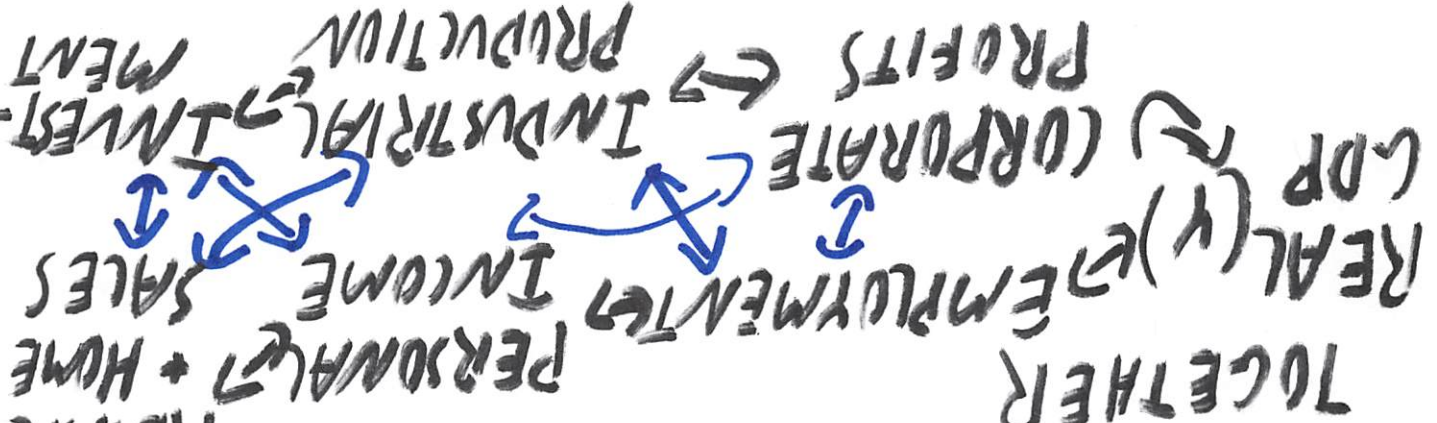


**BASIC FACTS ABOUT ECONOMIC FLUCTUATIONS**

**(H.20)**

- ① ECONOMIC FLUCTUATIONS ARE IRREGULAR + UNPREDICTABLE - BUSINESS CYCLE

② MACRO MEASURES FLUCTUATE TOGETHER



③ REAL GDP (Y)  $\leftrightarrow$  EMPLOYMENT

CLASSICAL, (MILACU, AUSTRIAN ETC...

- DATA  $\rightarrow$  TRUE IN LR, NOT ALWAYS TRUE IN SR

④  $M \uparrow \rightarrow P \uparrow$  (MONEY NEUTRALITY)

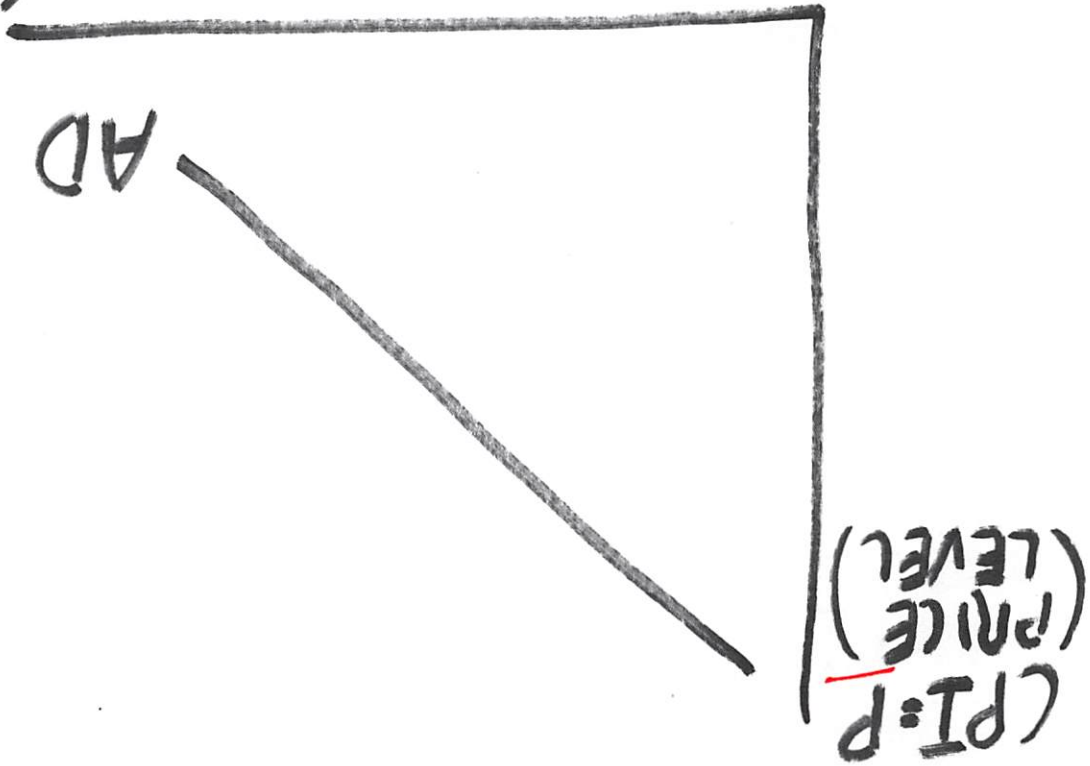
MONEY ONLY CREATES INFLATION IN LR

NOT  $\uparrow$  V,  $\uparrow$  EMPLOYMENT

- ① WEALTH EFFECT
- $P \rightarrow \downarrow \rightarrow Y \downarrow$
- LOW PRICES MAKE INCOMES GO FARTHER

WHY DOWNWARD SLOPING?

