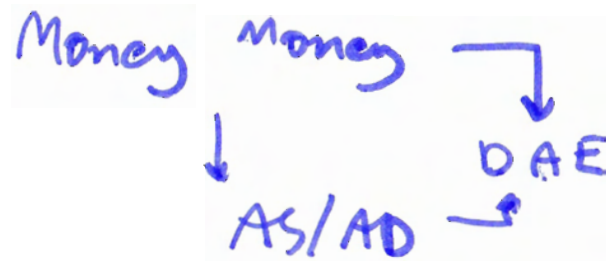
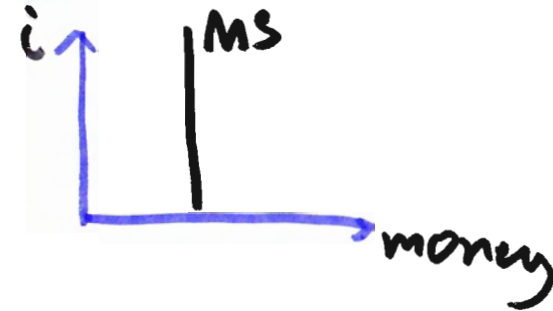


Demand for Money, Money Market Equilibrium



Money Supply: Monetary Policy



Money Demand

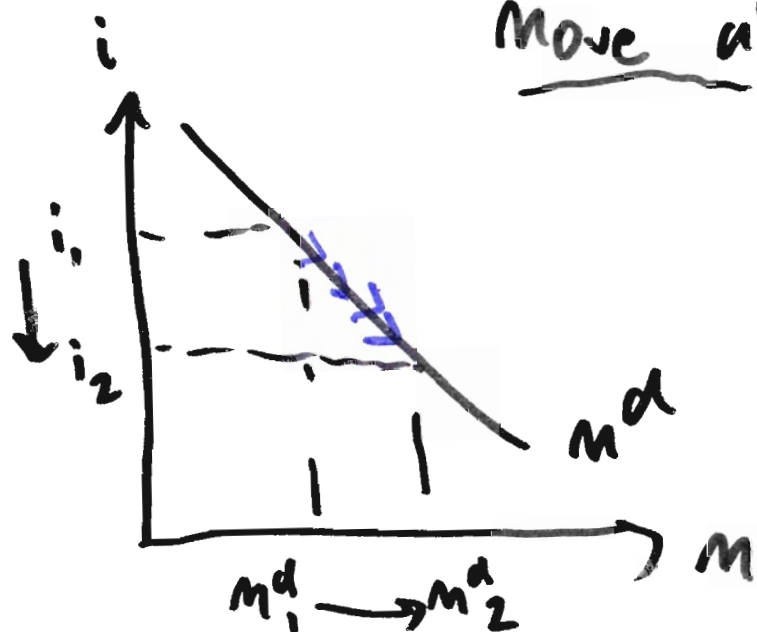
- ① for transaction (every transaction)
- ② Precautionary use
- ③ For asset investment or for speculative activity

