Macromodel (Cont2).

Exchange rate Dynamics

What are exchange rate dynamics?

- In reality when exchange rate is allowed to move freely, it is likely for a country experience exchange rate fluctuation, referred to as exchange rate dynamics.
- By nature, exchange rate is relatively changes quickly as opposed to structural variables like output price capital stock.
- Sources of exchange rate dynamics include shocks (permanent or transistory) and stickyness of certain macroeconomic variables.

Permanent vs. Transitory Shocks

- Transitory Shock is shock whose effect lasts only one period.
- Under rational expectation, it is possible for actual exchange rate to deviate from the expected exchange rate formulated by key economic fundamentals
- Asset Market Equilibrium would be

$$M = PL\left[\frac{\left(1+R^{*}\right)S^{e}_{+1}}{S}-1, Y\right]$$

- If there is permanent shock, the effect would happen and last in longer term (every period in the future)

- Hence when there is permanent shock and agents have rational expectation, agents would take into the effect of such a shock. We would not expect any difference I and expected exchange rates.

- Hence $$M = PL\left[\frac{\left(1+R^{*}\right)S}{S}-1, Y\right] = PL\left[R^{*}, Y\right]$$

- This part of the lecture empahsizes the stickyness on aggregate supply, lag in responses to shcoks as opposed to changes in aggregate demand
- Presence of stickyness on structural variables causes worry that when a country adopts floating exchange rate regime, she would experience currency fluctuation more.
- Model explaining the exchange rate dynamic is pioneered by Professor R. Dornbush, known as Dornbush Overshooting Model
- The exchange rate overshooting occurs due to the fact that different speed of adjustment between goods and financial asset markets.

Model Setting

- A country is under the full employment environment and output level is entirely determined by supply-side factors like labor capital and technology.

- Consequently, output level is pre-determined and varies across time;

  Output at the present is Y_0

  Output in the next period is Y_1

- Under floating exchange rate and perfect capital mobility, the key variables in interest are exchange rate (S) and output (Y)

- Agents' expectation is rational, i.e. Agents realize expected Exchange Rate and output in the present and future.

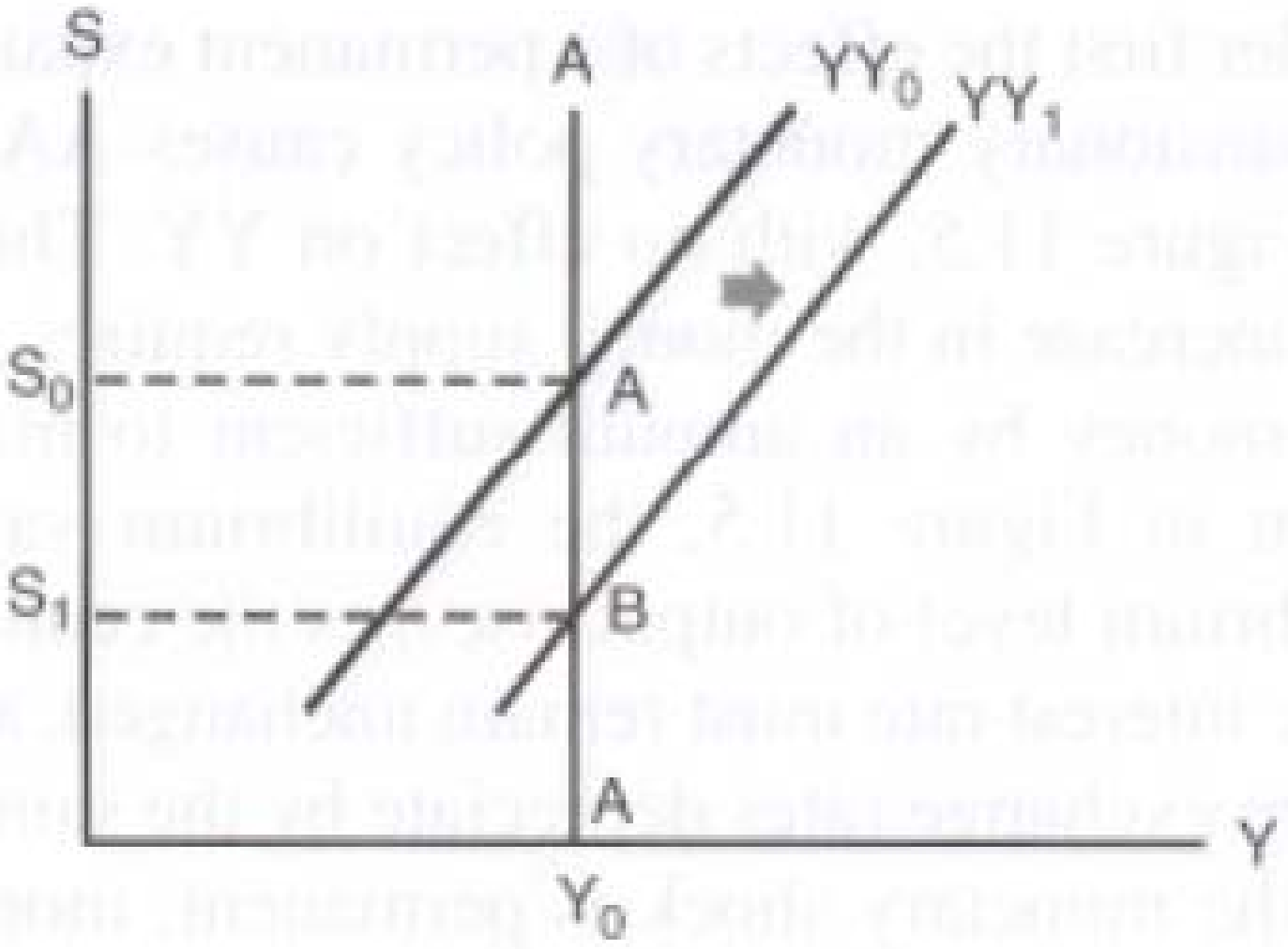
- In presence of stickyness on economic fundamentals, goods market is not always in the equilibrium.