OUTPUT =  $Y$



- ADD ALL BUYERS TOGETHER
- C, G, I, NET FOREIGN BUYERS

**(H.20) AGGREGATE DEMAND (AD)**

## SHIFTING AD

- STOCK MARKET BOOM (OR HOUSING BOOM) → AD SHIFTS OUT

- SAVINGS RATE INCREASE → AD SHIFT IN (PARADOX OF THRIFT)

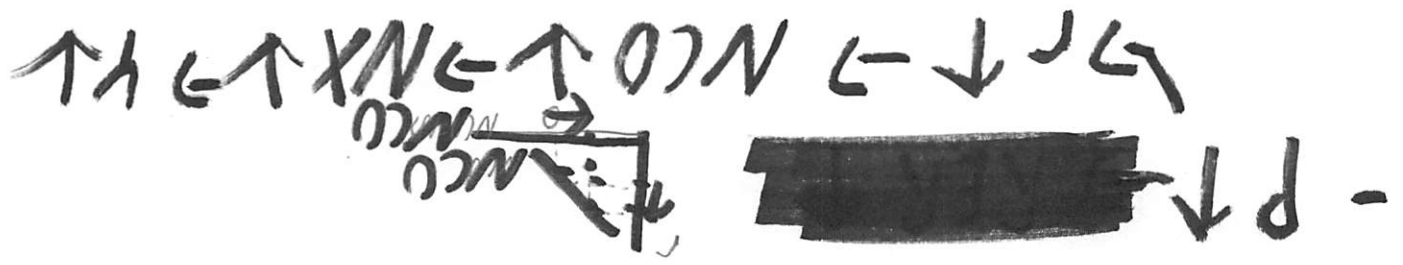
- INCREASED TAXES → AD SHIFTS IN

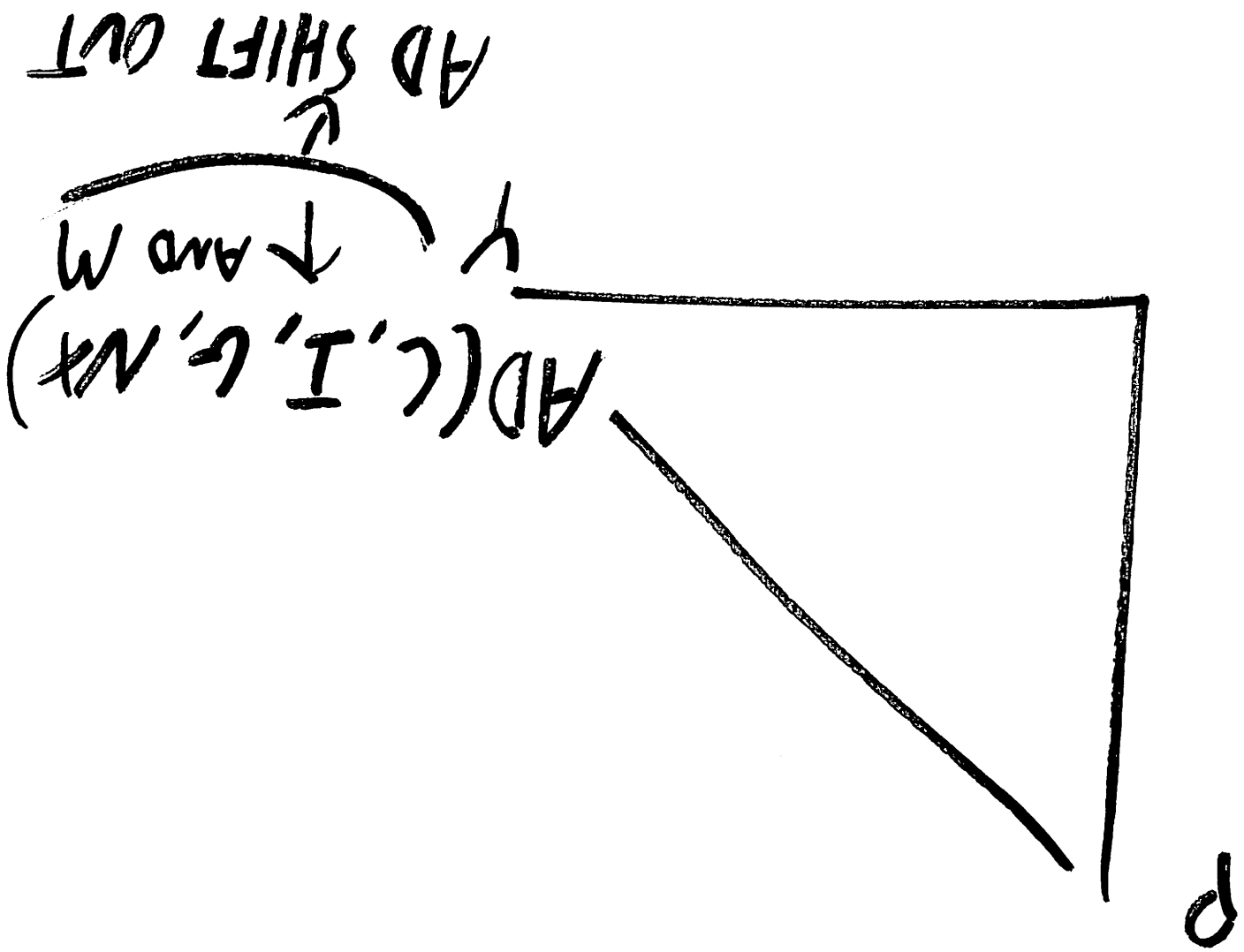
- INCREASED GOVT SPENDING → AD SHIFTS OUT

