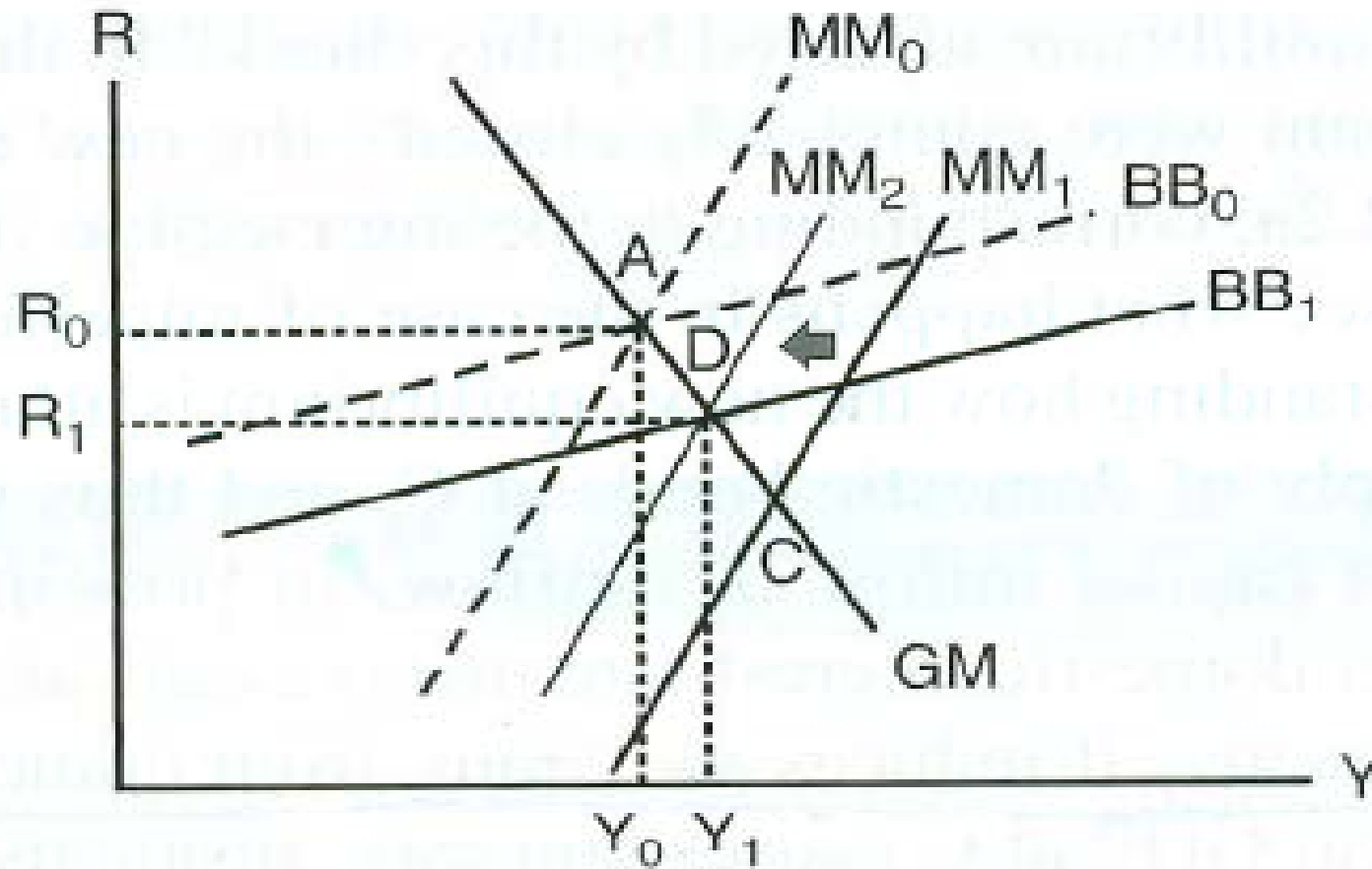
(Fixed but Adjustable and Imperfect Capital Mobility)





Given the size of interest rate changes, Y change on BB curve is greater than that on MM .