$$M^d = M_t^d + M_P^d + M_S^d$$

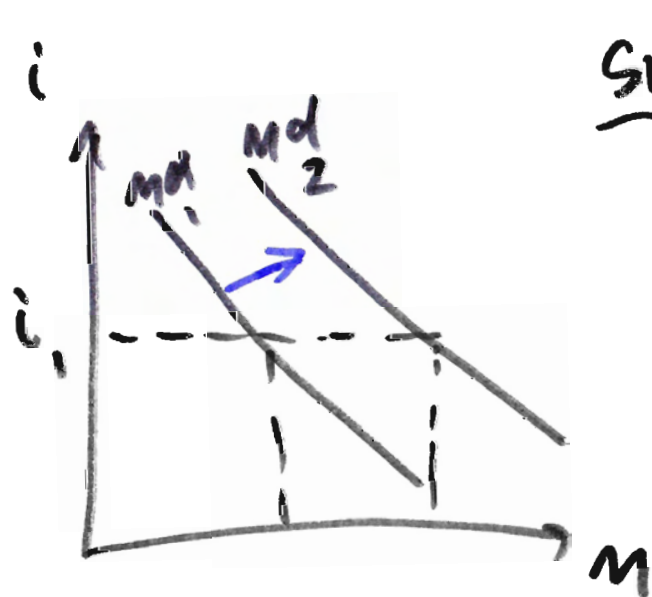
$$= f(i, Y, P)$$

$(-)$ $(+)$ $(+)$

Move along the curve



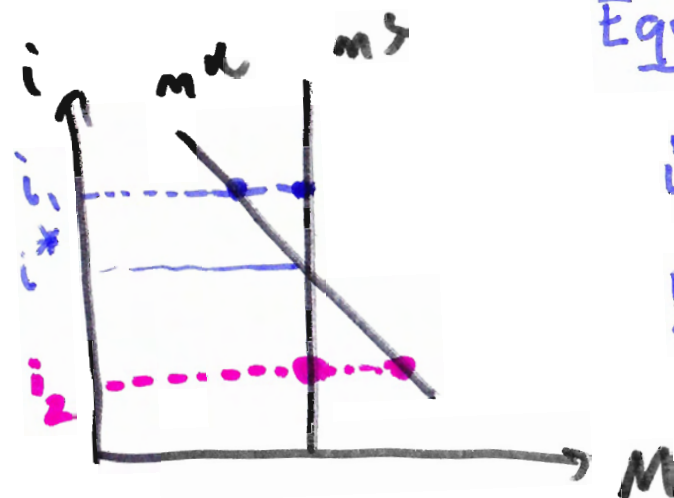
$$\underline{i} \uparrow \rightarrow \underline{m^d} \downarrow$$



Shift the curve (other than i)
(e.g. Y, P)

$$\text{at } i_1 : \text{if } \underline{Y} \uparrow \rightarrow \underline{m^d} \uparrow$$

Equilibrium in Money Market



i^* = equilibrium interest rate

Bond is the only alternative asset.

At i_1 : At

this point $M^S > M^d$ = Excess supply of money $\nearrow$ ES

$\Rightarrow$ People will use ES to buy bonds

$\Rightarrow$ Bond price $\uparrow \Rightarrow$ Interest rate $\downarrow$

$$M^d = M^S$$

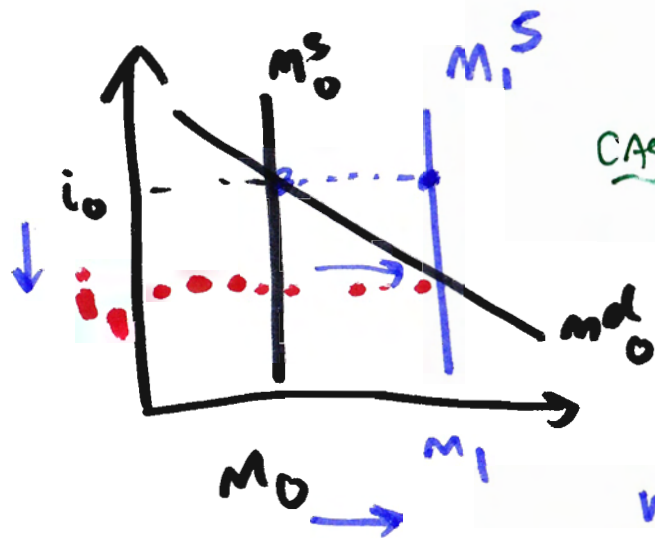
At i_2 : At this point $M^d > M^S$ = Excess demand for money

$\Rightarrow$ People will $\Rightarrow$ Sell bond $\Rightarrow$ Bond price $\downarrow \Rightarrow$ Interest rate $\uparrow$

$$M^d = M^S \text{ where } i = i^*$$

find the way to obtain cash

Adjustment in Money Market



CASE 1: Shifting M^S

At i_0 with monetary expansion ($M_0^S \rightarrow M_1^S$)
(ES)

