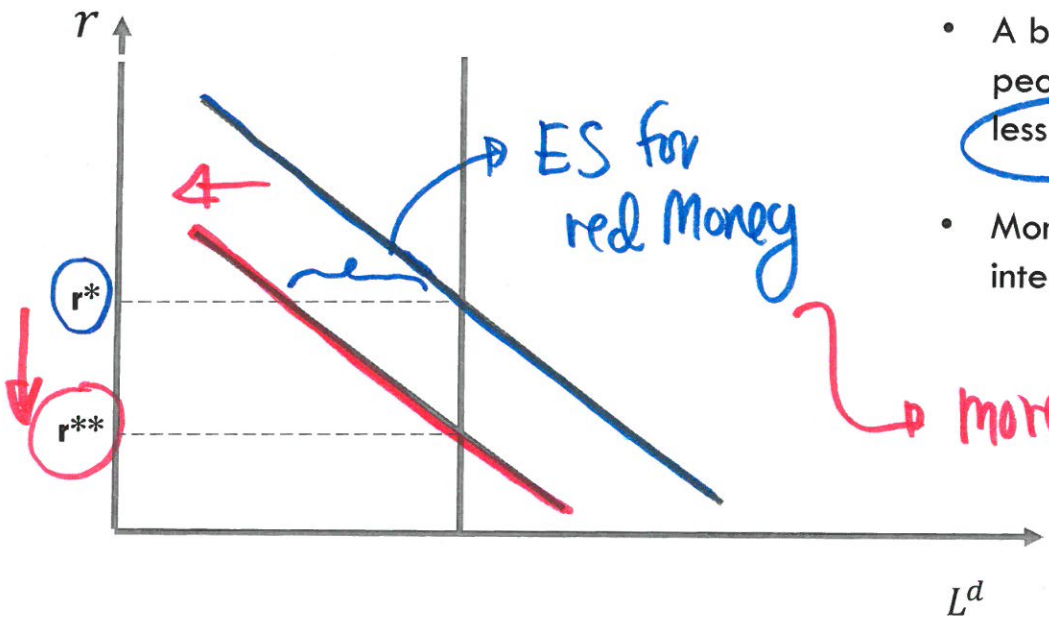
INTEREST RATE MODEL: EQUILIBRIUM

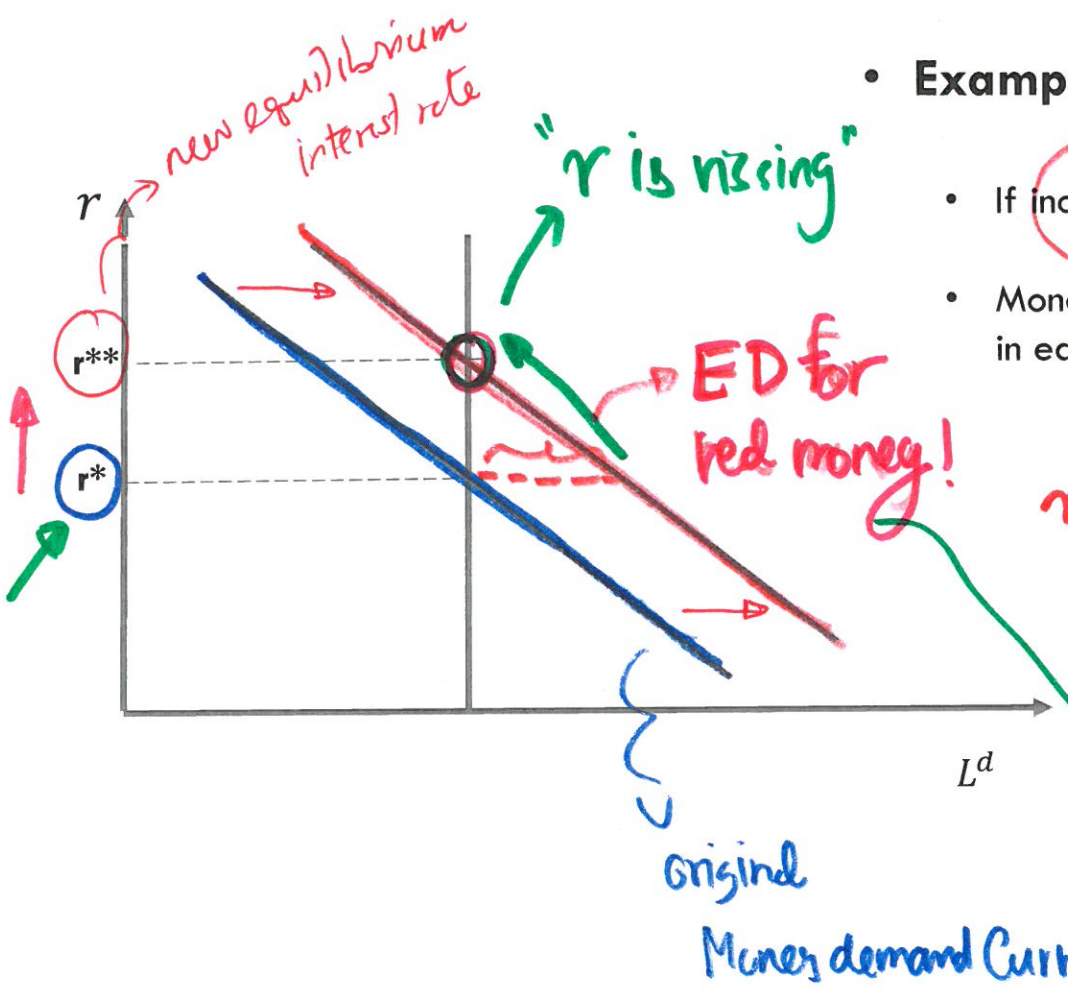


- **Example:**
  - A better payment technology can change people's behavior of money holding – holding less cash
  - Money demand curve shifts left → equilibrium interest rate drops from r* to r**

→ more Cash than needed
↳ Convert Cash into Bond
↳ P_b ↑ → r ↓

INTEREST RATE MODEL: EQUILIBRIUM