- BOOM IN FOREIGN GROWTH → AD SHIFTS OUT

③ EXCHANGE RATE EFFECT

② INTEREST RATE EFFECT

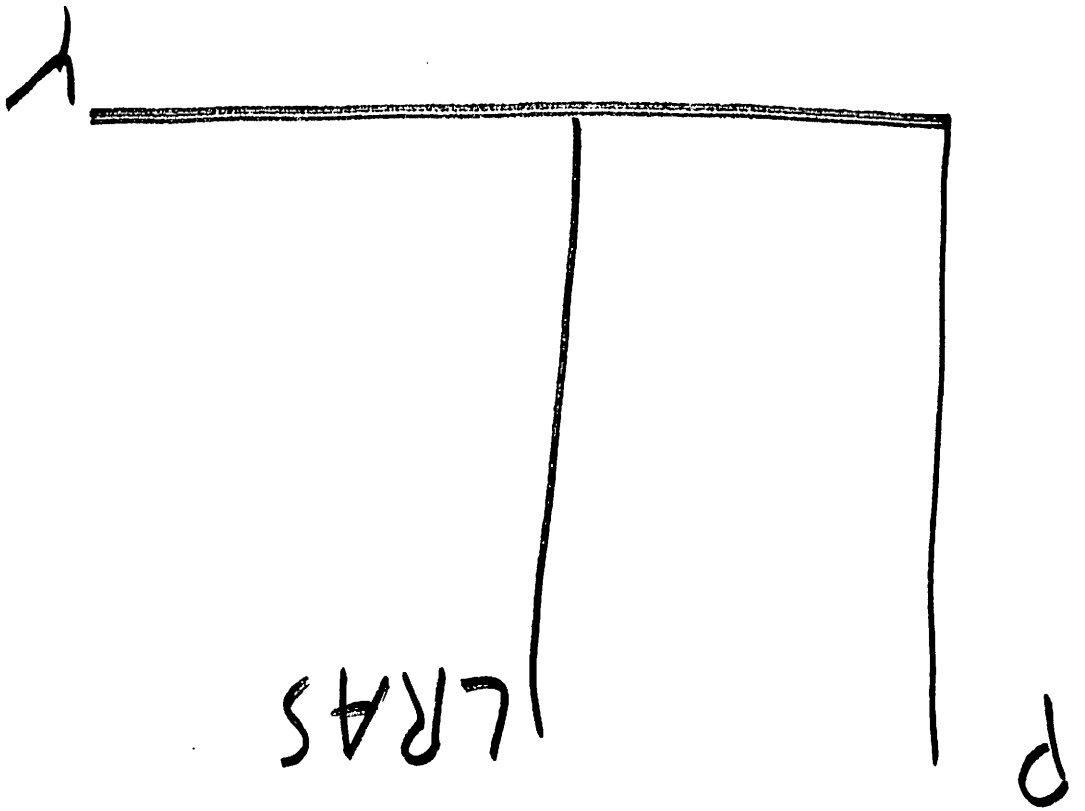




- ANY POLICY TO INCREASE  $r_1 = I$
- FED LOWERING FED FUNDS + DISCOUNT RATE, BUYING BONDS ( $M^x$ )
- INVESTMENT TAX CREDIT
- DUMP IN TECHNOLOGY
- AD SHIFTS OUT

**CH. 20** AGGREGATE SUPPLY

- LONG RUN AS (LRAS)



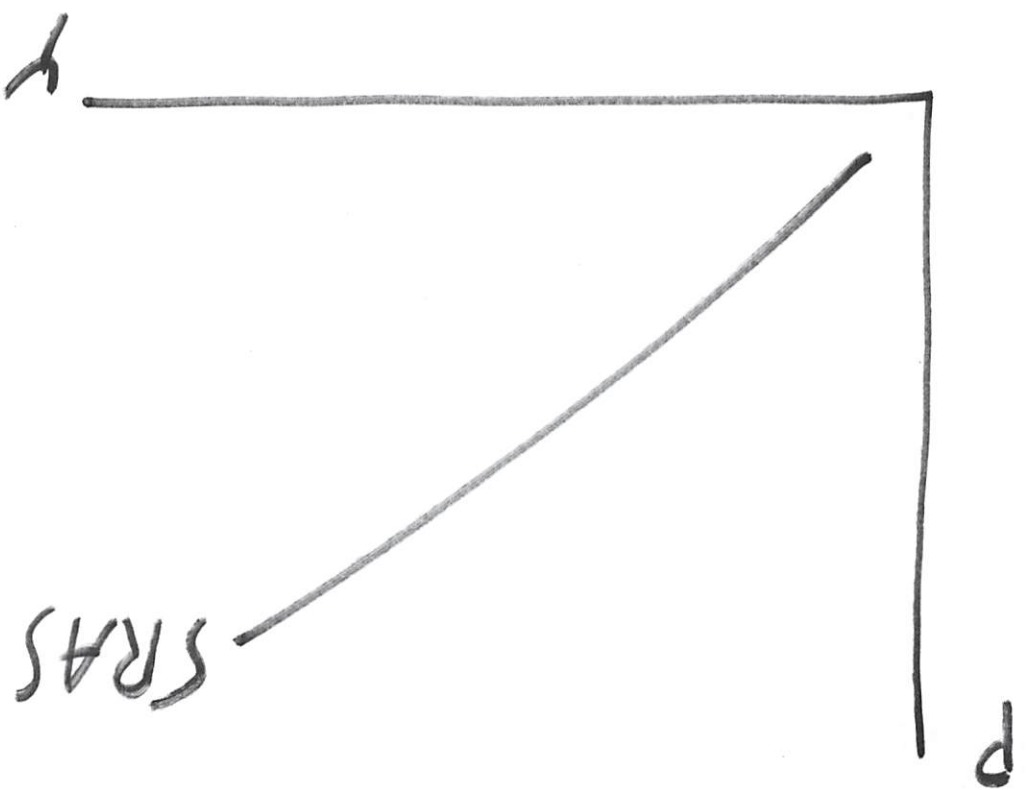
WHY Y?

$$Y = \bar{A}F(\bar{K}, \bar{L}, \bar{H}, \bar{N})$$

ONLY SHIFT LRAS IF A, K, L, H, N CHANGE



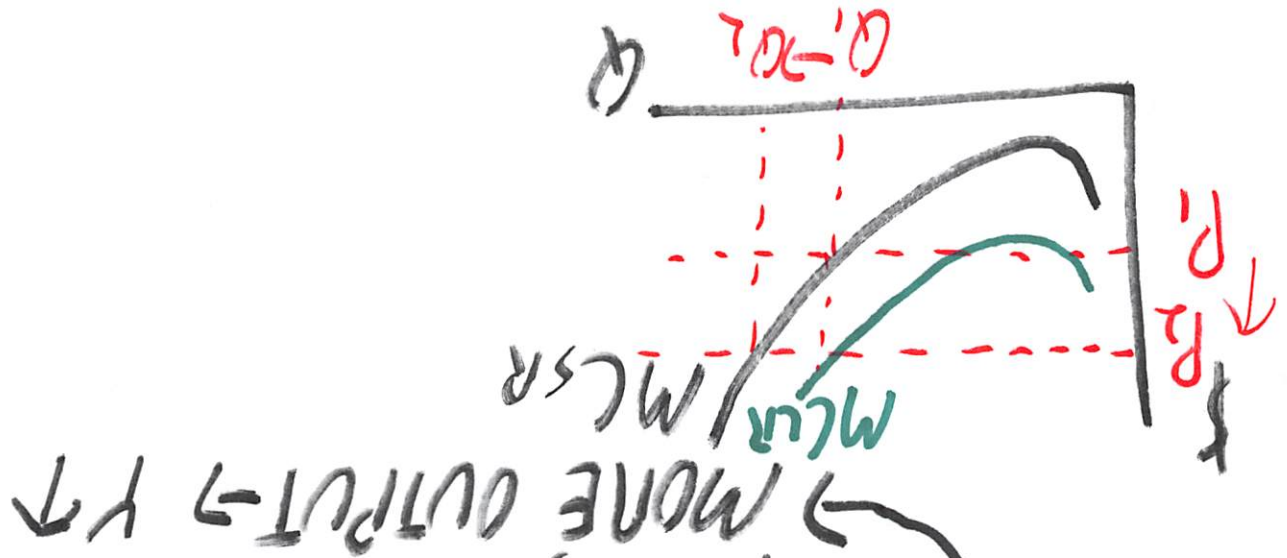
- SHORT RUN AS (SRAS)



WHY SRAS UPWARD SLOPING?