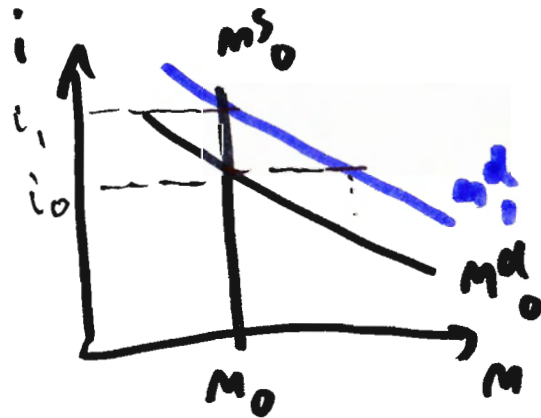
$M_1^S > M_0^d \rightarrow$ Excess Supply of Money

With ES of money $\rightarrow$ People $\rightarrow$ Price of $\rightarrow$ Interest rate $\downarrow$
buy Bond $\uparrow$ Bond $\uparrow$ rate $\downarrow$

When $M^S \uparrow \rightarrow i \downarrow$ until $M^S = M^d$

$\nwarrow \nearrow$
PV of Bond

CASE 2: Shifting M^d



At i_0 with $M^d \uparrow \rightarrow$ Excess Money demand

$M_0^d > M_0^S$

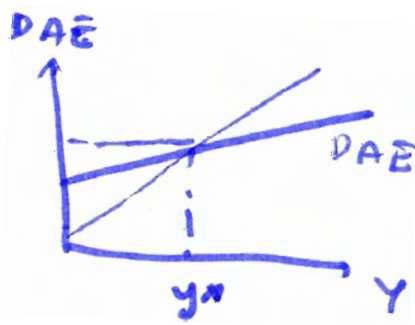
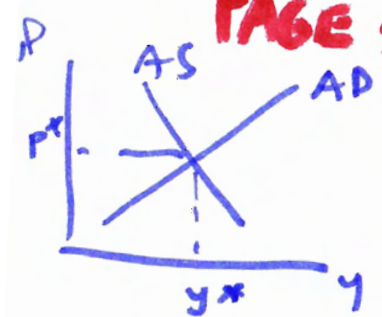
Excess Money Demand $\rightarrow$

People sell bond to obtain money

$\rightarrow$ Bond Price $\downarrow \rightarrow$ Interest rate $\uparrow$

$\nwarrow \nearrow$
PV of Bond

When $M^d \uparrow \rightarrow i \uparrow$ until $M^S = M^d$



AS-AD : $K, L, Tech \rightarrow AS$

$C, I, G, X, M \rightarrow AD$

DAE :

$C, I, G, X, M \leftrightarrow Y$

Money Mkt :

