

Short term Equilibrium in an Open Economy

Readings:

Chapter 18: Study everything

Omit the following:

- Sidebar “Barriers to expenditure switching” pages 719-721
- Section 6
- All appendices

Aim: Understand the interaction between international and domestic elements in determining macro-economic policy- interest rates, exchange rates, inflation, money supply, taxes, government spending-----THE REAL STUFF!

Three Important Markets for an Open Economy

For Open economy to be in equilibrium, 3 markets must be in equilibrium

1. Goods market
2. Money market
3. Forex market

Use 3 relationships to get unified way of analysis

1. IS curve
2. LM curve
3. BOP curve

Assume:

Prices constant so real output same as nominal output.

Review:

- $e = \#$ of \$ needed to buy 1 pound.
- £ price of good $\cdot e =$ \$ price of good
- or $R = P/e \cdot P^* =$ Relative price of dom. goods

How to analyze all these markets?

- Look at equilibrium relationship in i - Y diagram
- Is slope + or - ?
 - Assume i changes and find change in Y needed to restore equilibrium
 - Assume Y changes and find change in i needed to restore equilibrium
- What about exchange rate e ?
 - find out how e affects relevant variables
 - then, find change in Y (i constant) that would counteract the effect of the changes in e ?
 - or, the change in i (Y constant) that would counteract the effect of the changes in e ?

National Income Accounting in an Open Economy

Variables

Y	nominal income (= production, GNI)
C	consumption
I	investment
G	government consumption
X	exports
M	imports
S	saving
T	taxes

The uses of production

$$Y = C + I + G + X - M$$

i.e. Income = Expenditure

The uses of income

$$Y = C + T + S$$

i.e. Income = Expenditure + Taxes + Savings

Various Interpretations of GM Equilibrium

Standard: $Y=C+G+I+X-M$

$$Y - (C+G+I) = \text{Current Account} = CA$$

i.e. CA represents difference between domestic income and spending

$Y = C+T+S$ implies

$$S+T = I+G+X-M$$

or

$$S - I = (G-T) + (X-M)$$

Pvt. dom. savings = Govt. Budget Balance + CA

So $(G-T) > 0$ implies $CA < 0$ which implies $KA > 0$

That is, Govt. borrows abroad to finance spending

Goods Market Equilibrium

Equilibrium Condition:

$$Y - C = G + I + X - M$$

- Net Consumption $Y - C$: \uparrow ing in dom. income Y
- Investment I : \downarrow ing in i
 - i : opportunity cost of funds
 - \uparrow in cost of funds affects investment decisions
- Govt. Consumption G : assume constant, depends on fiscal policy
- Exports X : \uparrow ing in foreign income Y^* , \downarrow ing in $R = P/eP^*$
 - R = relative price of dom. goods
 - \uparrow in R (\downarrow in e) \Rightarrow dom. goods more expensive \Rightarrow exports fall
- Imports M : \uparrow ing in dom. income Y , \uparrow ing in R