Sub-case 1- An increase in money supply and relatively open capital account



Points to be considered

- Changes in M_s through open market operation (the central bank purchases more bonds issued by the government) would affect both MM and BB.
- This is according to the central bank's net wealth equation.

$$W_C = SF_C^* + B_C - M = 0$$

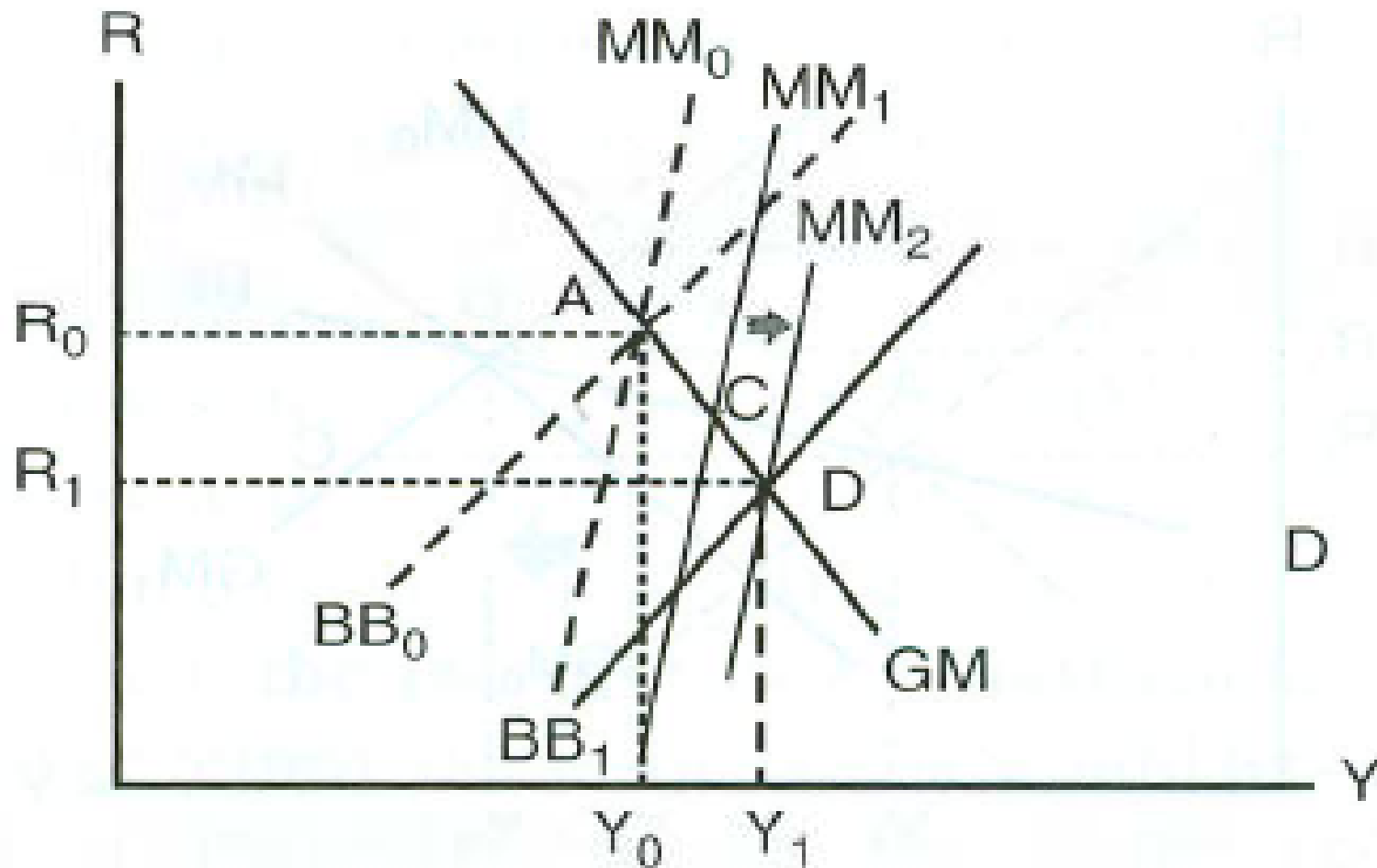
- Do B_C and M change in the same magnitude?

- Open market operation (an increase in B_c) makes $B - B_c$, the bond traded among the private agent, become less (Excess demand). To eliminate the excess demand, interest rate must go down. There would be downward shift in BB curve (BB_0 to BB_1).
- Open market operation causes M_s increase. Excess money supply lowers domestic interest rate and return to equilibrium. There would be downward shift in MM curve (MM_0 to MM_1).