$M^S \rightarrow \text{Central Bank's 5 tools}$

$M^d : Y, i, P$

Fiscal Policy

$\Delta G \rightarrow AS-AD : Y \rightarrow M^d \rightarrow i \rightarrow I$

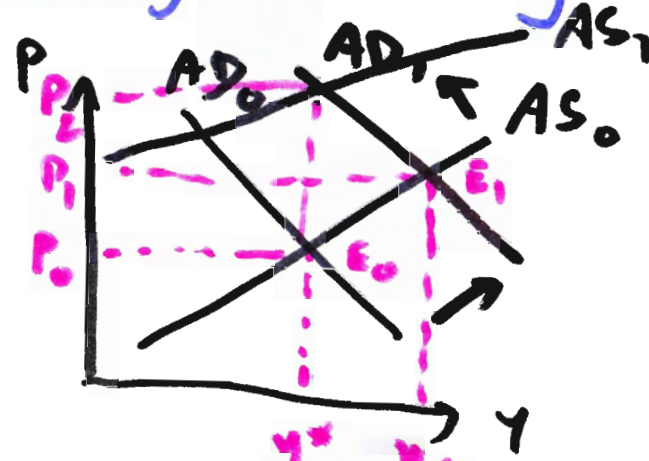
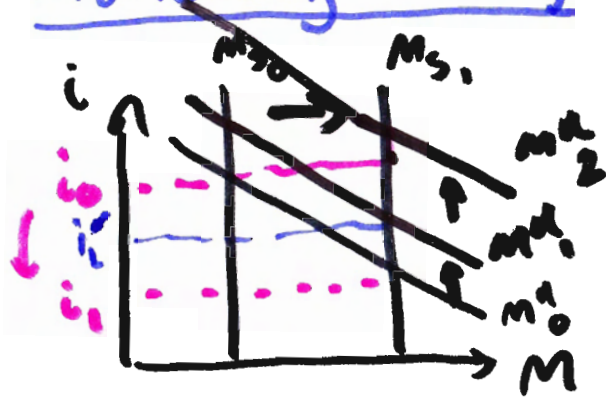
Diagram showing the flow of fiscal policy: ΔG shifts the AD curve, leading to a new equilibrium output Y . This output Y determines the money demand M^d in the money market, which then determines the interest rate i . The interest rate i determines investment I , which in turn determines the new output Y . The AD curve is labeled AD , the money market is labeled $Money\ Mkt$, and the investment curve is labeled I .

Monetary Policy :

$\Delta M^S \rightarrow i \rightarrow I \rightarrow Y$

Diagram showing the flow of monetary policy: A change in the money supply ΔM^S shifts the MS curve in the money market, leading to a new equilibrium interest rate i . This interest rate i determines investment I , which in turn determines the new output Y . The money market is labeled $Money\ Mkt$ and the investment curve is labeled I .

Monetary Policy : Neutrality of Money



PAGE 6 Main Argument

When $I \uparrow$ there are new machine & equipment, y^* is changed

$I \uparrow \rightarrow y^*$

Step 1: $MS_0 \rightarrow MS_1$

Money Mkt: $MS \uparrow \rightarrow i \downarrow \Rightarrow i_0 \rightarrow i_1$

Step 2: $i \rightarrow I$

Money Mkt & AD: $i \downarrow \rightarrow I \uparrow$

$I \uparrow \rightarrow DA \uparrow$
(or $AD \uparrow$) $\rightarrow y^* \rightarrow y'$
 $\rightarrow P_0 \rightarrow P_1$

Step 4: since $y' > y^* \rightarrow AS$ shifts
 $AS_0 \rightarrow AS_1 \rightarrow$ to reach the y^*

so, $y \downarrow \rightarrow y_1 \rightarrow y^*$ and $P \uparrow \rightarrow P_1 \rightarrow P_2$

Step 3: $y \uparrow \rightarrow M_d$
 $P \uparrow \rightarrow$

with $y \uparrow$ (from $y^* \rightarrow y_1$) and $P \uparrow \rightarrow M_d^0 \rightarrow M_d^1$
 $M_d \uparrow \rightarrow i \uparrow : i_1 \rightarrow i_1'$

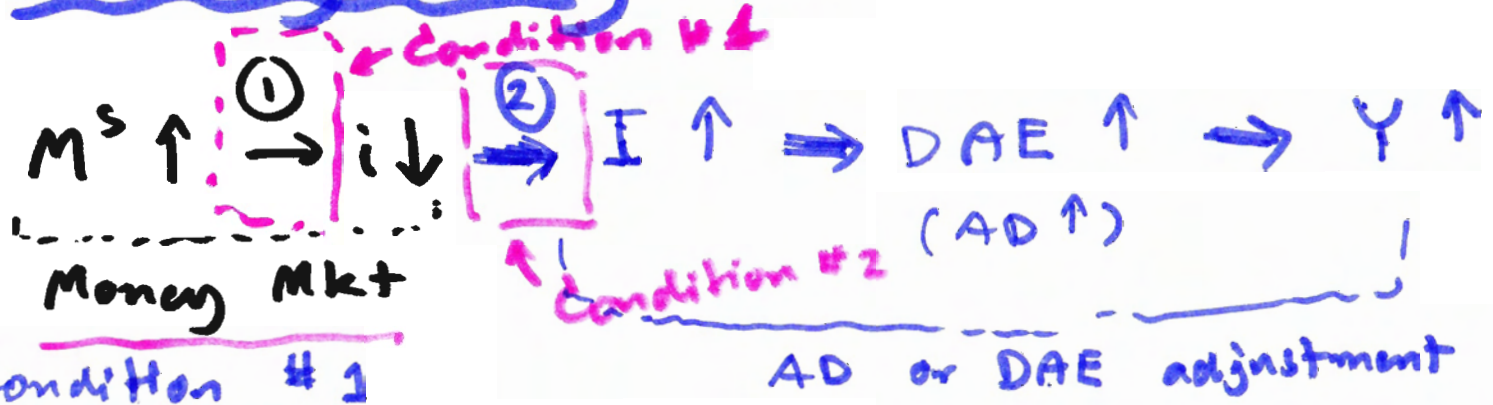
Step 5: $P \uparrow$ (from $P_1 \rightarrow P_2$)