Equilibrium relationship between Y and i in the goods market

Suppose \uparrow in Y , everything else constant

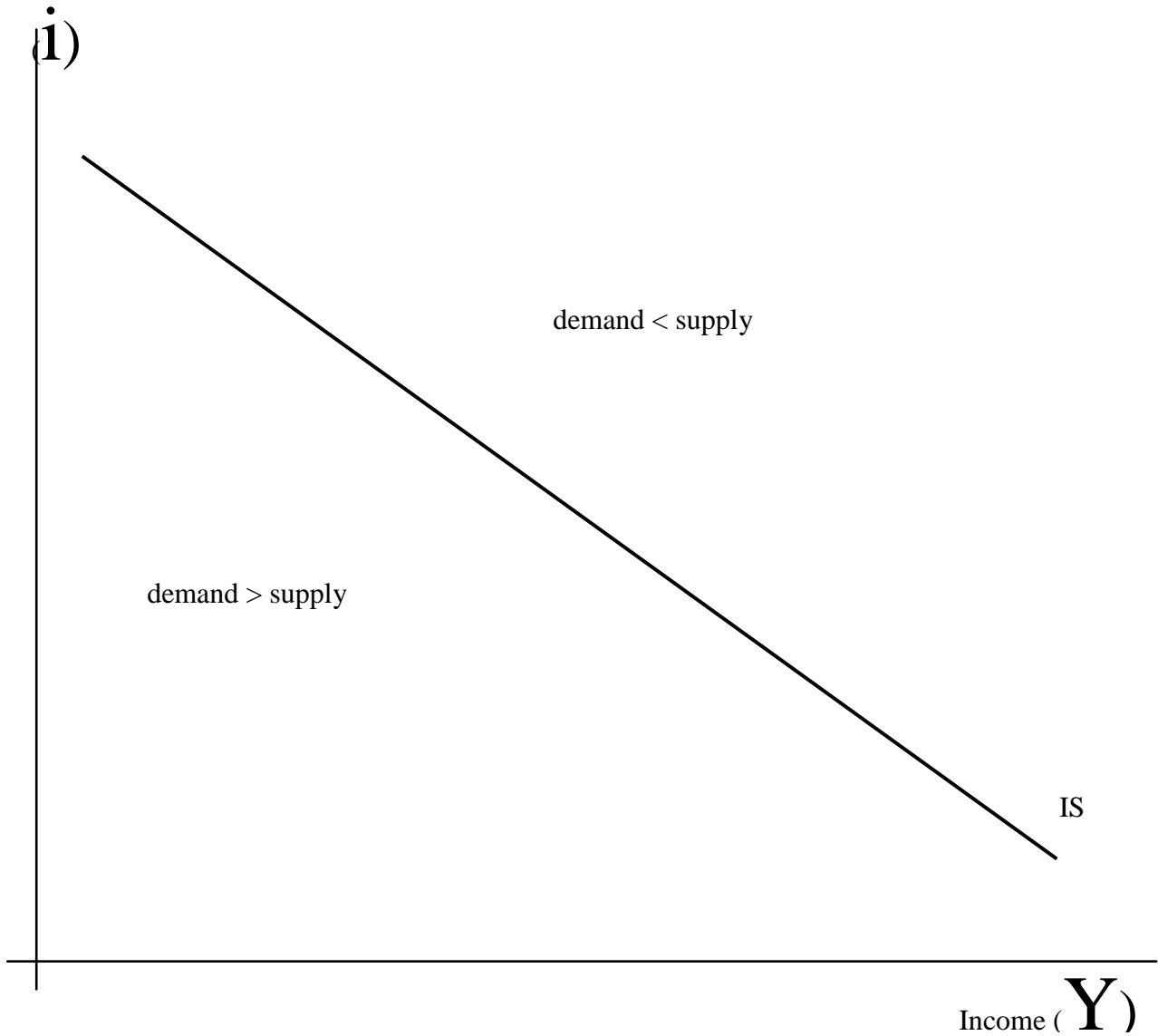
- \uparrow in $(Y-C)$ & \uparrow in M so $LHS > RHS$
- How should i change to maintain equilibrium?
- \downarrow in i leads to \uparrow in I so $RHS \uparrow$ es.

Suppose \uparrow in i

- OC of funds \uparrow = firms \downarrow I
- Now $Y > C+I+G+X-M$ ie income $>$ expenditure
- Ie, demand $<$ supply in the economy
- Sales \downarrow , inventories \uparrow , firms reduce production
- ie, \downarrow in Y
- **NEGATIVE** relationship between Y & i in the goods market