- Since BB curve is flatter than MM curve, the given amount of changes in Bond and Money supply causes change in interest rate differently to clear imbalances.
- When capital account is fairly open, minor changes in interest rate would induce interest arbitrage. Hence, the magnitude of interest rate change in BB curve would be less than that in MM curve.

- Initially, after the central bank undertakes open market operation, the equilibrium in goods and money markets occur at Point C.
- At Point C, Bond market experiences excess supply. In other words, domestic interest rate is too low so that the country experiences capital outflow.
- The capital outflow causes MM curve change from MM1 to MM2.

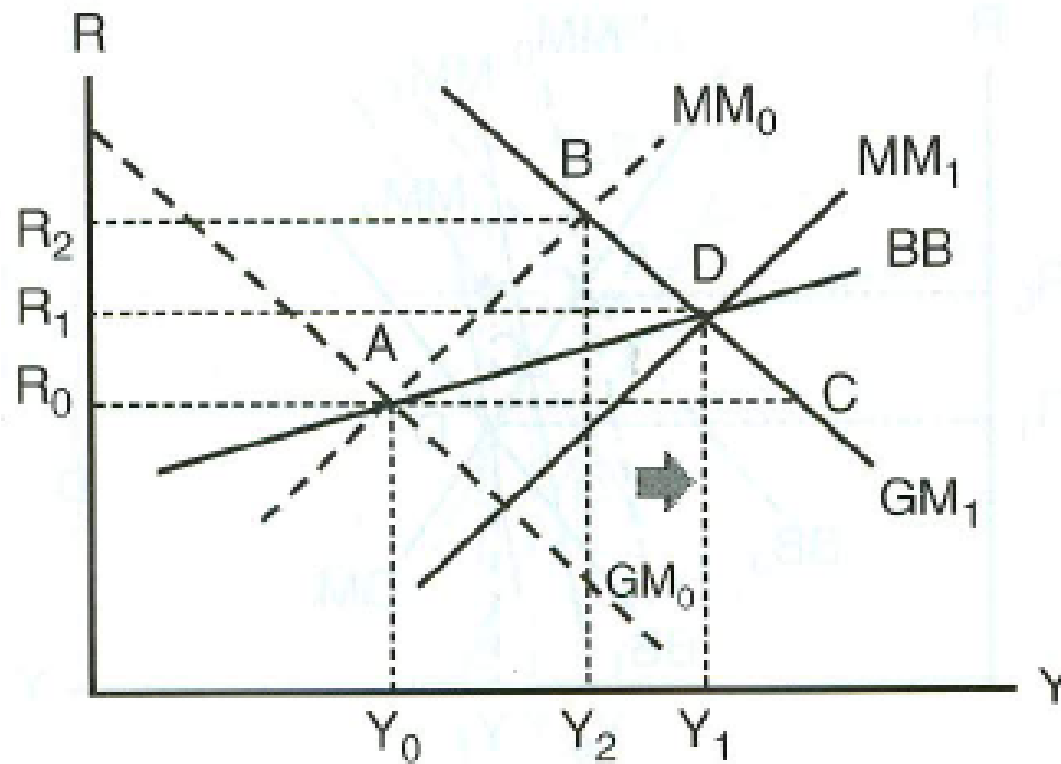
Sub-case 2- An increase in Money Supply and relatively close capital account



- Sub-case 2 is the case where capital account is relatively less open. This can be after the country strengthens the capital control measures.
- The key implication is to remove imbalances in the bond market need greater changes in interest rate.
- In this sub-case, BB curve would shift leftward at the greater rate than MM curve.

