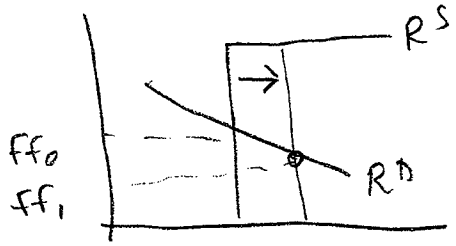
Economics 470/570
Midterm 2
Fall 2007

Definitions

1. Velocity is defined as $\frac{\text{Nominal GDP}}{\text{money supply}} = \frac{PY}{M}$. It measures how fast money circulates in the economy
2. The equation of exchange is $MV \equiv PY$, where V is defined as in definition 1. It is, therefore, an identity
3. Investment is the amount firms spend on goods and services, plus Consumer spending on new homes, plus any change in inventories.
4. For our simplest model, the expenditure Multiplier is $\frac{1}{1-mpc}$. It tells us, for a given change in expenditures, how much output will change, i.e. $\Delta Y = (\text{mult})(\Delta \text{exp})$.
5. The IS curve is all pairs (i, Y) that are equilibrium values in the goods market
6. Crowding out refers to a rise in the interest rate brought about by an increase in the deficit ($G\uparrow$ a $T\downarrow$). When, say, $G\uparrow$, then $i\uparrow \rightarrow I\downarrow$ and $NX\downarrow$. So $Y = C + \underset{\downarrow}{I} + \underset{\uparrow}{G} + \underset{\downarrow}{NX}$ and G "Crowds out" I and NX.

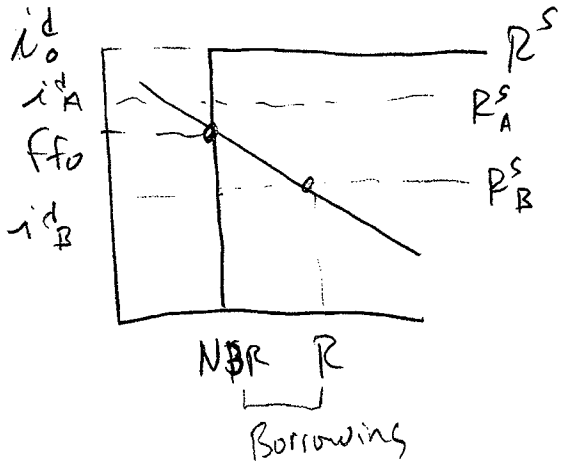
Short Answer

(1) (a)



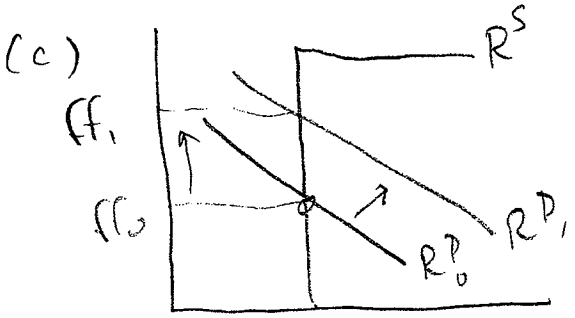
open MKt open to buy bonds → R^S↑ and ff↓

(b)



Two possibilities. When i^d↓ to i^d_A, No change in ff since still above old equil value of ff. When i^d↓ to i^d_B, discount window rate below the old ff → Some banks borrow from Fed.

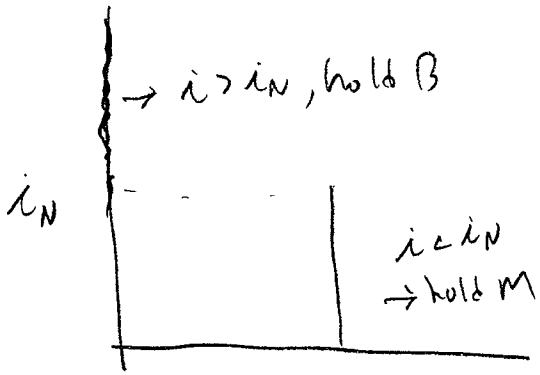
(c)



When required reserves go up, demand for reserves increases, and price of reserves, i.e. ff-rate, goes up as well

(2) Keynes believed that people have a Normal or long-run interest rate, call it i_N. When $i > i_N$, people expect $i \downarrow$ in the future, so they also expect $P_{Bonds} \uparrow$. Thus, bonds are a good investment and people will put there speculative balances into financial assets. When $i < i_N$, the opposite occurs. People expect $i \uparrow$, so they also expect $P_{Bonds} \downarrow$, so they will hold money, not bonds

Expectations are held with certainty, i.e. always $i > i_N$, 100% sure it in future, so, investor is either all the way into Bond mkt, or all the way out [To get ↓ Sloping Curve, Aggregate across indiv., but not needed to Answer this Question].