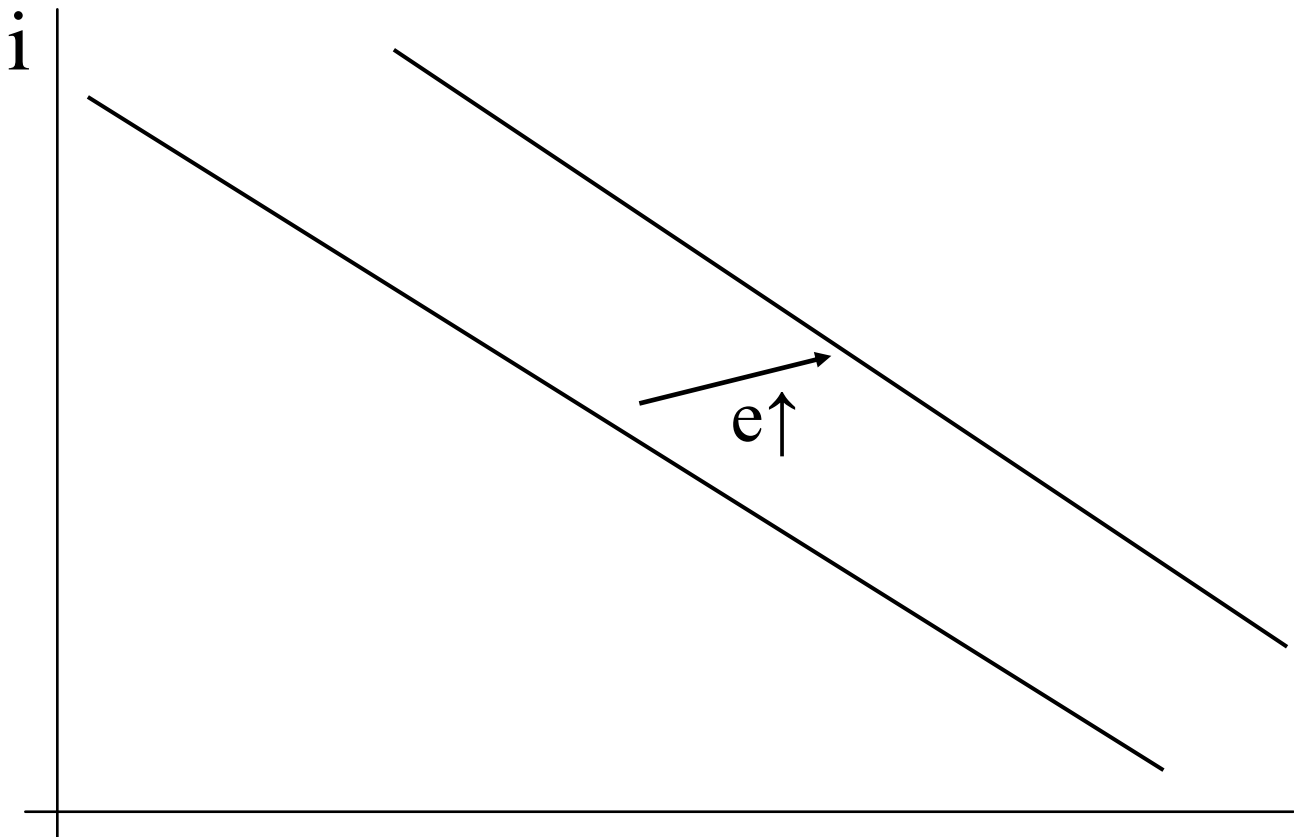
The IS Curve: combos of (Y, i) where goods market is in equilibrium