with $P \uparrow \rightarrow M_d \uparrow : M_d^1 \rightarrow M_d^2 \Rightarrow i \uparrow \Rightarrow$ from i_1' to i_0

Eventually: $y = y^*$
 $P = P_2$
 $i = i_0$

Effectiveness of Fiscal & Monetary Policies

Monetary Policy : Degree of Effectiveness

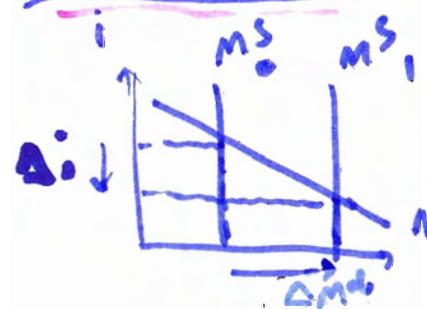


Effectiveness depends on:

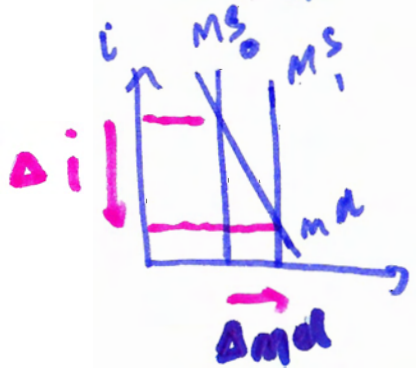
① $\frac{\Delta M^d}{\Delta i}$ (Inverse of Slope of M^d curve)

② $\frac{\Delta I}{\Delta i}$

Condition # 1



$\frac{\Delta M^d}{\Delta i}$ is high
 ↳ small impact of ΔM^s on Δi



$\frac{\Delta M^d}{\Delta i}$ is small
 ↳ big impact of ΔM^s on Δi

Condition # 2

$\frac{\Delta I}{\Delta i}$: If $\frac{\Delta I}{\Delta i}$ is big → Large impact on ΔY

We prefer:

small $\frac{\Delta M^d}{\Delta i}$ and big $\frac{\Delta I}{\Delta i}$

Effectiveness of Fiscal Policy

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3 important conditions

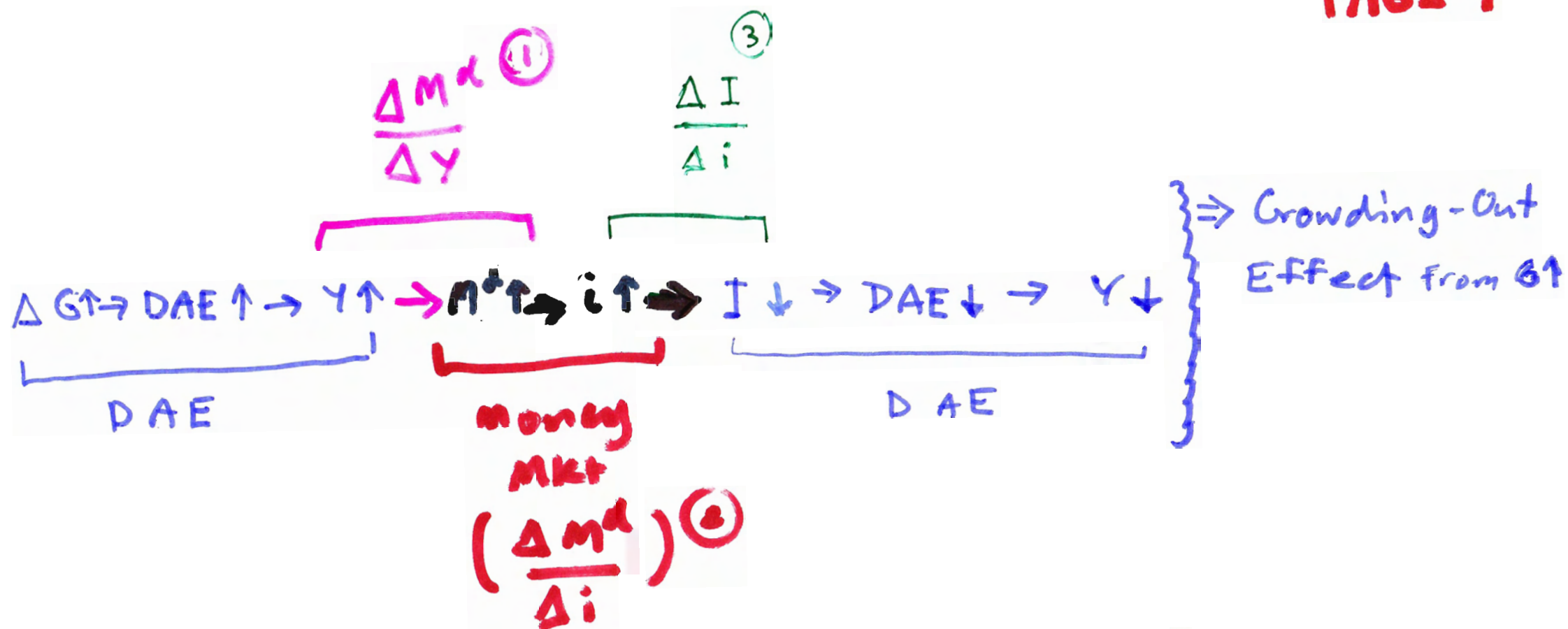
③ $\frac{\Delta I}{\Delta i} : \Delta i \text{ (Interest rate)} \rightarrow \Delta I \text{ (Investment)}$

(Linkage : Money Mkt $\rightarrow$ AD)
or DAE

② $\frac{\Delta M^d}{\Delta i} : \Delta i \text{ (Interest rate)} \rightarrow \Delta M^d \text{ (Money demand)}$
(Adjustment of money mkt)
 $\rightarrow$ Slope of Money Demand

① $\frac{\Delta M^d}{\Delta Y} : \Delta Y \text{ (Output or GDP)} \rightarrow \Delta M^d \text{ (Money demand)}$

(Linkage : AD to Money demand (M^d))
or DAE



The effectiveness of fiscal expansion ($\Delta G \uparrow$) depends

on 3 conditions.

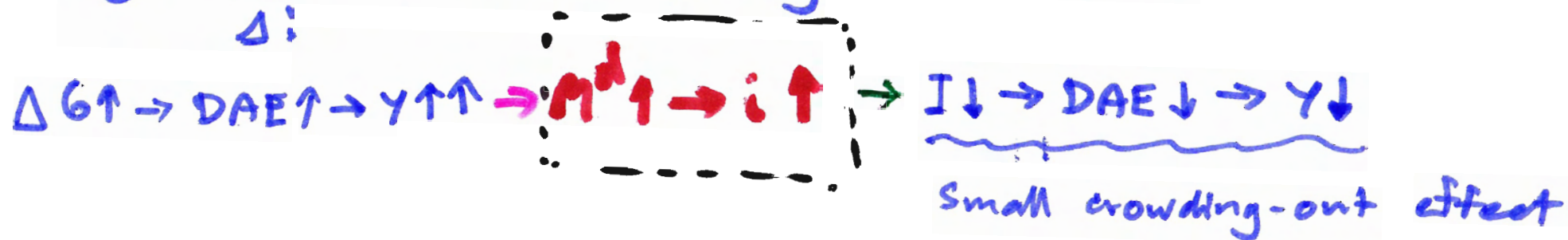
We prefer the small crowding-out effect.