Recap AA and YY Curve

under permanent shock

$$M = PL\left[R^*, Y\right] -- \text{Asset Market}$$

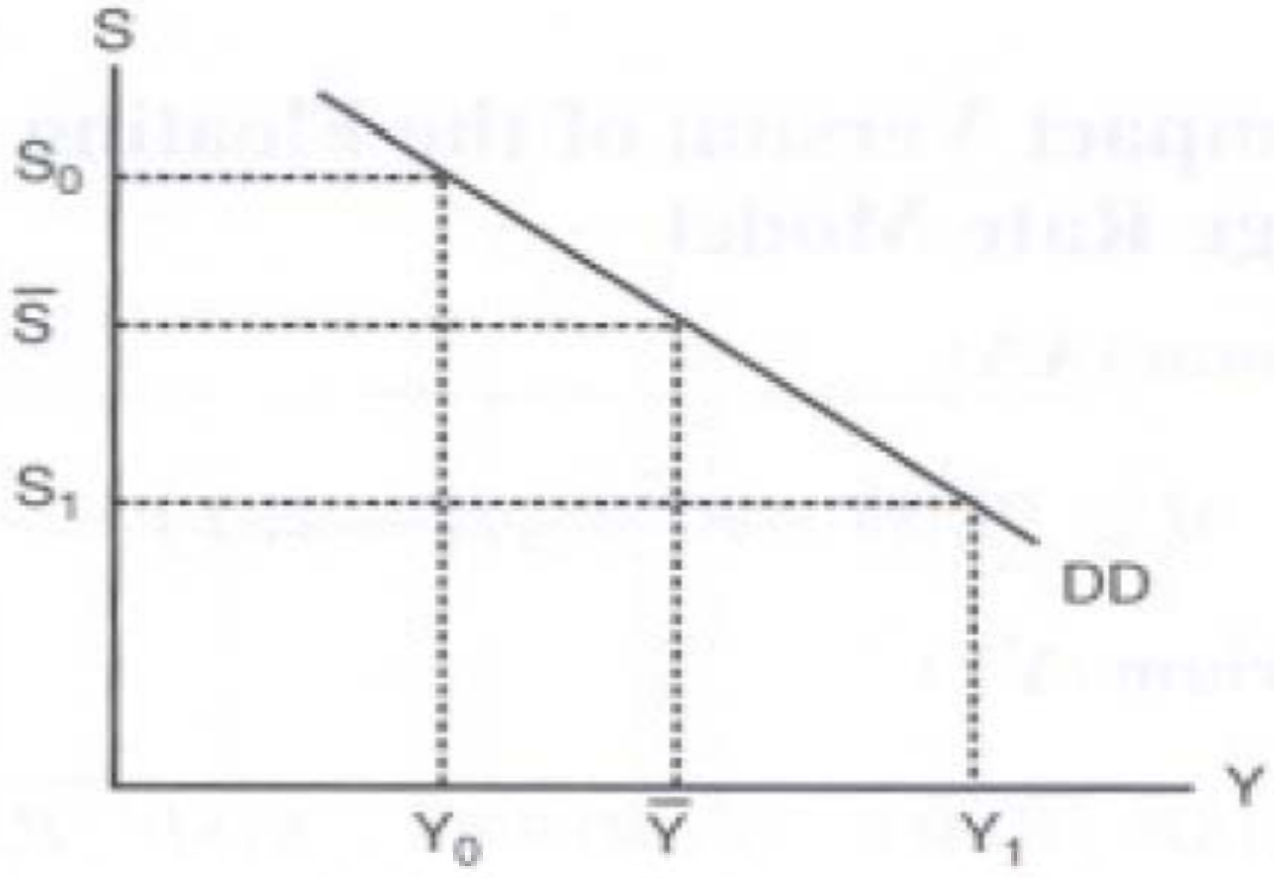
$$Y = \varphi\left(\frac{SP^*}{P}\right) A\left(Y - T, R\right) + G + X\left(\frac{SP^*}{P}, \theta\right) \text{-- Good Market}$$