(2)

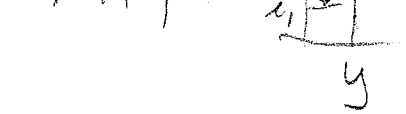
(3) In a recession, firms have lots of idle capacity (unused capital). In that situation, a fall in the interest rate is unlikely to generate much investment. Why invest if you can't use all the capital you already have? In addition, households, also face high unemployment and poor future prospects, would be less likely to buy new houses.

Near full employment, it's different. Firms are running at capacity and changes in costs (the i-rate) can change investment, e.g. $i\downarrow \rightarrow$ projects to be expected to be profitable $\rightarrow$ Investment $\uparrow$.

Same with households. With more confidence about the future and high employment, $i\downarrow$ is more likely to generate new home sales.

The IS curve is vertical because

$i\downarrow \rightarrow$ no change in Investment $\rightarrow$ no change in Y

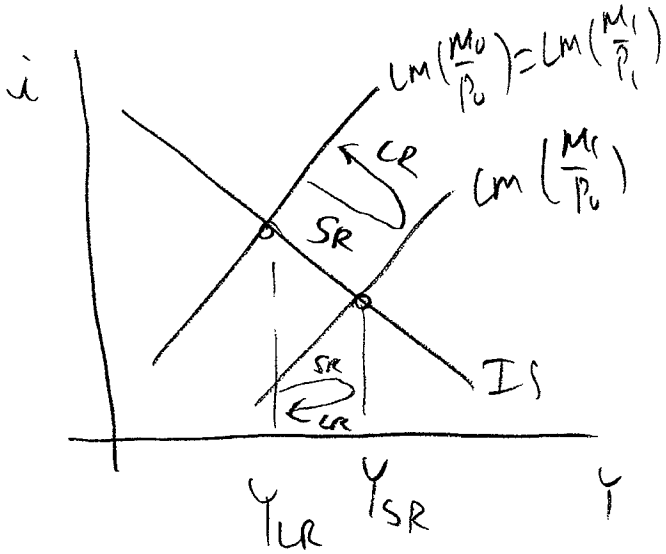


(4) Neither influences output in the LR, but both have SR impacts. The mechanism that produces the LR result is changes in the P-level. Whenever $Y > Y_N$ (Natural rate) $\rightarrow P\uparrow$ and whenever $Y < Y_N \rightarrow P\downarrow$

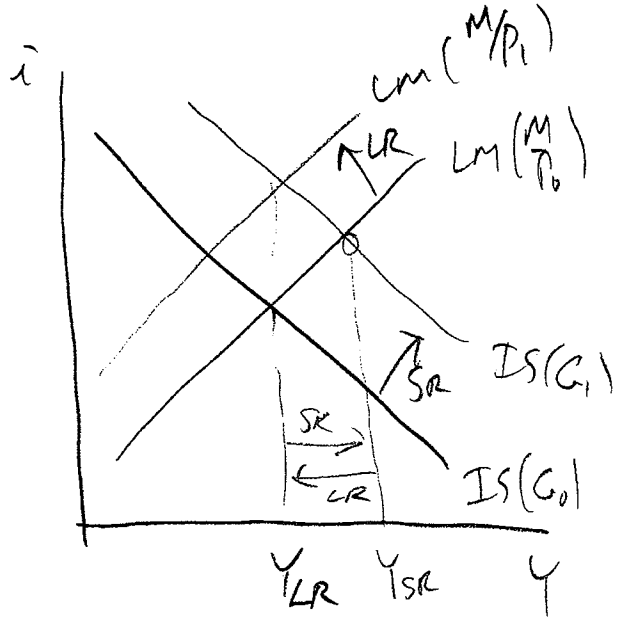
Money Supply

$M\uparrow \rightarrow Y\uparrow$ so long as P constant. Move to Y_{SR}. But, at Y_{SR}, $Y_{SR} > Y_N \rightarrow P\uparrow \rightarrow \frac{M}{P}\downarrow$

$\rightarrow$ LM shifts back where it started, NO Change in Y in LR



$G\uparrow \rightarrow Y\uparrow$ in SR. But when $P\uparrow$ due to $Y > Y_N$ ($Y_N \equiv Y_{LR}$), $\frac{M}{P}\downarrow \rightarrow$ LM shifts back $\uparrow \rightarrow Y$ back where it started in LR.