① STICKY WAGES

P STUFF  $\rightarrow$  IF WAGES (OR MC) ARE  
FIXED  $\rightarrow$  MORE OUTPUT  $\rightarrow Y \uparrow$



CHANGES IN  $A, L, K, H, C, N$

$A, L, K, H, C, N \rightarrow$  EXPECTATIONS OF

WHAT SHIFTS SRAS?

$\rightarrow$  STOCKPILE  $\rightarrow$   $\uparrow$

INDUSTRY

IMPACTED BUT NOT

$\rightarrow$  BELIEVE SOME FIRMS ARE

AD  $\rightarrow$   $\rightarrow$  SOME FIRMS RAISE PRICES (PT)

③ MISPERCEPTIONS

$\rightarrow$  AVERAGE P  $\rightarrow$   $\uparrow$

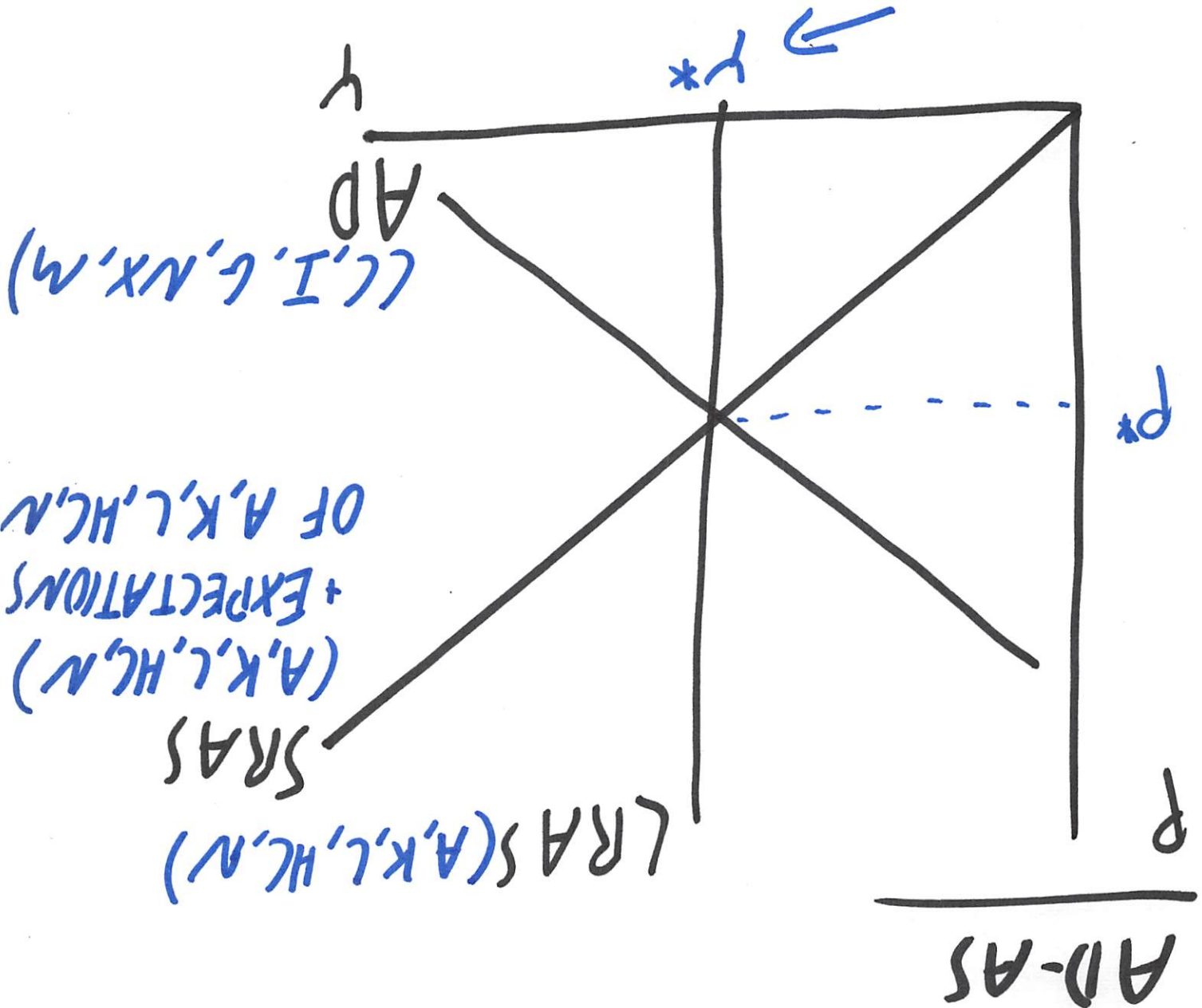
ALL FIRMS

PRICES BUT NOT

MORE DEMAND  $\rightarrow$  SOME FIRMS RAISE

② STICKY PRICES (MENU COSTS)