interest rates

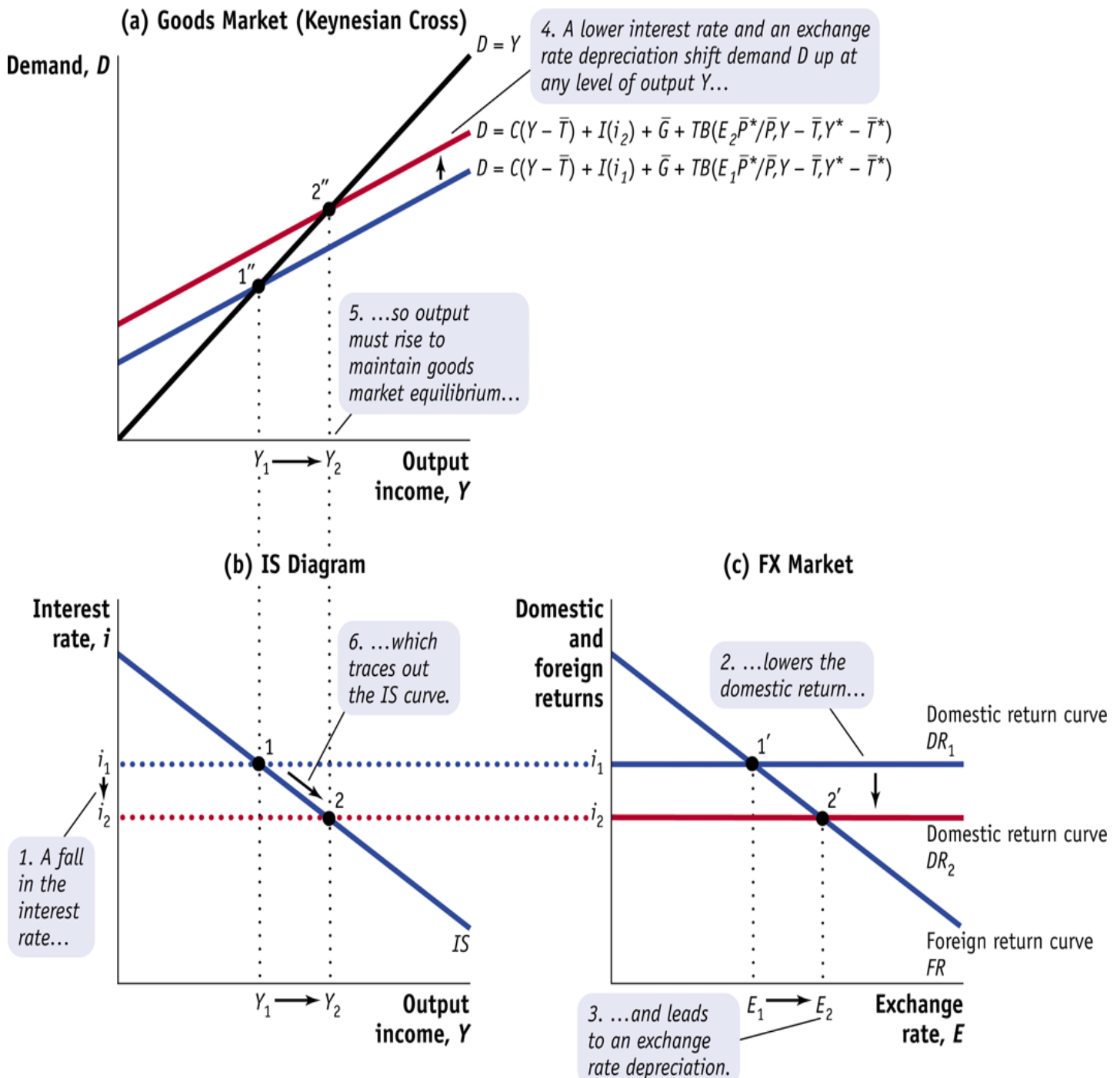


Shift in the IS curves

- Any factor other than i or Y is a shift
- Suppose \uparrow in e
- Then $R(=P/eP^*) \downarrow$, dom. goods cheaper
- $(X-M) \uparrow$ \Rightarrow demand $>$ supply
- That is, for each level of i , output (Y) will rise to supply demand for exports
- ie, the IS curve shifts out



The IS Curve: combos of (Y, i) where goods AND foreign exchange market are in equilibrium!!



Money Market Equilibrium

- Equilibrium \Rightarrow demand = supply
- Supply of money
 - M1 = quantity of currency + checkable deposits
 - Depends on
 - Monetary policy by CB
 - CB puts \$ in and out of economy by buying and selling govt. bonds & forex.
- Demand for money for 2 reasons

- Transactional purposes - \uparrow **es with inc. Y**

For eg: as I become richer, I consume more & I need more disposable income (not locked in assets)

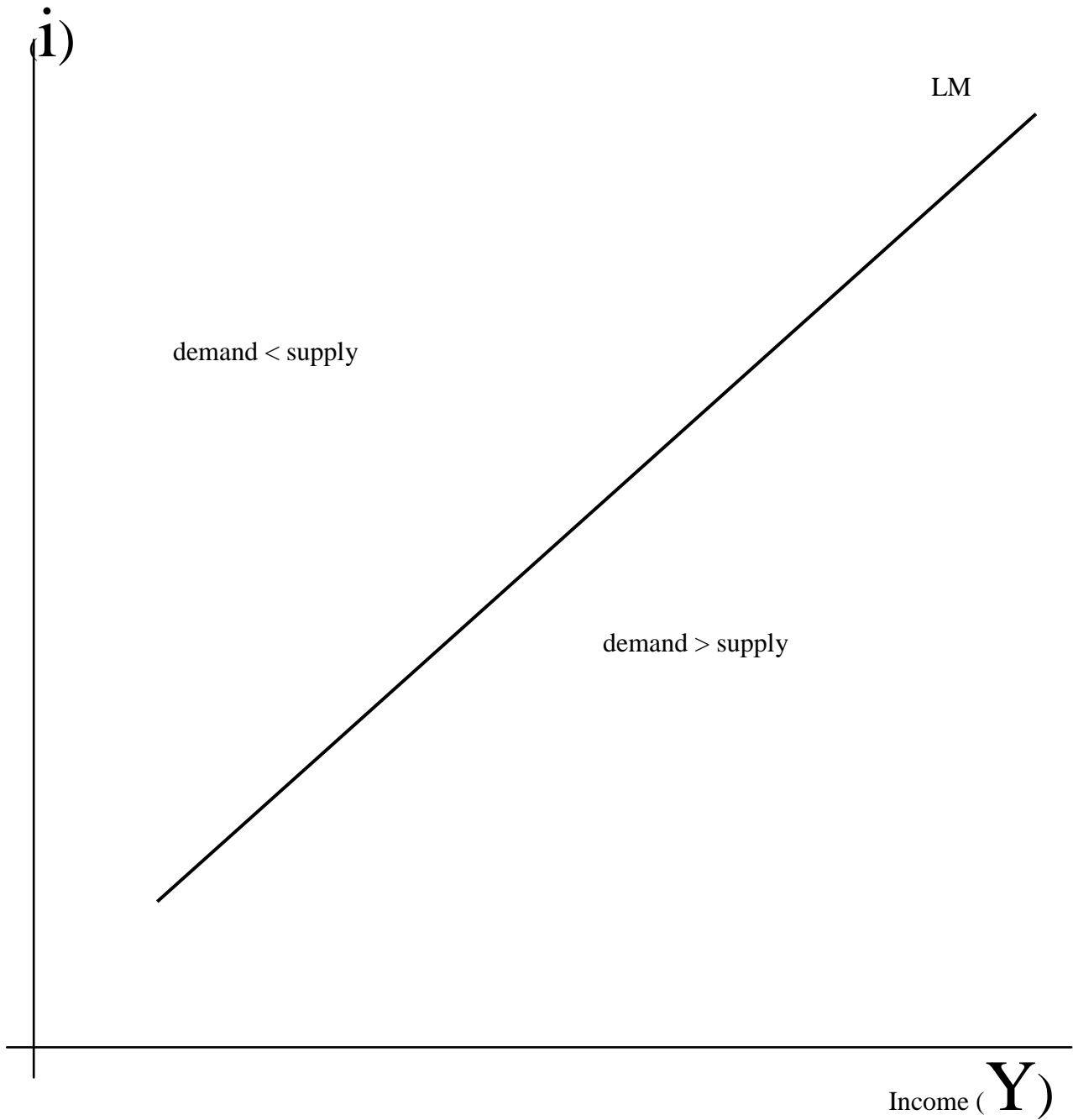
- As as Assets - \downarrow **es with i**
 - $i = \text{OC of holding money}$