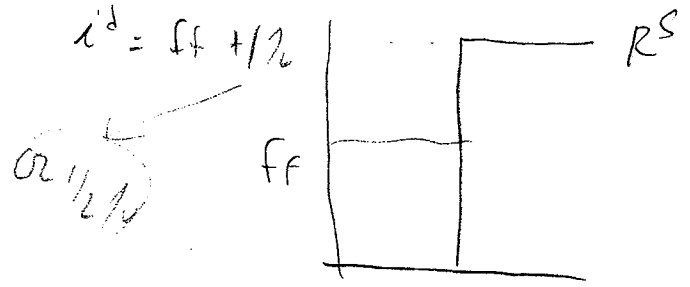


Essay Questions

(1) Lender of Last resort refers to the fact that the discount window stands ready to lend banks money even when nobody else is willing to do so (ex ff-market, etc.) It is a place where a bank in trouble (short of reserves) can turn for help. Without this, during times of financial crises, we would likely see more banks fail due to lack of liquidity.

The discount rate (the rate the Fed charges on these loans) is generally 1% above the ff-rate, though currently it is only ½%.

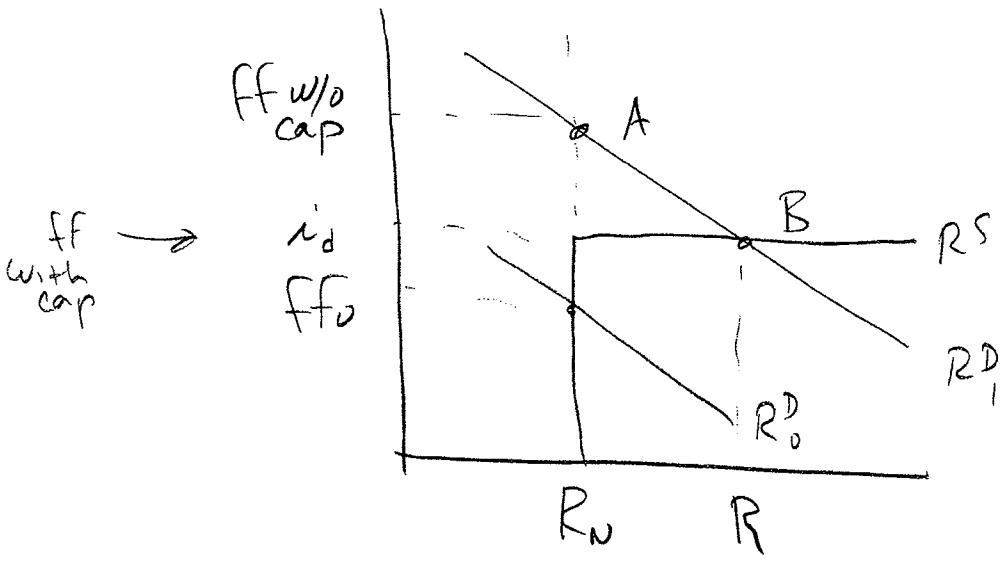
The Fed will loan all banks want to borrow at i^d, so, R^S horiz at i^d.



This caps the ff rate at i^d. To see this, start at equilibrium

and let R^S fall or R^D ↑. Then

(7)



Here, R^D↑, but R^S↓ gives same result.

Without the discount window, ff ↑ to point A

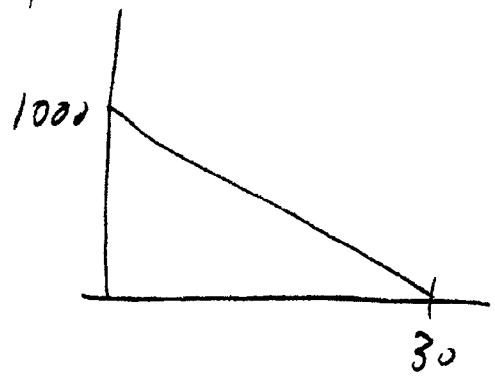
With a discount window, go to point B instead

and ff does not rise above i_d. So,

when R^D↑ substantially, ff capped at i_d,

(2) The short answer is: the i-rate is opportunity cost of money. As i-rate ↑, cost of holding money for transactions ↑ → hold less. More detail:

Suppose an indiv. is paid $1,000/month (in "Bonds" to make it simpler) and spends it all at a constant rate over the month. Graphically



In this case:

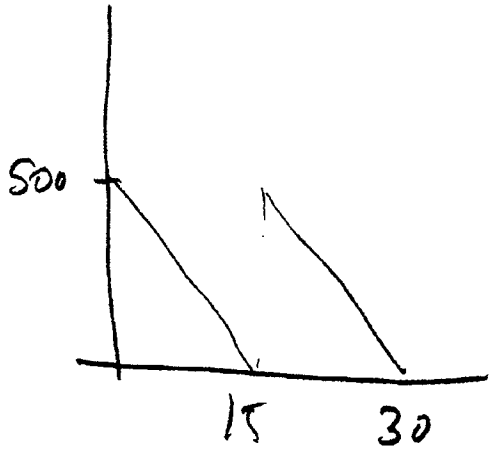
Avg $\frac{M^d}{P} = 500$

Avg Bonds held = 0

Since paid in Bonds, this requires 1 trip to the bank

What if you take 2 trips to take out $500 on 1st, 15th?

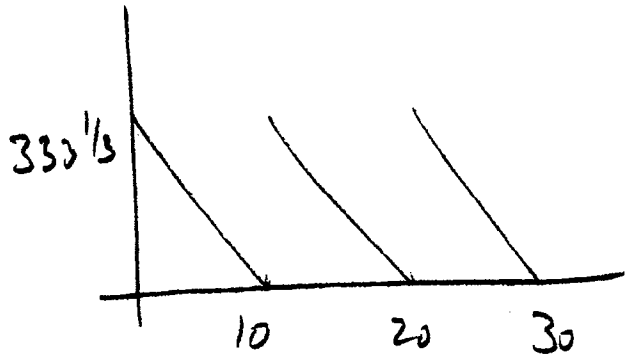
Then



Avg $\frac{\text{Mtg}}{\text{P}}$ = 250

Avg $\frac{\text{Bonds}}{\text{held}}$ = 250

Try 3 Trips



Avg $\frac{\text{Mtg}}{\text{P}}$ = $167\frac{2}{3}$

Avg Bonds = $333\frac{1}{3}$

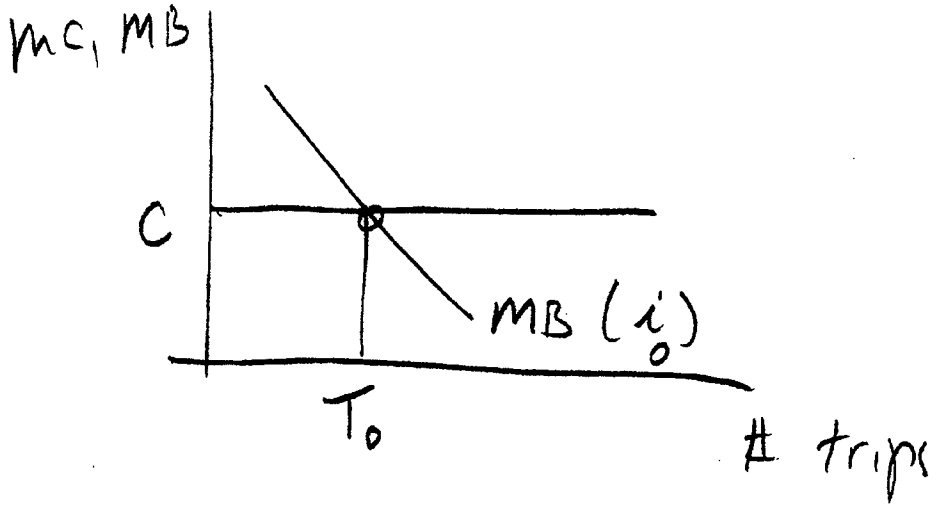
Summarize:

[cont]

Summarize:

	$\frac{MP}{P}$	BMUs	Let i-rate be 10%
1 Trip	500	0	
2 Trip	250	250	> MB = 25.00
3 Trip	$166\frac{2}{3}$	$333\frac{1}{3}$	> MB = 8.33

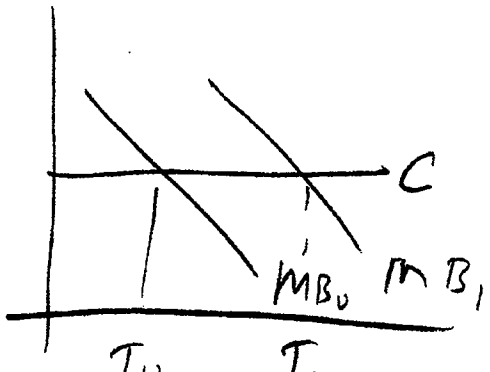
So, MB ↓ as trips ↑. Let cost of a trip be constant (C)



If i-rate is i_0, make T_0 trips

[cont.]