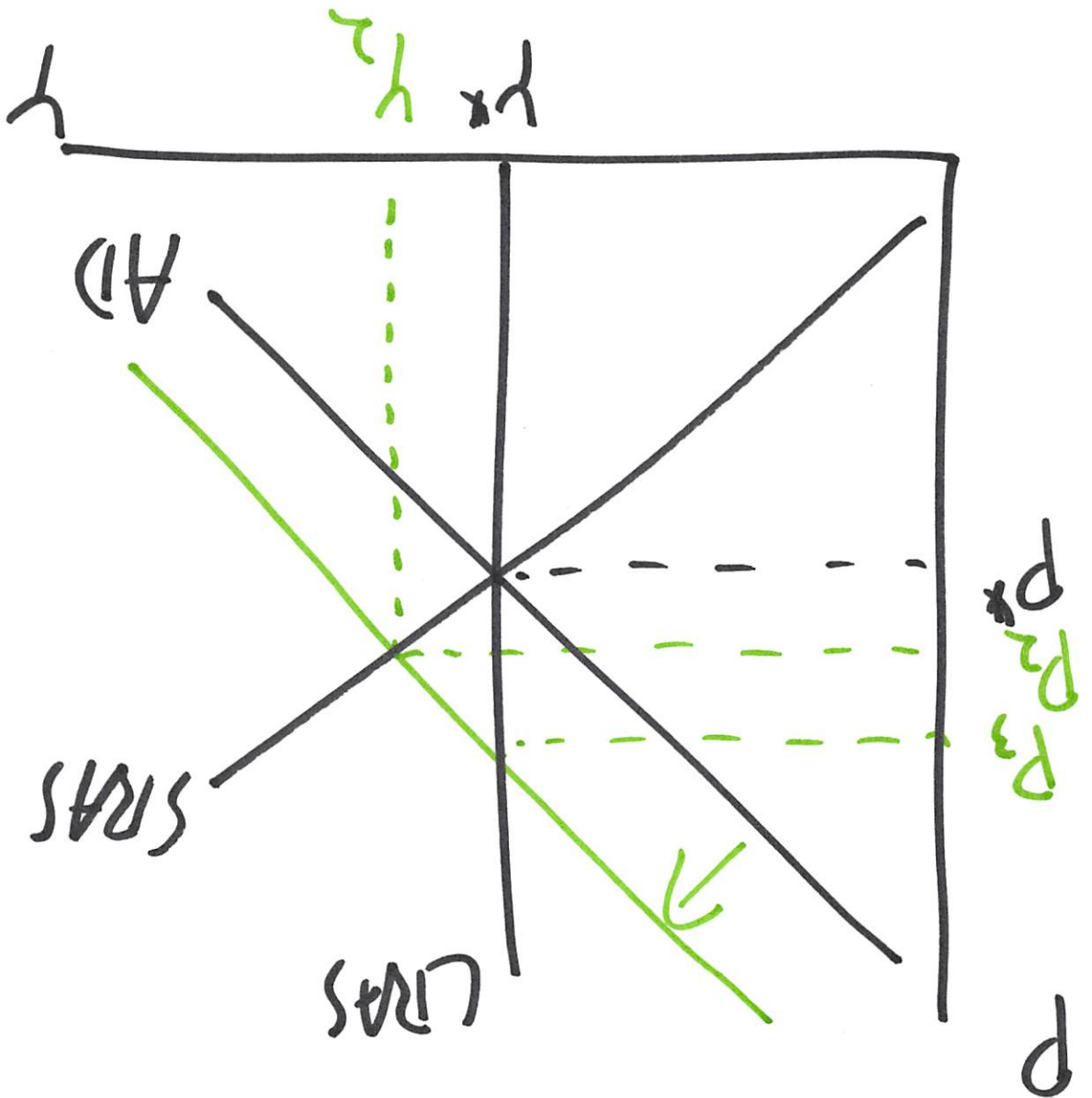
NATURAL RATE OF OUTPUT  
ENFORCED BY LRAS