S
A
YY_0
YY_1
S_0
A
S_1
B
A
Y
Y_0

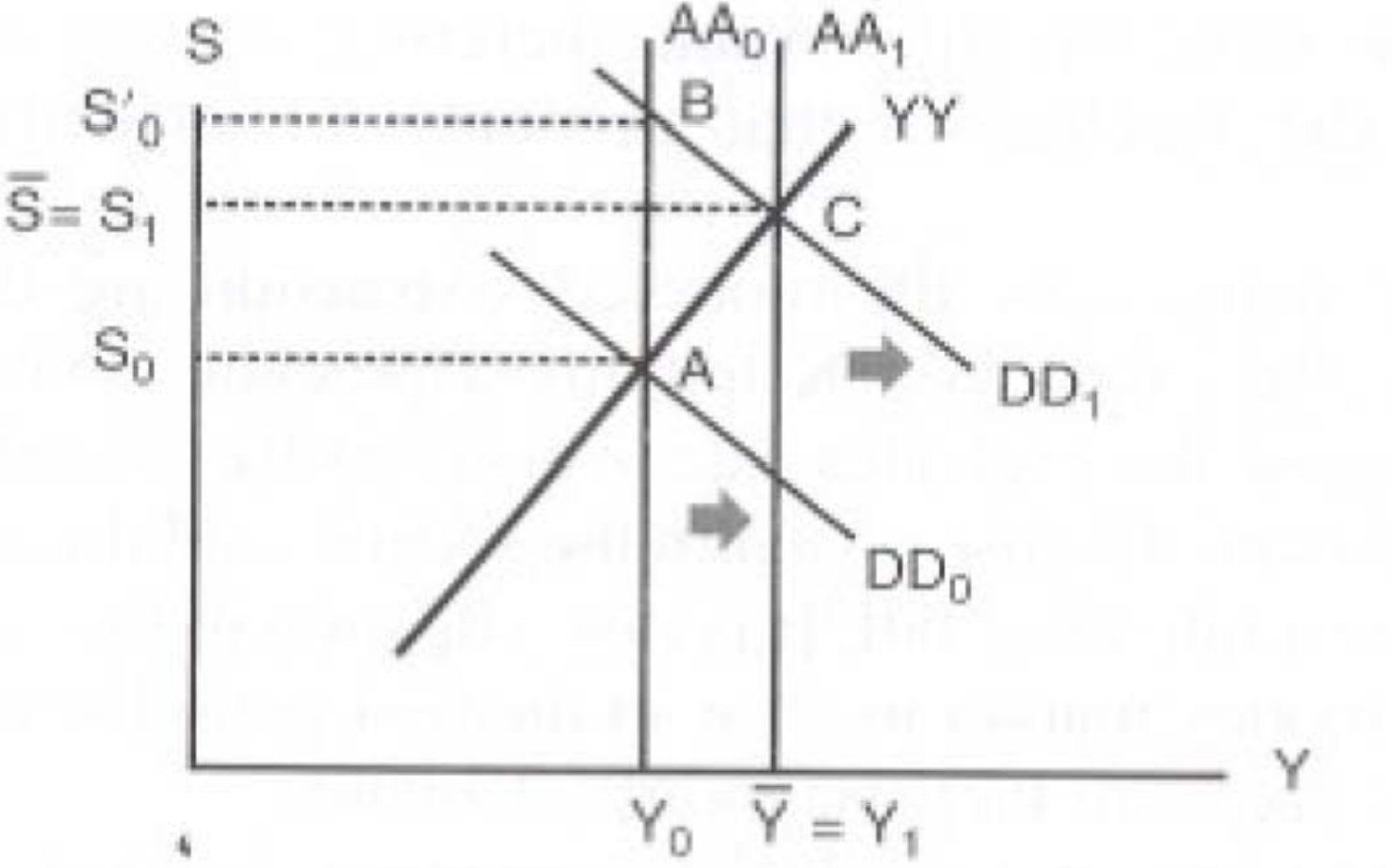
- Under rational expectation, agents realize what exchange rate and output would be
- Assume they equal to $\overline{S}$ and $\overline{Y}$, respectively