Fiscal Policy's Effectiveness

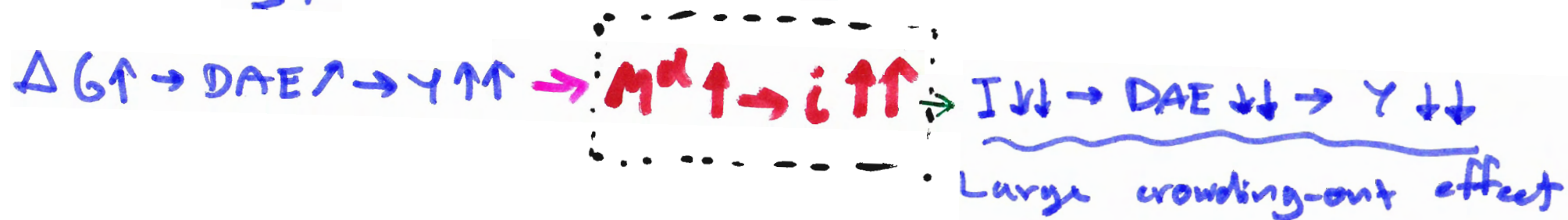
PAGE 10

Condition #2 : $\frac{\Delta M^d}{\Delta i}$

High $\frac{\Delta M^d}{\Delta i}$: fiscal policy is effective



Low $\frac{\Delta M^d}{\Delta i}$: fiscal policy is not effective



Fiscal Policy is Effectiveness

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Condition # 1 $\frac{\Delta M^d}{\Delta Y}$

High $\frac{\Delta M^d}{\Delta Y}$: $\Rightarrow$ Effectiveness is low

$\Delta G \uparrow \rightarrow DAE \uparrow \rightarrow Y \uparrow \uparrow \rightarrow M^d \uparrow \uparrow \rightarrow i \uparrow \uparrow \rightarrow I \downarrow \rightarrow DAE \downarrow \downarrow \rightarrow Y \downarrow \downarrow$

High crowding-out effect

Low $\frac{\Delta M^d}{\Delta Y}$: $\Rightarrow$ Effectiveness is high

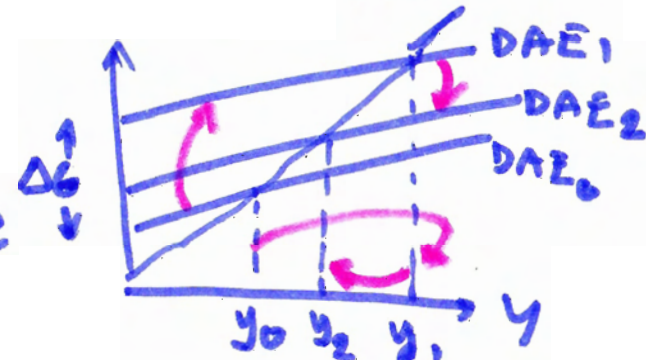
$\Delta G \uparrow \rightarrow DAE \uparrow \rightarrow Y \uparrow \uparrow \rightarrow M^d \uparrow \rightarrow i \uparrow \rightarrow I \downarrow \rightarrow DAE \downarrow \rightarrow Y \downarrow$