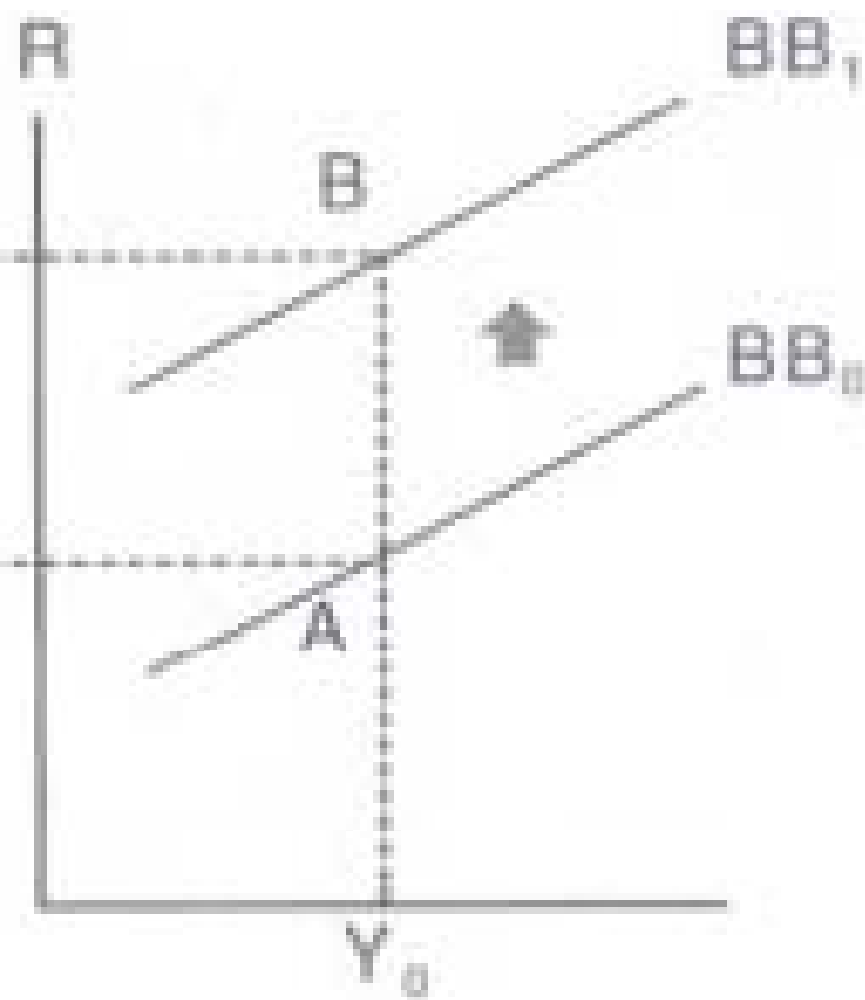
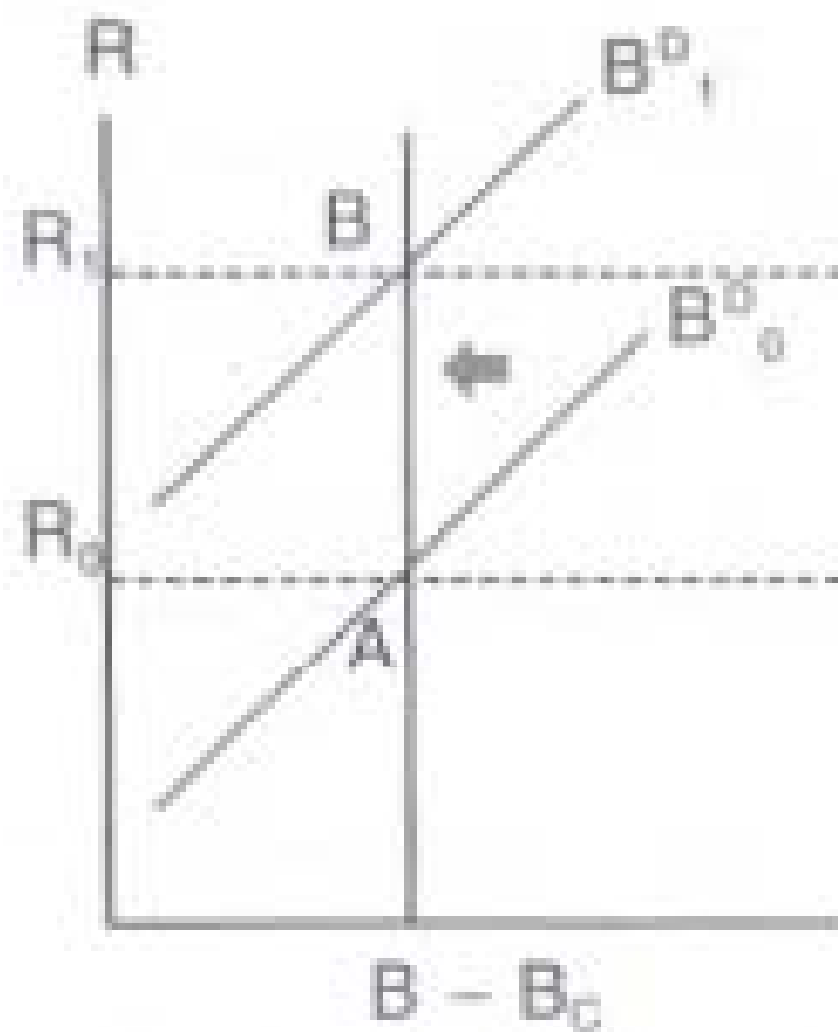
- Consequently, the intersection between GM and MM curves occurs at Point C (MM1 and GM), which is on the left of BB1. There is excess demand for domestic bond. Domestic interest rate is higher and attractive.
- Capital inflows would increase and cause MM shift again from MM1 to MM2.