When $i \uparrow$, MB $\uparrow$ (more interest)



$\rightarrow$ Trips $\uparrow$.

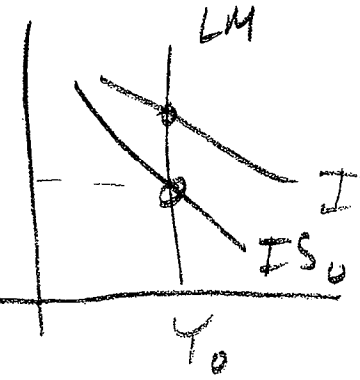
From table, (Summary)

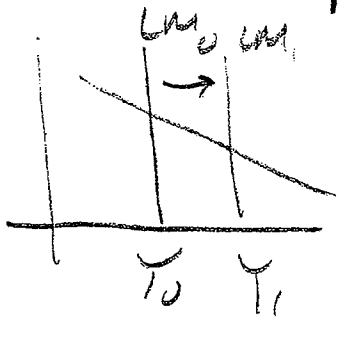
Trips $\uparrow \rightarrow \left(\frac{M^d}{P}\right)_{Trans} \downarrow$

So, $i \uparrow \rightarrow \left(\frac{M^d}{P}\right)_{Trans} \downarrow$.

Important because it overcame objections to including i-rate in $\frac{M^d}{P}$ function. Keynes said Spec d depends upon i-rate, but, resisted. This showed trans d depends upon i, ended the controversy

(3) The extreme case of insensitivity is represented by the classical model of money demand $M = PL(Y)$ where the i-rate does not appear. Thus, in this case, the LM curve is vertical. In this case, as shown in graph, fiscal policy does not affect Y at all. Monetary Policy does:

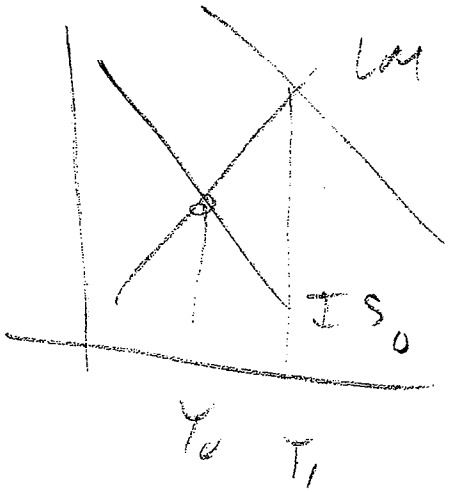




Thus, when M^d is completely insensitive to i-rate changes, M-policy is more effective than fiscal policy.

In the more usual case, as

Shown in the graph



Okay to use horiz LM here.

fiscal policy does affect, Y, Y_m, as it gets less sensitive (LM gets steep), fiscal policy is effective relative to mon. policy.

Intuitively (Summary)

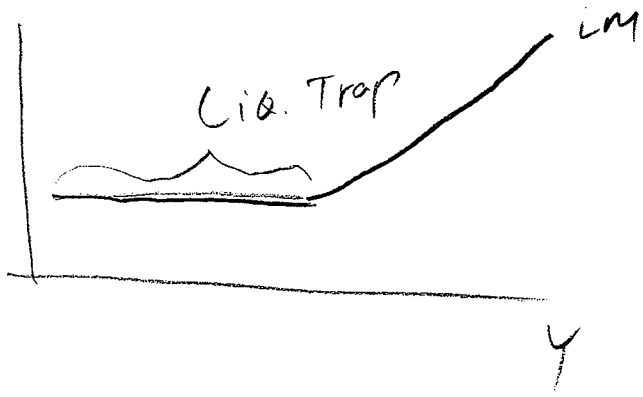
$G\uparrow \rightarrow Y\uparrow \rightarrow L\uparrow \rightarrow i\uparrow \rightarrow I^{NX}\downarrow \rightarrow Y\downarrow$

↳ when LM vertical, this is "strong" → less effective

$M\uparrow \rightarrow i\downarrow \rightarrow I^{NX}\uparrow \rightarrow Y\uparrow \rightarrow$ etc.

↳ when this is strong (LM steep), more effective.