$$M = PL\left[\frac{\left(1+R^{*}\right)\overline{S}}{S}-1,\overline{Y}\right]$$

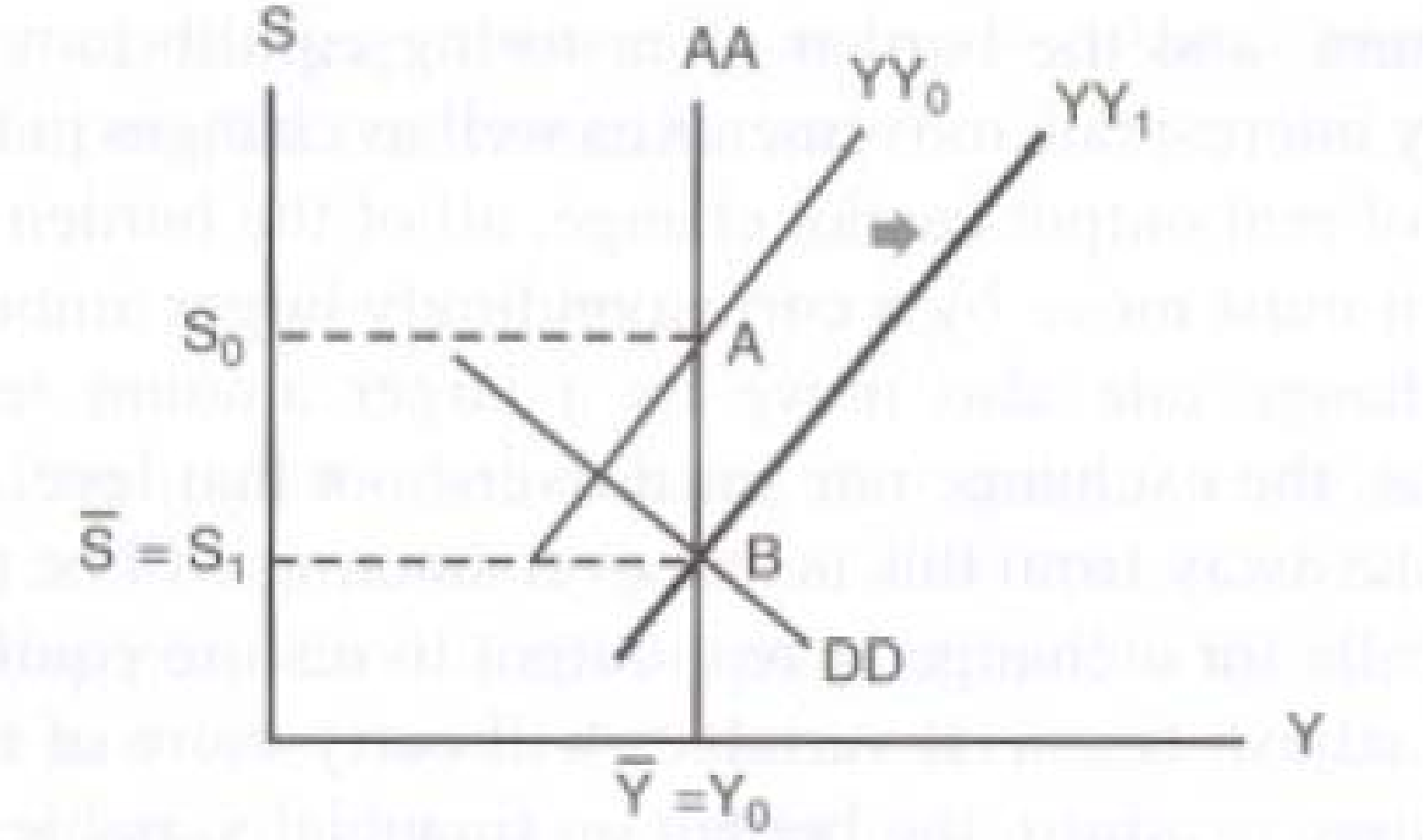
Hypotheoritical Line between S and Y under super flexible Goods Market



Monetary Expansion



Aggregate Demand Shocks



External Financial Shocks