For eg: If you don't hold money, you hold a bond that gives you RoR of i

- Suppose \uparrow in Y, money supply constant
 - We become richer, consume more, our demand for cash \uparrow
 - ED in money market
 - How to restore equilibrium?

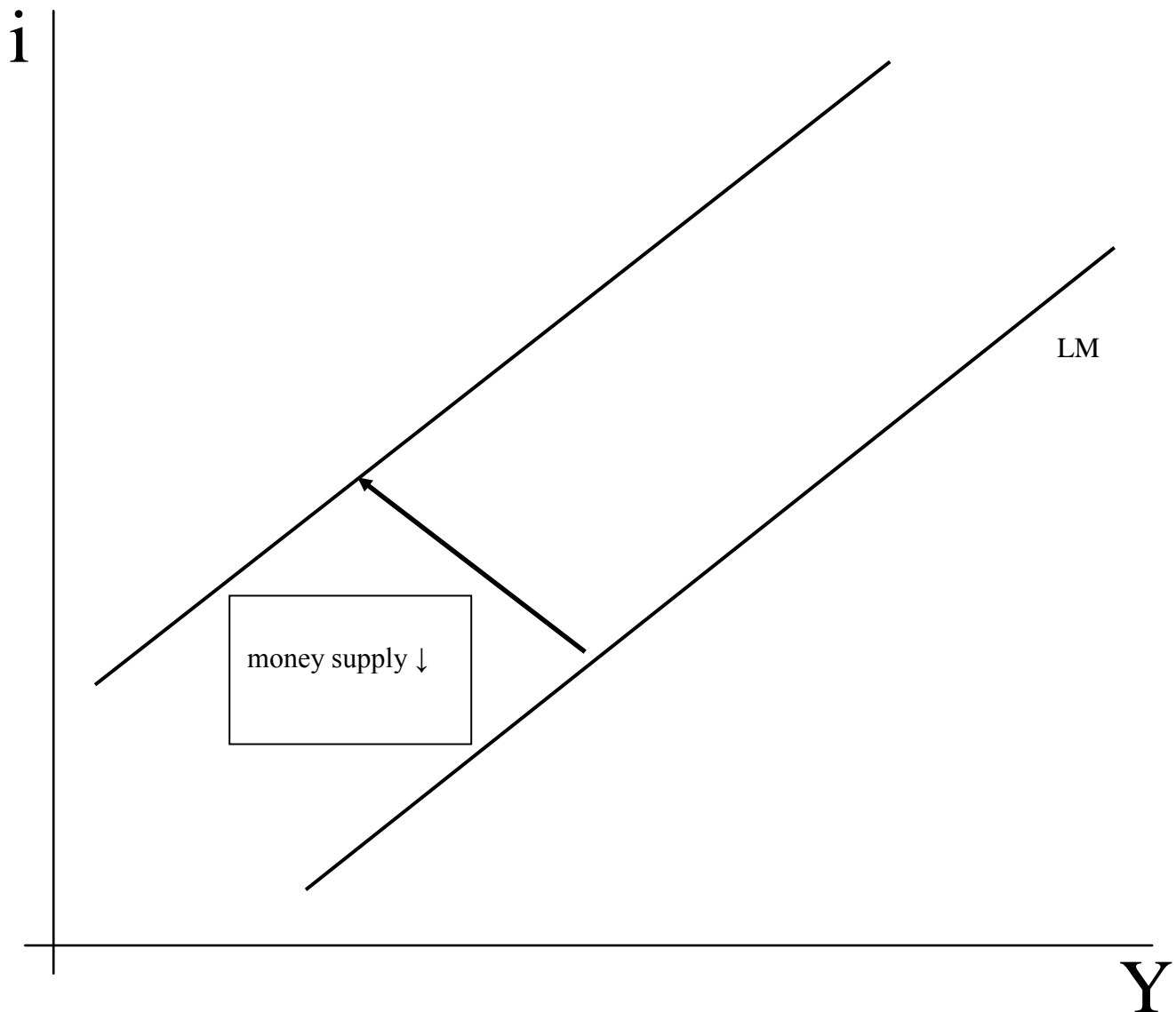
The LM Curve: combos of (Y, i) where money market is in equilibrium