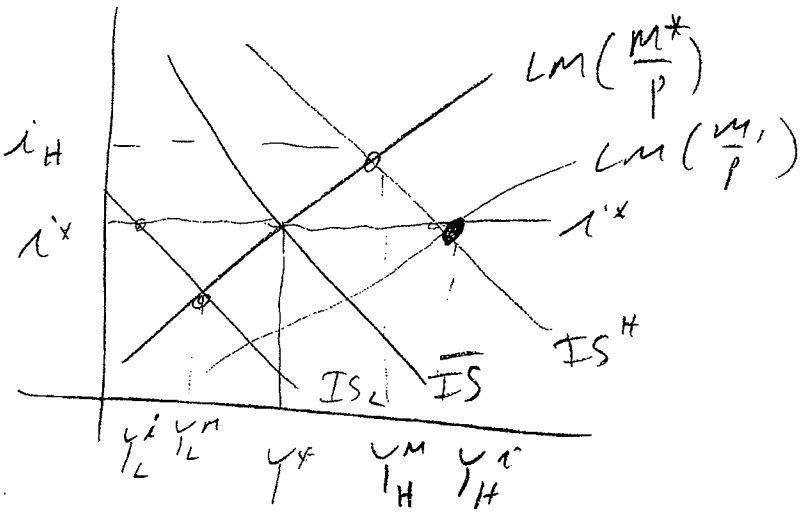
The liquidity trap case occurs when the LM curve is completely horizontal



Here, an ↑ in the Y does not change the i-rate. When Y ↑, generally M^d ↑ and B^D ↑ (Buy more of all assets). But, in Liq. trap, everyone believes that P_{Bonds} ↑ (i ↑) in future. So, D_{Bonds} does not change even though Y ↑, and P_{Bonds} does not change since $S_{Bonds} + D_{Bonds}$ unaffected by Y ↑.

④ Poole's Rules tell us whether to choose i or M as a monetary policy target according to whether there is instability in IS or LM curve.

IS unstable



Start at all targets i^*, M^*, Y^*

$\bar{IS}$ = Avg. or expected.

Suppose actual IS is higher. Then $i \uparrow$ to i^H, Still at M^*, $Y \uparrow$ to Y_H^M with money target. With i-target, shift LM Out → go to Y_H^i. Since Y_H^i further from Y^* than Y_H^M, more variance with i-rule (so choose M-rule).

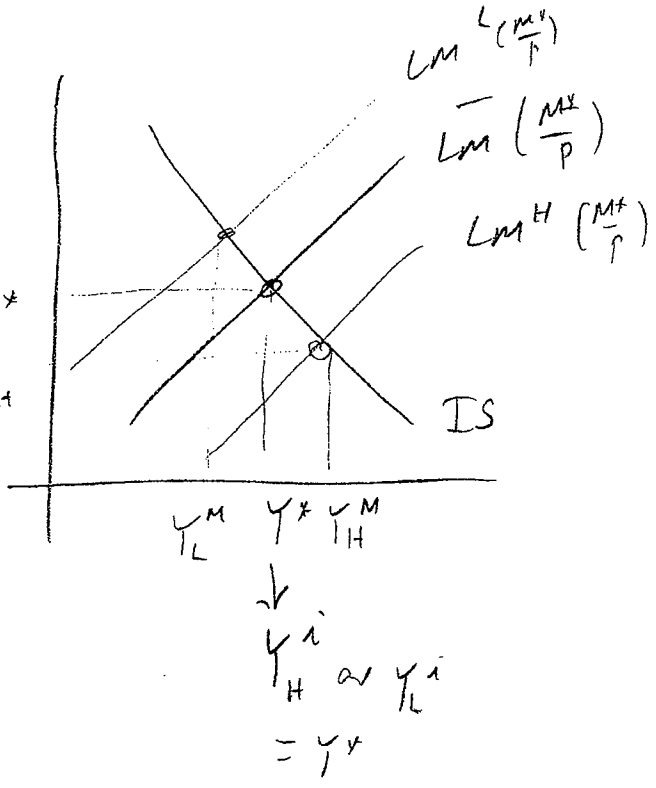
On other side, when IS too Low and get IS_L, Symmetric → also get more Variation for i-rule.

LM unstable

Here, with m-rule, move to Y_H^M, i^*

but, with i-rule, i_H

Never move from $Y^* \Rightarrow$ i-rule has smaller variance.



Since Fed uses i-rule, this model, if Correct, says they must believe LM more unstable than IS.