- **Example:**
  - If income increases, demand for money will rise
  - Money demand curve shifts, causing an increase in equilibrium interest rate; r* → r**



new equilibrium interest rate

"r is rising"

B/C higher income → higher Transaction demand for money

ED for red money!

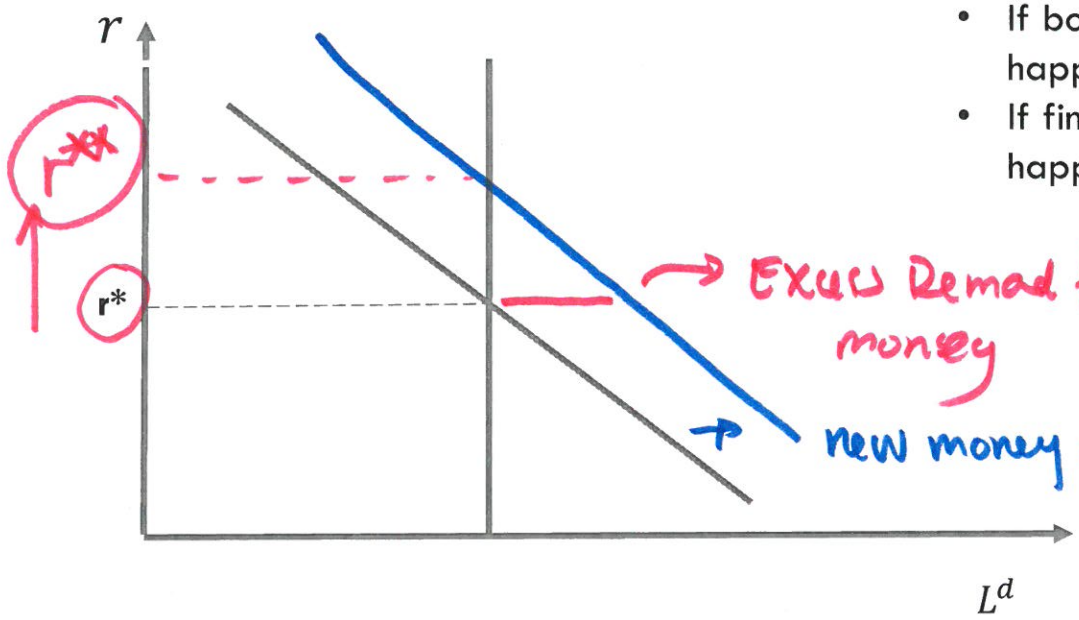
r*: no longer be equ" under new higher money demand curve.