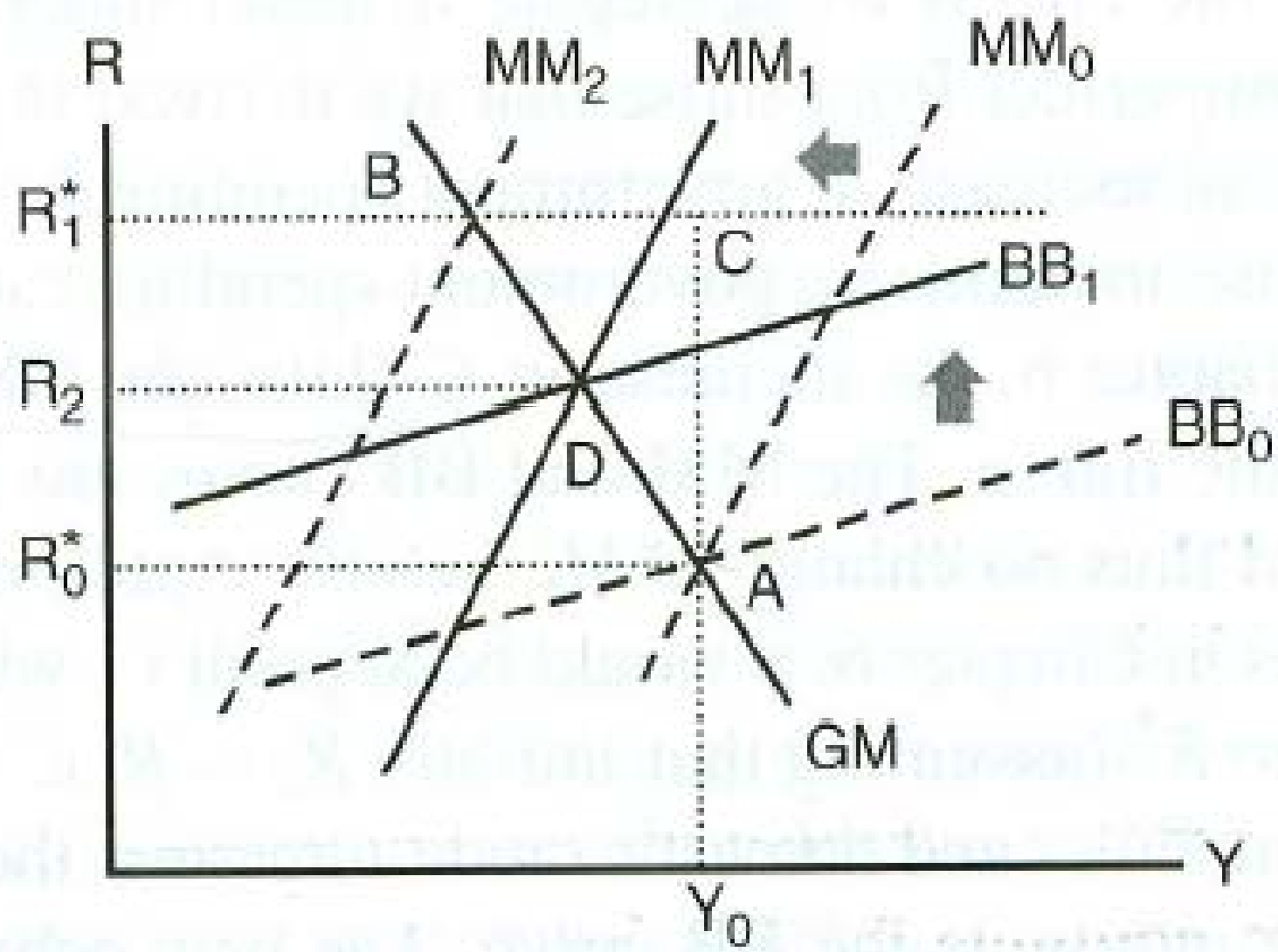
Positive Aggregate Demand Shocks



World Interest Rate Shocks

- What would happen when the world interest rate increases?
- Foreign bond would become more attractive, i.e. domestic/foreign bond holders will purchase more foreign bonds. This would affect demand for bonds

