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Test - 1

Monetary Economics

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Q1 Bond Price = 100
$rr = 0.5$
$cr = er = 0$
$C = 0$

→ Changed Balance Sheet of Central Bank

Asset	Liability
FOREX	C
B ⇒ B - 100	R ⇒ R - 100
Loan	
Gold	

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Changed Balance Sheet of Commercial Bank

Asset	Liability
$R \Rightarrow R - 100$	$D \Rightarrow D - 200$
$B \Rightarrow B + 100$	$\left(\frac{100}{0.5}\right) \Rightarrow$
$Loan \Rightarrow Loan - 200$	

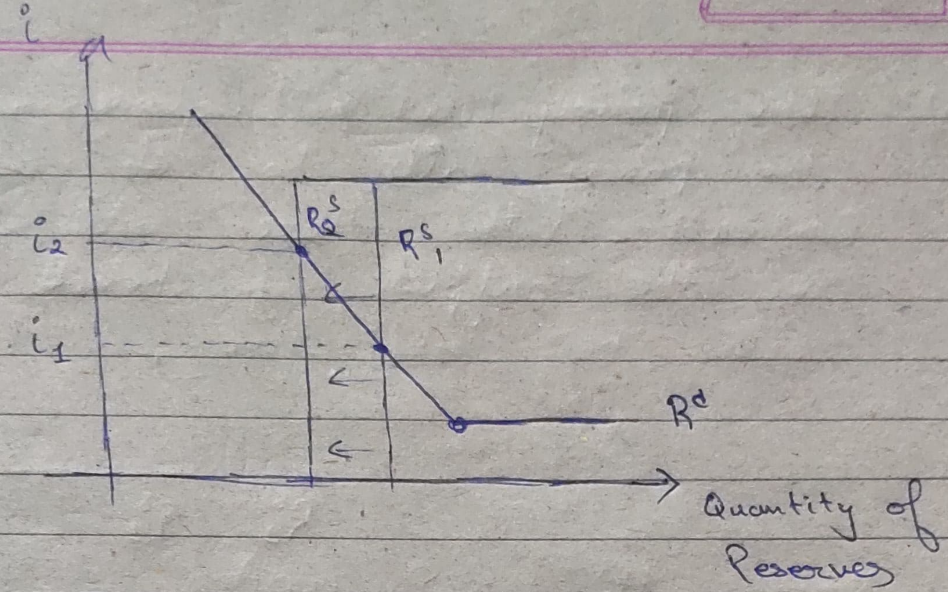
$M = C + D$

$\Delta M = \Delta D$

$\Delta M = -200$

The central Bank has sold bonds worth ₹100 to the commercial Bank ⇒ Assets of the Central Bank have fallen, As Assets are equal to the liability and assets have fallen, the liability will also fall by the same measure ⇒ Reserves of the Central Bank fall by ₹100.

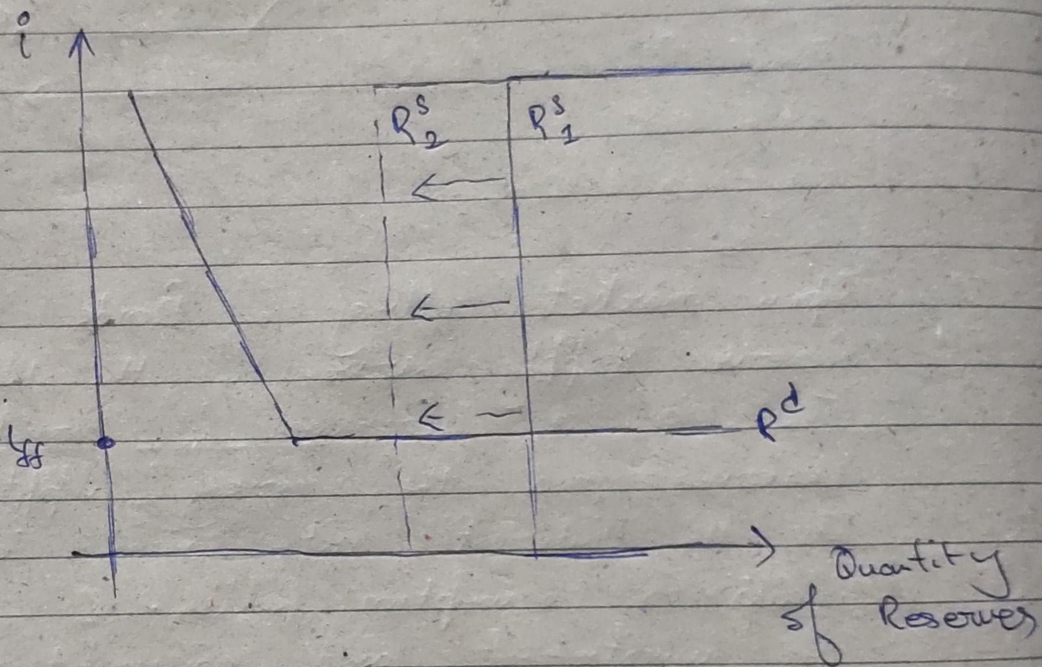
As the Reserves have fallen, to maintain rr, the deposits also fall ~~proportional~~ (in proportion) ⇒ Money Supply falls.