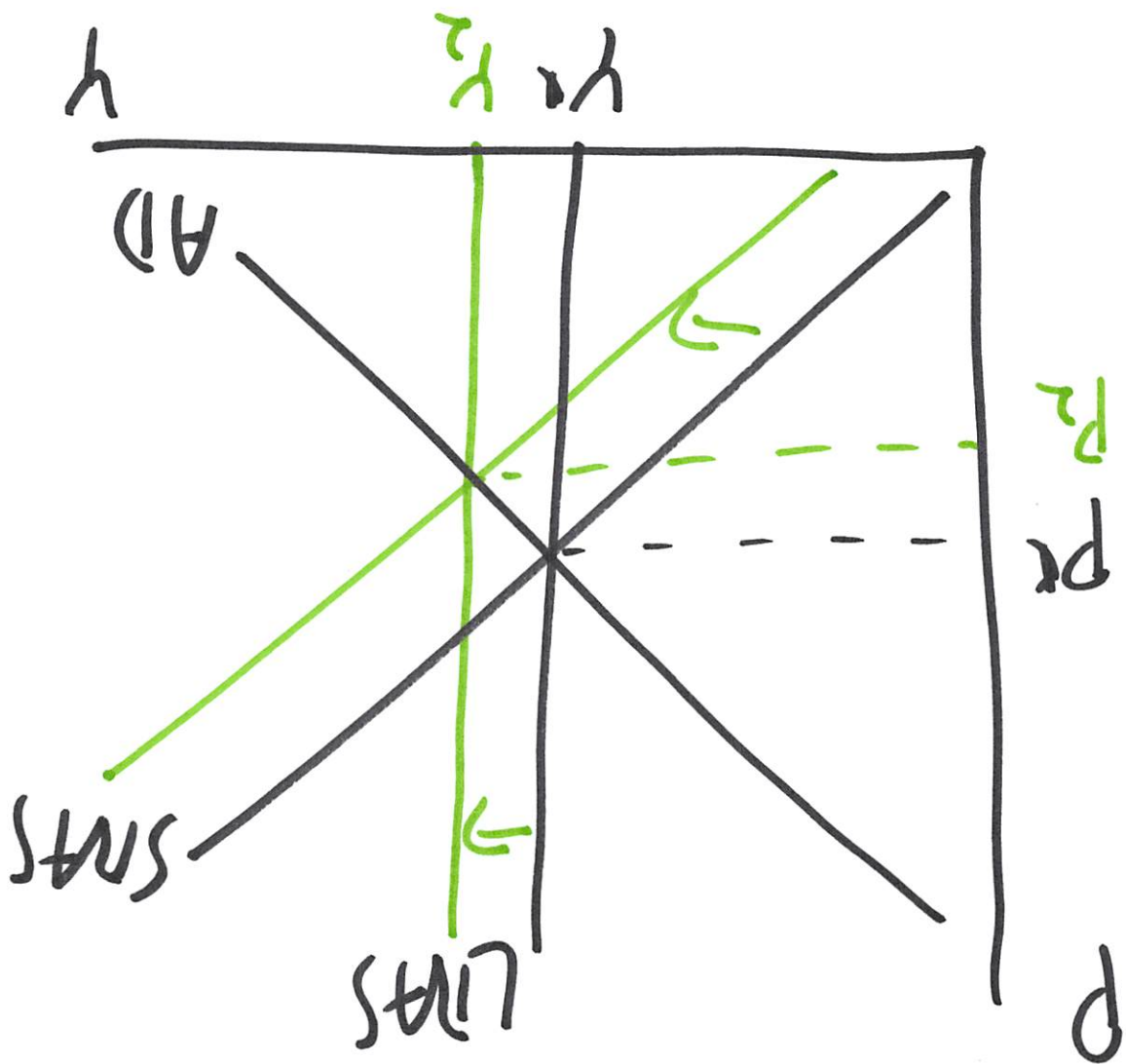
AD-AS

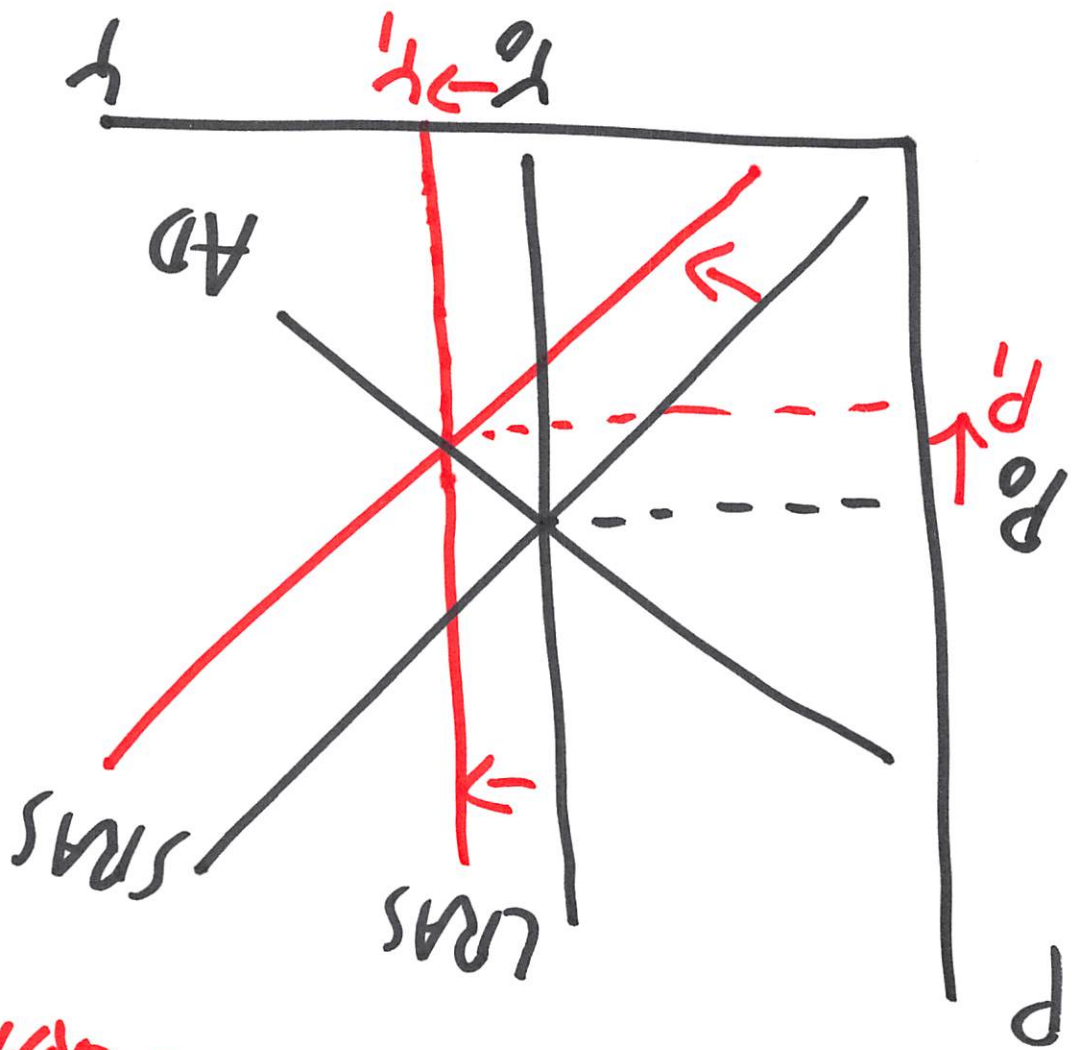


BOOM IN EXPORTS  $\rightarrow$  AD  $\uparrow$   
 SR:  $Y_2, P_2$   
 LR:  $Y^*, P_3$

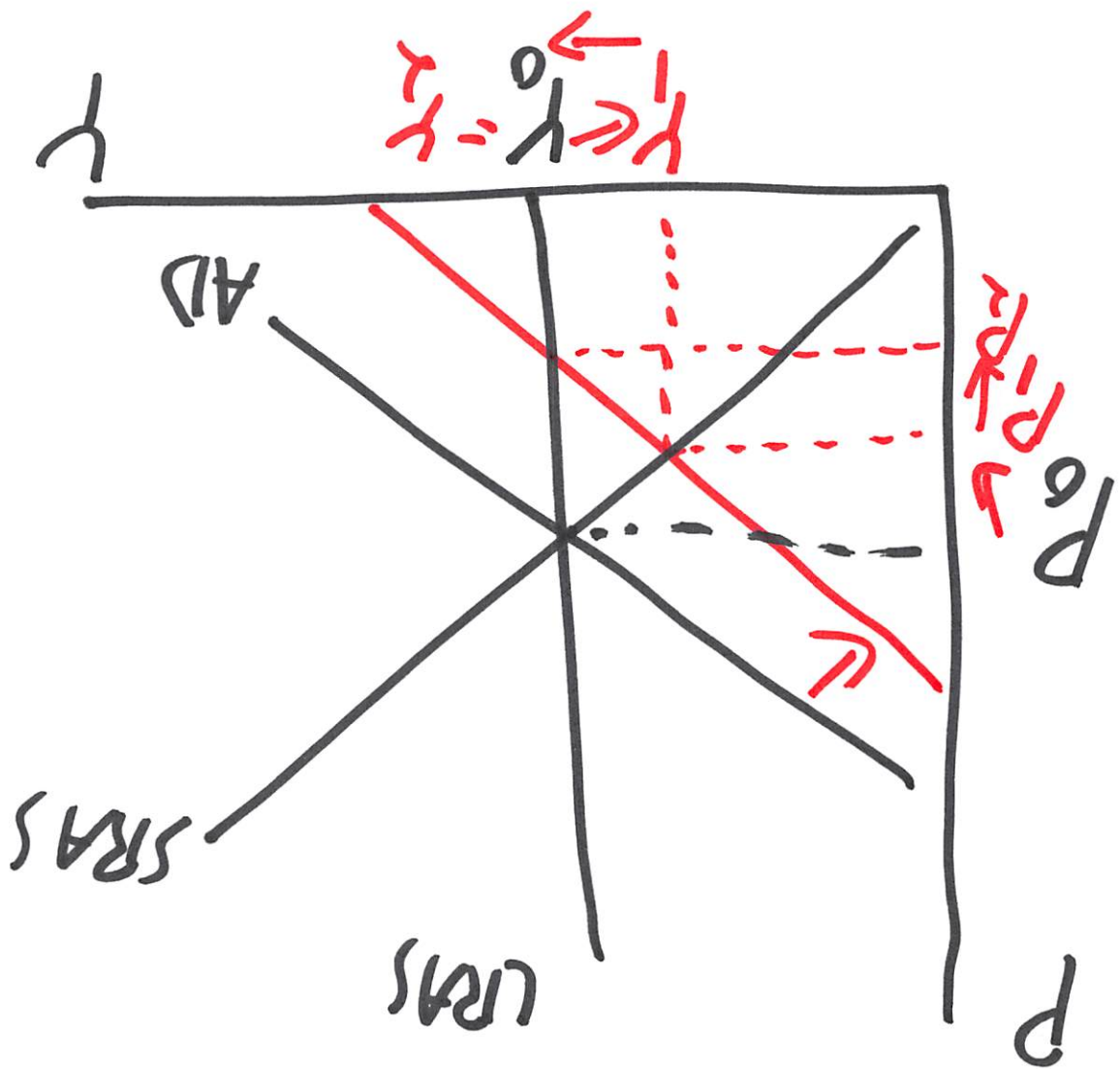


INCREASE IN LABOR SUPPLY  
 $L \rightarrow \text{SNAS} \downarrow, \text{LNAS} \downarrow$   
 $\text{SR: } Y_2, P_2, \text{ LR: } P_2, Y_2$