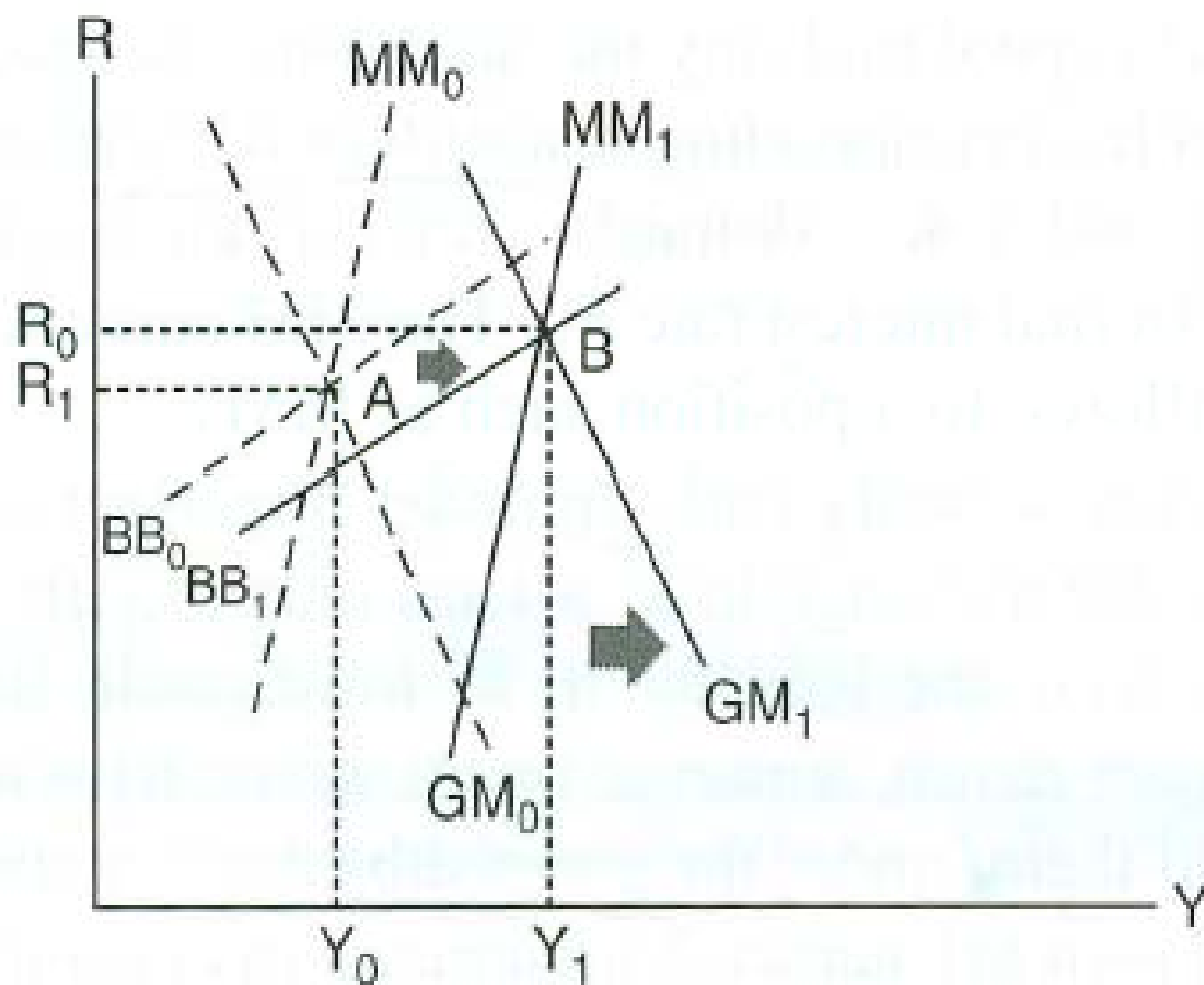




Unexpected Currency Devaluation

- ‘Unexpected’ means nobody knows the currency devaluation.
- Otherwise, speculative action takes place.
- Currency devaluation causes expenditure-switching effects, i.e. relative price between domestically and foreign produced goods changes. Hence, it is similar to positive aggregate demand shocks.