Low crowding-out effect

Fiscal Policy's Effectiveness

Condition #3: $\frac{\Delta I}{\Delta i}$

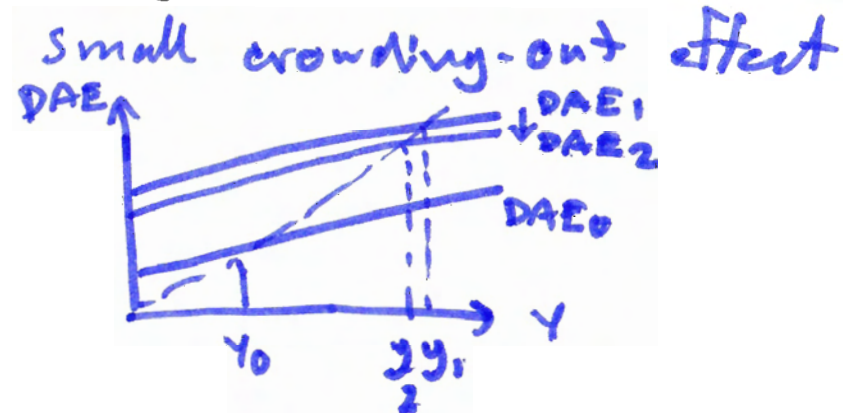
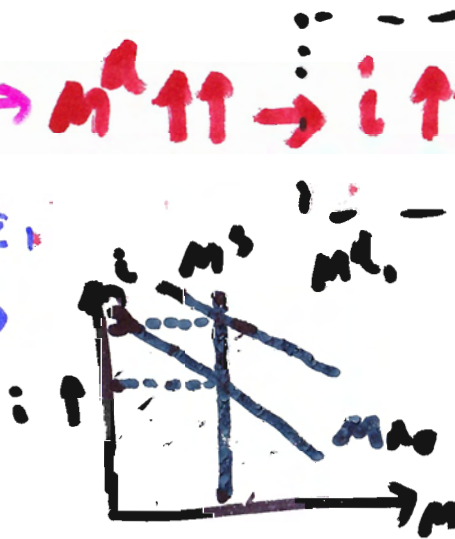
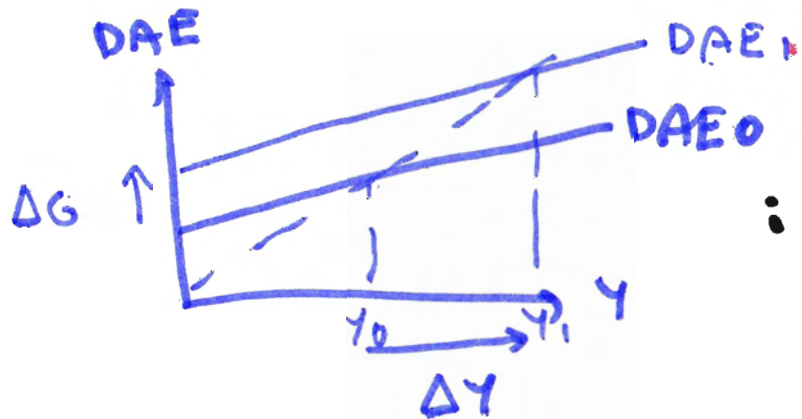
High $\frac{\Delta I}{\Delta i}$: Fiscal policy is not effective



$\Delta G \uparrow \rightarrow DAE \uparrow \rightarrow Y \uparrow \uparrow \rightarrow M^d \uparrow \uparrow \rightarrow i \uparrow \uparrow \rightarrow I \downarrow \rightarrow DAE \downarrow \rightarrow Y \downarrow$
 Large crowding-out effect

Low $\frac{\Delta I}{\Delta i}$: Fiscal policy is effective

$\Delta G \uparrow \rightarrow DAE \uparrow \rightarrow Y \uparrow \uparrow \rightarrow M^d \uparrow \uparrow \rightarrow i \uparrow \uparrow \rightarrow I \downarrow \rightarrow DAE \downarrow \rightarrow Y \downarrow$



SUMMARY

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Preferred Conditions
for
Fiscal Policy
Low

Preferred Conditions
for
Monetary Policy
-

① $\frac{\Delta M^d}{\Delta Y}$

② $\frac{\Delta M^d}{\Delta i}$

③ $\frac{\Delta I}{\Delta i}$

High

Low

Low

High