interest rates



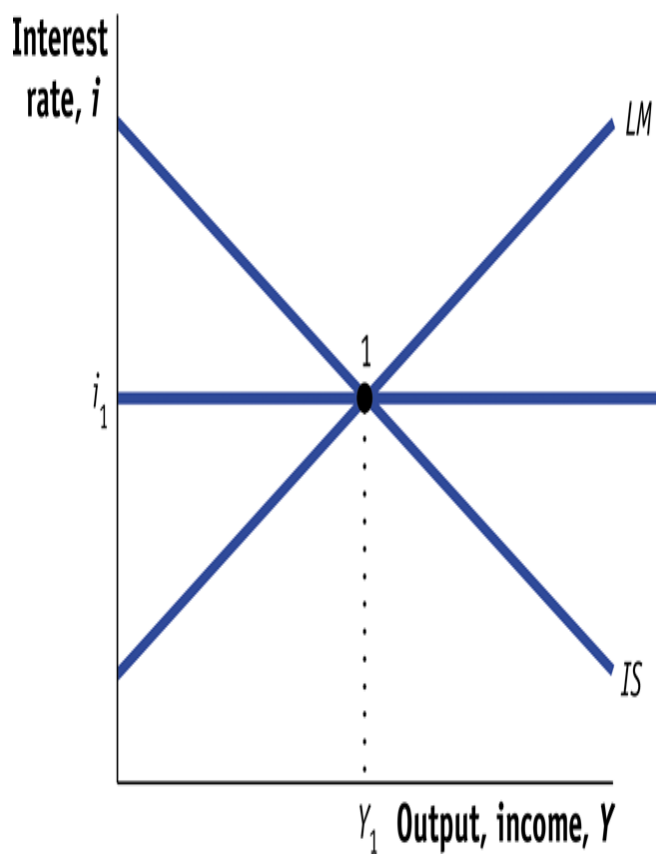
Shifts in LM Curve

- CB ↓es Money Supply
 - everything else constant, demand > supply
 - Need higher i at each level of income
 - LM curve shifts up