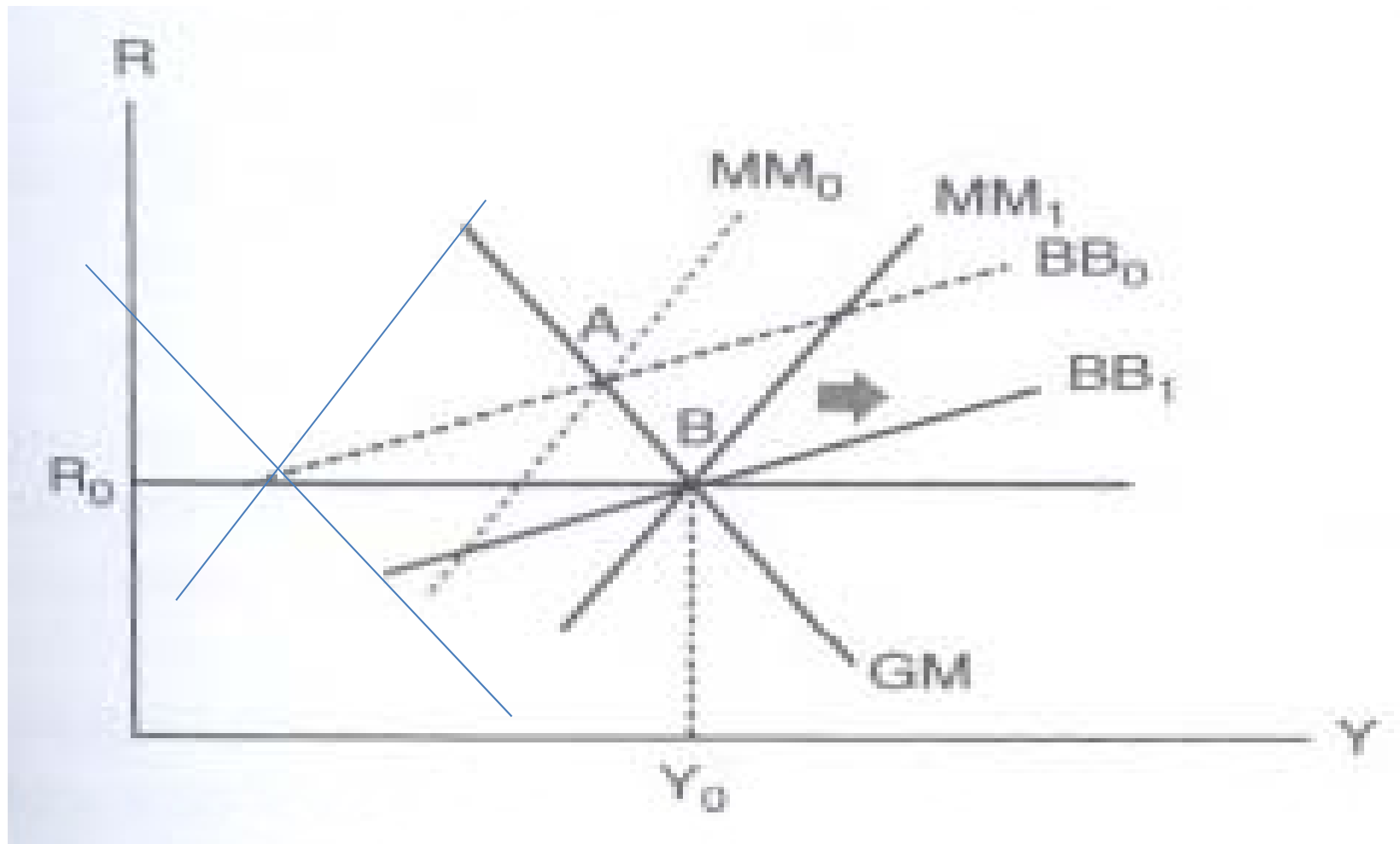
- Currency devaluation also affects BB curve because;
 - Domestic investors will earn capital gains from foreign bonds.
 - All other things remain constant (e.g. holding foreign and domestic bonds at 1:1) , there would be additional demands for domestic bonds.
 - Foreign investors would experience capital loss in domestic bonds and want to hold more domestic bonds to balance their portfolio between foreign and domestic bonds.