Sell Bond → P_b ↓ → ir ↑

original Money demand Curve

INTEREST RATE MODEL: EQUILIBRIUM

- **Question?**
  - If bond investment is even more risky, what would happen to the interest rate?
  - If financial sector is under trouble, what would happen to the interest rate?



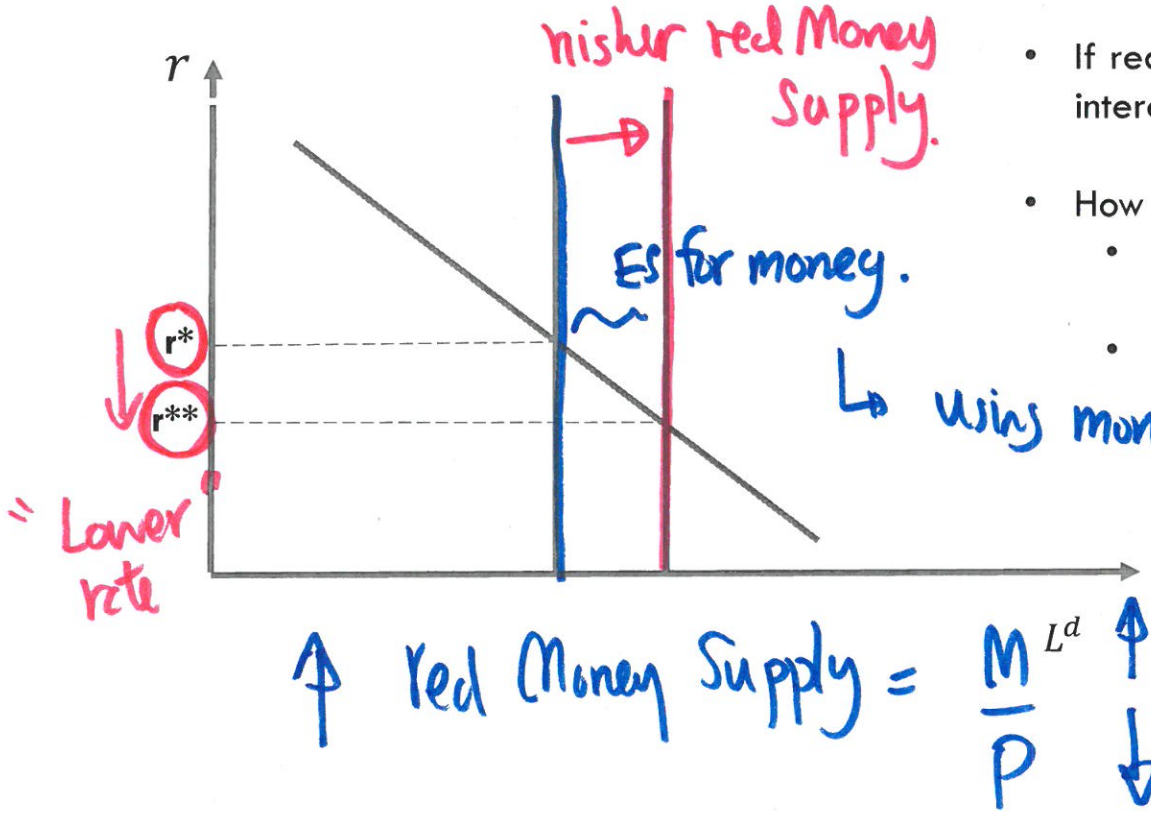
money demand ↑

Excess Demand for money → sell assets; Bond; P_b ↓ → r ↑

new money demand Curve

INTEREST RATE MODEL: EQUILIBRIUM

- **Example**



- If real money supply increases (more liquidity), interest rate will drop by r* to r**
- How can real money supply increase?
  - Central bank increases "nominal" level of money supply ~~(alert)~~ intention
  - Price falls

↳ using money to hold/Buy bond → P_b ↑ → r ↓

↑ real Money Supply = $\frac{M}{P}$ ↑ L^d ↓

A PRIMER ON MONETARY POLICY

- Function of the central bank
  - Conduct of monetary policy → 312 / 432
  - Financial supervision → FN 211 / EE431
  - Payments system