MİGRANTIS  $\rightarrow \rightarrow LRAS \rightarrow SRAS \rightarrow$   
 $LRAS \rightarrow$



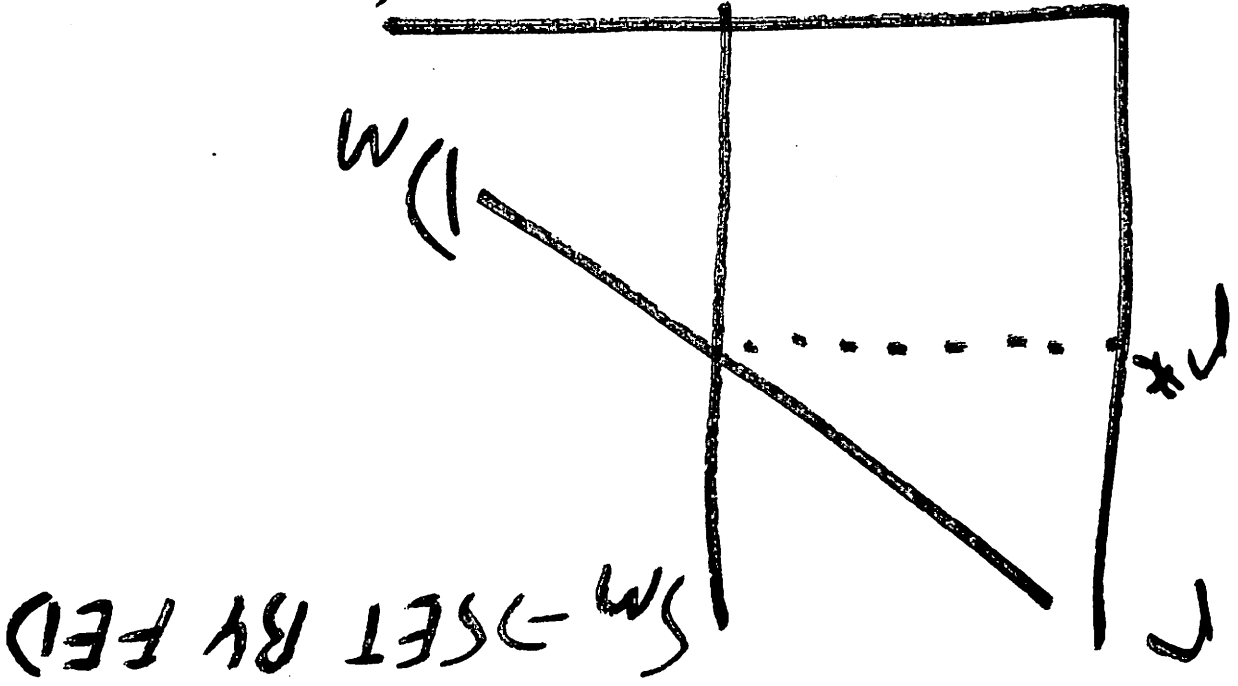
EXPORTS ↓ → AD ↓

**CH. 21**

**MONETARY POLICY**

- FEDERAL RESERVE
- USUALLY CHANGES THE FED FUNDS RATE + DISCOUNT RATE
- BUYING BONDS (PRINTING MONEY)