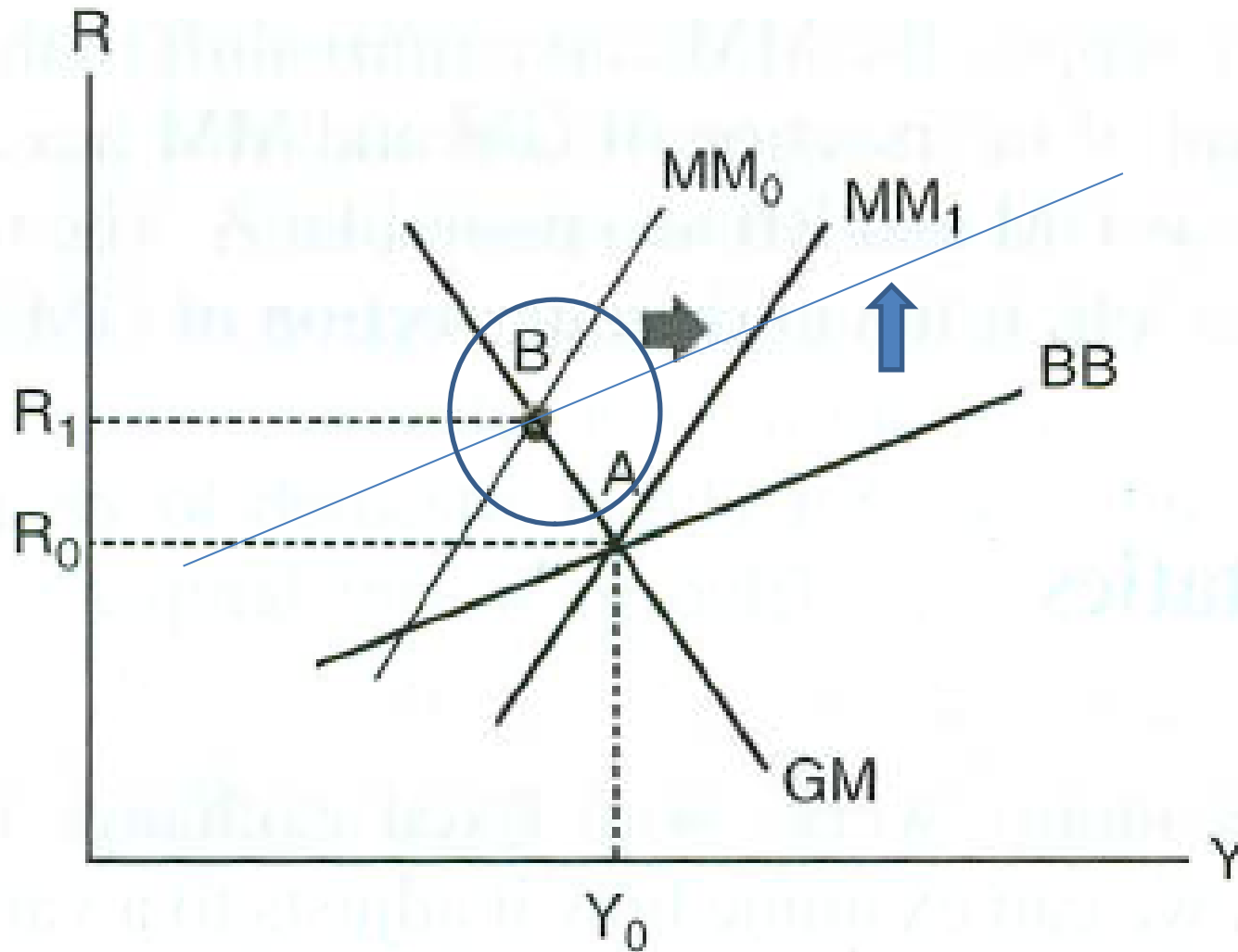
Monetary Policy

- So far we assume that open market operation is the only policy tool for the central bank. That is, the central bank sets B_c as a target.
- In fact, under the fixed exchange rate, the central bank can have other target such as interest rate targeting, monetary targeting.

Interest rate targeting



Monetary Targeting



Monetary Expansion under Monetary Targeting