A PRIMER ON MONETARY POLICY

- Monetary policy
  - Controlling money supply and adjust the interest rate

- The ultimate aim of this control is to keep inflation low and promote economic growth

A PRIMER ON MONETARY POLICY

- Types of monetary policy
  - Expansionary monetary policy
    - Recession / Deflation
    - Injecting liquidity to boost money supply, and lower interest rate
  - Contractionay (Tight) monetary policy
    - Boom/ Bubble/ Inflation
    - Absorbing liquidity to lower money supply, and increase interest rate

→ affects spending and hence output/income

A PRIMER ON MONETARY POLICY

monetary Policy tools ⟹ adjust these tools ⟹ money supply change.

- To control and adjust the level of money supply, central bank adopts the following tools

$M = C + D$

  - Change in the level of reserve requirement $rr\downarrow \rightarrow M\uparrow$; $rr\uparrow \rightarrow M\downarrow$
  - Change in the level of discount rate → Interest rate in the discount market
    - **Discount rate:** cost of borrowing charged to Commercial banks.
  - Open market operation
    - **OMO:** operation initiated by central bank; to purchase or to sell government bond

Market wher Com banks acquire loan from Central Banks.

OMO purchase ⟹ increase money supply

OMO sale ⟹ decrease Money Supply

Central Bank's

↳ "from point view of ~~Contracts~~ initiation"

how does the change in reserve requirement affect Money Supply?

Suppose ⇒ rr = 10% → and Deposit = 1,000

→ Reserve = 100 (minimum) ⇒ 900 used for financial investments

rr 10% ↓ rr 5%

} Excess Reserve after a cut in the reserve requirement.

$\Delta D = \frac{1}{rr} \cdot \Delta R$

M↑; D↑ B/C

↳ affects the money supply through the change in deposit

multiple deposit creation

checking

} via the deposit creation process

If Central Bank lowers the discount rate,

Cost of Borrowing from Central Bank ~~might be lowered~~ is lower

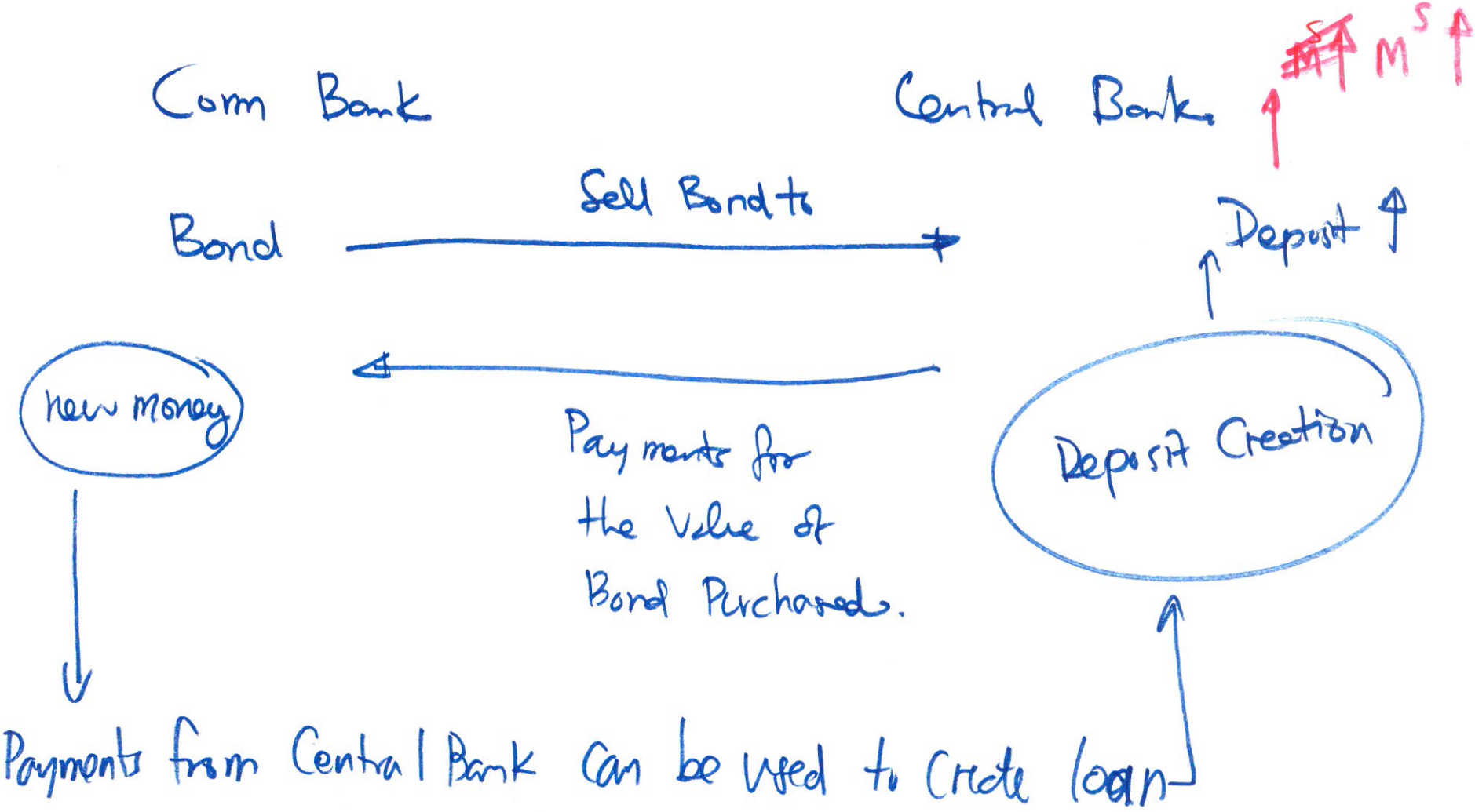
↳ Commercial Banks can get more fundings from Central Banks (B/C lower cost → they might borrow more from central bank)