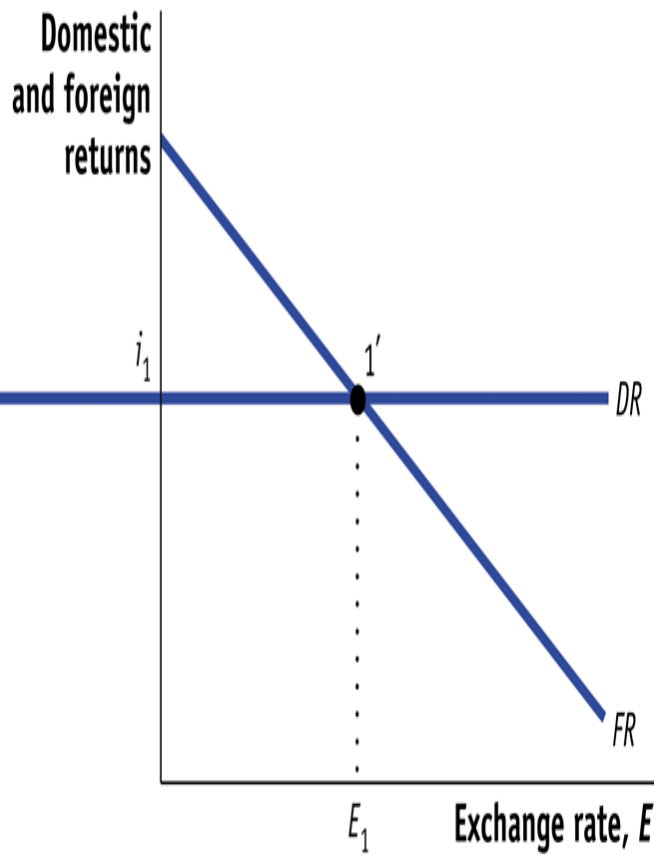


Equilibrium: Short run, SOE

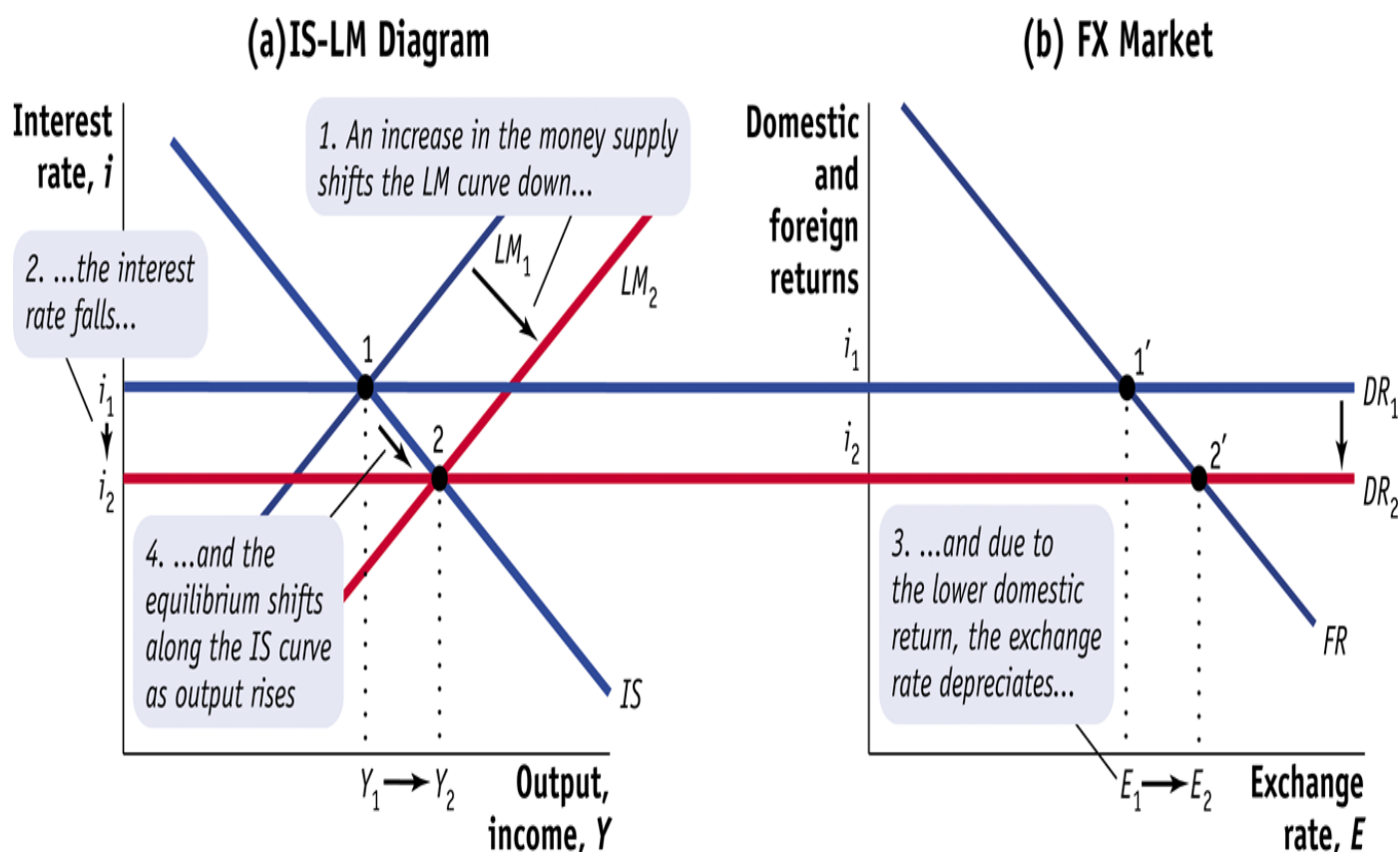
(a) IS-LM Diagram



(b) FX Market



Monetary Policy + Flexible exchange rates

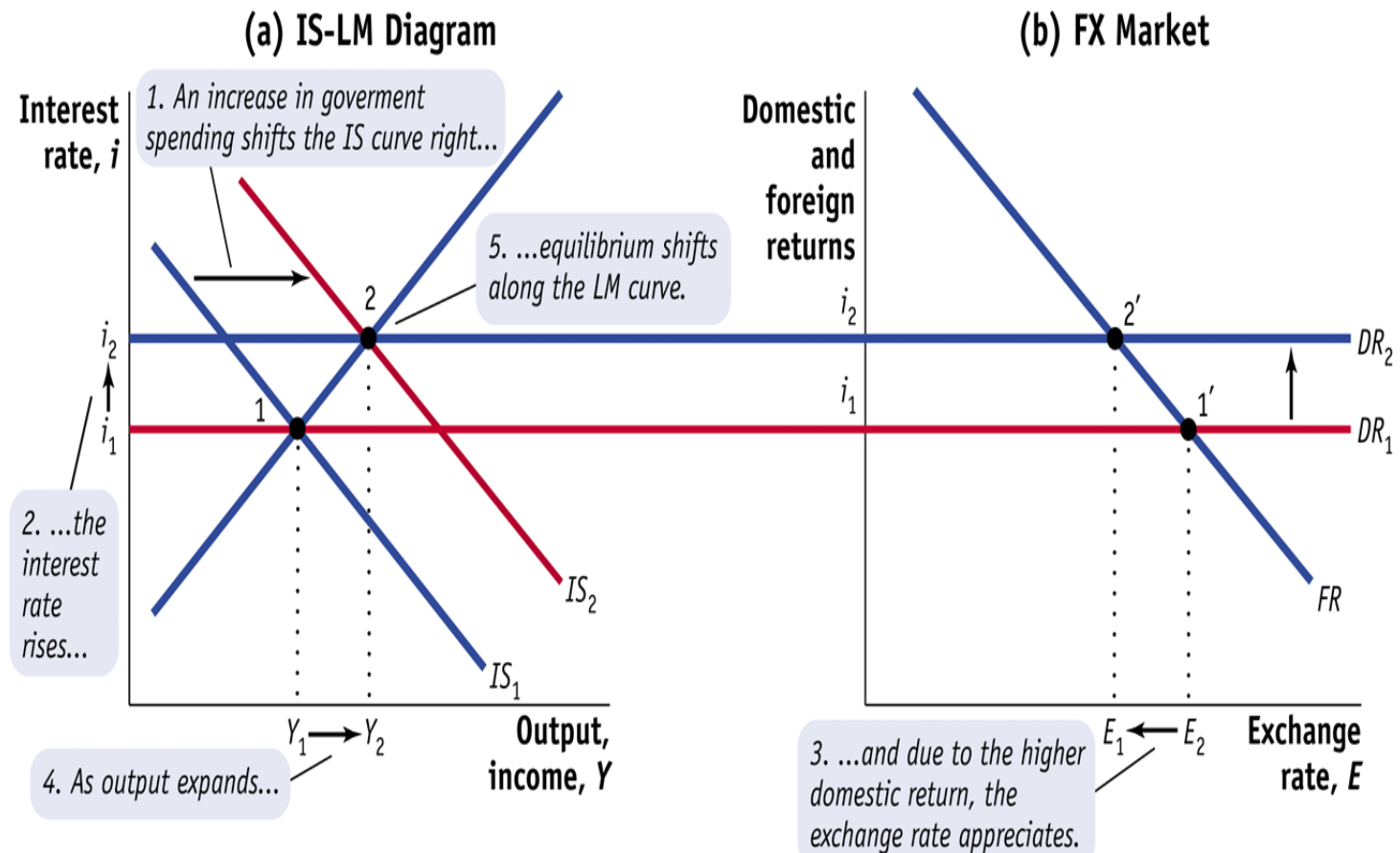


Thus, monetary expansion leads to

- Higher income
- Lower roi
- Rise in $e_{\$/\pounds} \Rightarrow CA > 0$
- If e can not change, then monetary policy is useless! Fixed exrate incompatible to autonomous monetary policy

Fiscal Policy + Flexible exrate

Issue: Why does not a \$1 rise in G lead to \$1 rise in Y?????



- Rise in $G \Rightarrow$ rise in r_{oi} (new IS curve) \Rightarrow lower private investment – **“Crowding out”**
- Rise in $r_{oi} \Rightarrow$ exchange rate appreciates \Rightarrow lower $(X-M) \Rightarrow$ Crowding out of net exports!!
- Thus, temporary rise in G does raise Ybut not by the full amount

Fiscal Policy + Fixed Exrate

- What happens when G rises?
 - R_{oi} falls, pressure on $e_{\$/\pounds}$ to fall
 - That is, price of \$ in terms of £ starts to rise
- To maintain peg, Central bank must supply more \$ => monetary expansion!
 - LM curve shifts so that exrate and roi are unchanged
 - Outcome: Output expands by full amount of rise in G !!!