Open market selling of Bonds shifts the Reserve Supply curve to the left.
There is a decrease in non-borrowed reserves and the money supply falls.
As the interest rate rises, investment falls ⇒ consumption falls.
As investment and consumption fall, the output also falls.

As the output falls, Open market selling of bonds is a contractionary policy.

→ The policy is not always effective, if the policy fails to ~~ch~~ alter the interest rate, there will be no change in the output & hence the policy will be ineffective.



The interest rate remains unchanged as the Reserves Supply shifts to the left ⇒ The policy is ineffective

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Q2 $\dfrac{M^d}{P} = 500 + 0.2Y - 1000i$

- Real Money demand $= \dfrac{M^d}{P}$

Substitute the values of Y & i in the equation, we get

$$\frac{M^d}{P} = 500 + 0.2(1000) - 1000(0.1)$$

$$= 500 + 200 - 100$$

$$\frac{M^d}{P} = 600. \quad -①$$

- Nominal Money Demand $= M^d$.

We have $M^d = 600(P)$ - from ①
& $P = 100$ → Given
∴ $M^d = 60{,}000$

- Velocity $= \dfrac{PY}{M^d} = \dfrac{PY}{PL(Y,i)} = \dfrac{Y}{L(Y,i)}$ -②

Substituting the values of P, Y & M^d, we get

$$V = \frac{100(1000)}{60000} = \frac{10}{6} = \frac{5}{3}$$

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(b) The Price level changes from $100 \rightarrow 200$

Real Money demand is independent of Price level so it remains the same

$$\boxed{\frac{M^d}{P} = 600}$$

Nominal $M^d = P(600)$
$= 200\,(600) = 120000$

Velocity is also independent of the price level & hence won't change

$$\boxed{V = \frac{Y}{L(Y,i)} = \frac{5}{3}}$$

c) We have $V = \dfrac{Y}{L(Y,i)}$

where $L = 500 + 0.2Y - 1000i$

To calculate the effect of Real income, nominal interest rate & price level, we need to calculate the respective derivates.

1) $\dfrac{dV}{dY} = \cancel{\dfrac{L - 0.2(Y)}{L^2}}$

$= \cancel{\dfrac{(0.8)600}{(600)^2}} = \cancel{\dfrac{8}{600 \times 100}}$ 4 5

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1) $\frac{dV}{dY} = \frac{L - 0.2(Y)}{L^2} = \frac{600 - 0.2(1000)}{(600)^2}$

$= \frac{\cancel{400}^{2}}{\cancel{600}_{3} \times \cancel{600}_{3}} = \frac{1}{900} > 0$

$\frac{dv}{dY} > 0 \therefore$ As $Y \uparrow \Rightarrow V \uparrow$.

2) $\frac{dv}{di} = \frac{L(Y,i)\, dY/di - Y(dL/di)}{L^2}$

$= \frac{L(1000/0.2) - Y(-1000)}{L^2}$

$\frac{dv}{di} = \frac{600(1000/0.2) + (1000)(1000)}{L^2} > 0$

$\frac{dv}{di} > 0 \Rightarrow$ As $i \uparrow \Rightarrow V \uparrow$

3) $\frac{dV}{dP} = 0$ as V is independent of P $\Rightarrow$ it rise in P doesn't affect V.