↳ Commercial Banks Can create Loan out of the funding newly acquired from Central Bank

↳ Deposit Creation Process starts to work! → D ↑

Central Bank Conducts OMO purchase with Commercial Banks

Central Bank buys Govt. Bond from Commercial Banks



A PRIMER ON MONETARY POLICY

- How does a change in the open market operation affect money supply?
- Suppose **an OMO purchase**
  - Central bank buys government bond from market.
    - Household
    - Commercial bank
  - Total deposit created within the banking system will rise
  - Money supply (C + D) will rise at the end

A PRIMER ON MONETARY POLICY

- How does a change in the level of discount rate affect money supply?
- Suppose **a lower discount rate**
  - Bank gets incentivized to borrow from the central bank
  - Acquire additional funding sources, and hence allowing for more loan origination
  - Total deposit created within the banking system will rise
  - Money supply (C + D) will rise at the end

A PRIMER ON MONETARY POLICY

- How does a change in the level of reserve requirement affect money supply?
- Suppose **a lower reserve requirement**
  - Bank can create more loan out of its deposit; less reserve required
  - Total deposit created within the banking system will rise
  - Money supply (C + D) will rise at the end

Autonomous factors → Ag Autonomous Expenditure

$\bar{C}, \bar{I}, \bar{G}, \bar{X}, \bar{M}, \bar{T}$

Those with bar notation

Income determination Model

→ how output/income/real GDP is determined in the macroeconomy.

Liquidity Preference Model

→ interest rate is determined

Fiscal Policy

$\bar{G}, \bar{T}$ → affect output real GDP

Monetary Policy

M^S → affect the r

Income determination Model

- Equilibrium Income level (y^*) → $Y = AE$

  45° degree line cross with the AE function

- y^* ⇒ $\overline{AE}$ autonomous Expenditure.

$\bar{C}, \bar{I}, \bar{G}, \bar{X}, \bar{M}, \bar{T}$

↓

These are determined by autonomous factors

"interest rate"

interest rate drives the Level of income

IS relation

Product Market Real Sector } Equilibrium

Interest is determined in the Money Market.

↳ in real money demand = real money supply.

"i" "r" → many factors that drive real money demand and real money supply

LM Relation

Equilibrium in the Money Market

"y"

{ "Simultaneous determination" }

"y, r" → occurs in the macroeconomy

Income / interest rate

are jointly determined in the

macroeconomy

"IS-LM Model"