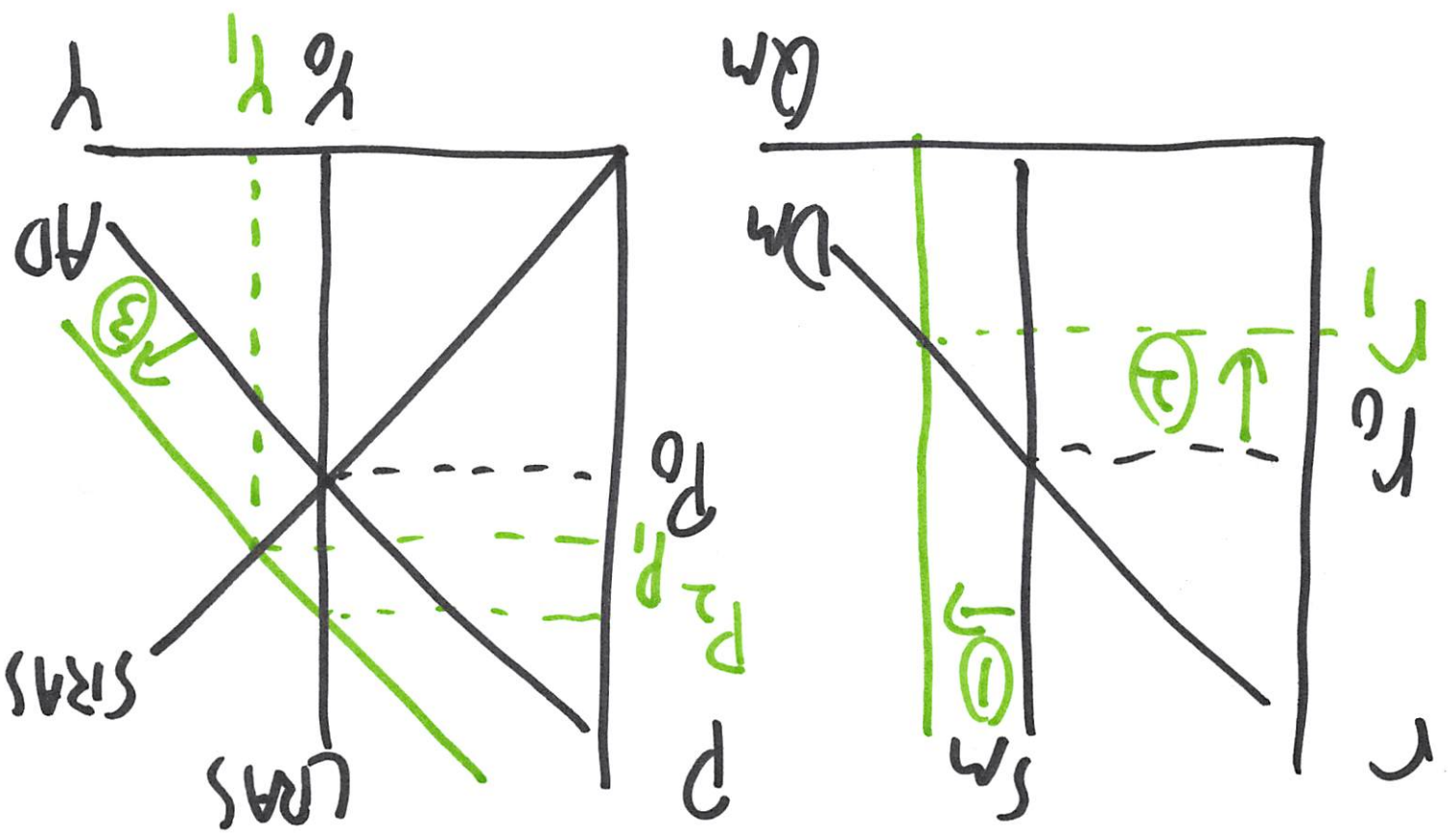
**LIQUIDITY PREFERENCES**



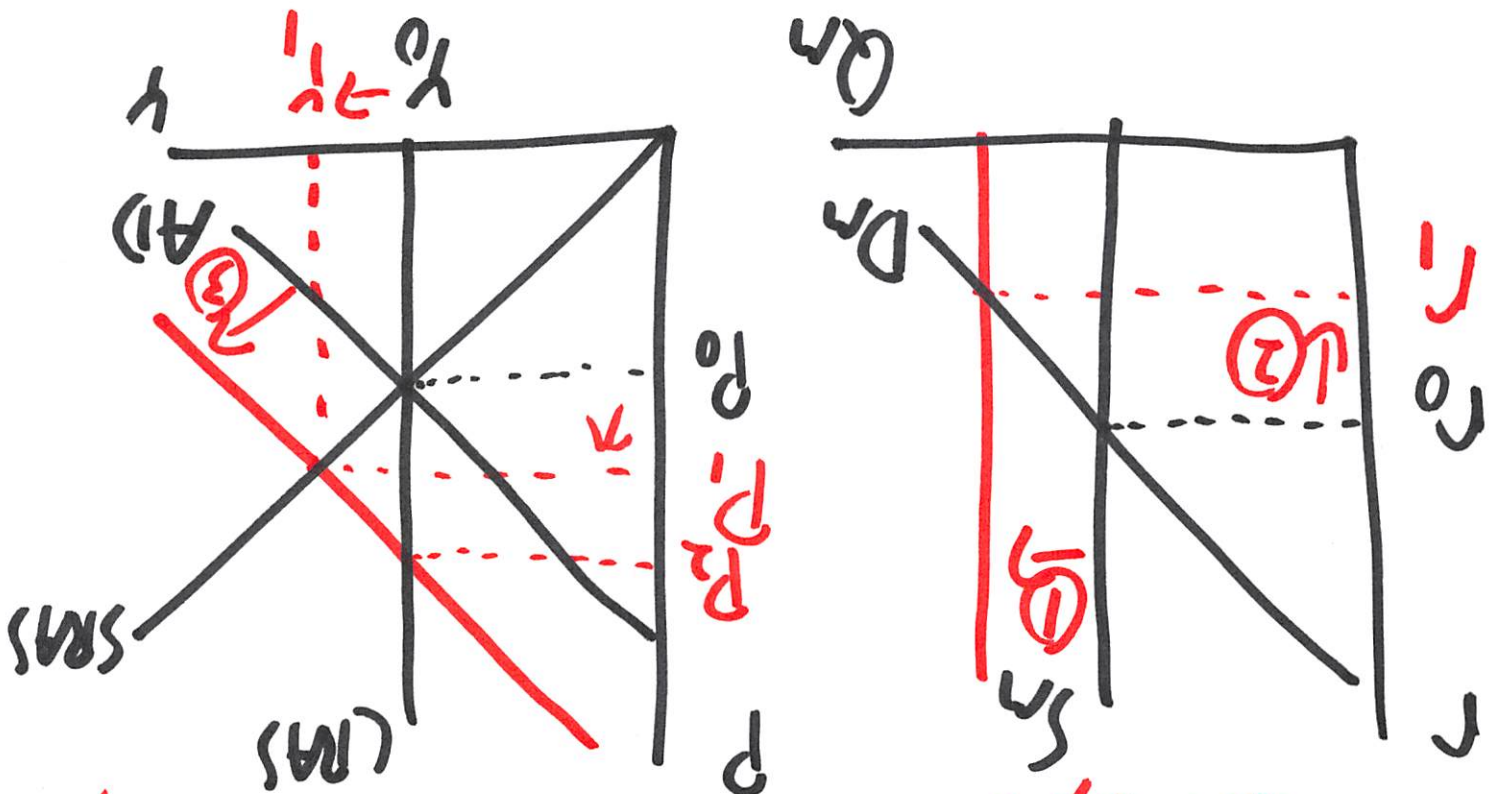
**r\* IS SET BY FEDERAL RESERVE**



- ① FED BUYS BONDS  $\rightarrow M \rightarrow S_m \downarrow$
- ②  $r_0 \rightarrow r_1$
- ③  $r \uparrow \rightarrow I \downarrow \rightarrow AD \downarrow$   
 $S \uparrow \rightarrow C \downarrow$
- ④ SR:  $r_1, P_1$
- ⑤ LR: [A] LEAVE MONEY LR:  $r_0, P_2$  STAGFLATION  
 [B] TAKE MONEY LR:  $r_0, P_0$  OUT OF ECONOMY
- ⑥ REVERSE STEPS (1-3)



QE1-3, Buy Bonds + Printing Money



①  $S_M \downarrow$

②  $r_0 \uparrow$  to  $r_1$

③  $N \uparrow \Rightarrow I \downarrow \Rightarrow AD \downarrow$

$\hookrightarrow (S \uparrow \Rightarrow (r) \Rightarrow AD \downarrow$

④ SR EQUILIBRIUM:  $P_1, Y_1$

⑤ LR EQUILIBRIUM:

⑥ LEAVE MONEY IN ECONOMY:  $P_2, Y_0$

⑦ REMOVE MONEY IN ECONOMY: REVERSE STEPS ①-④

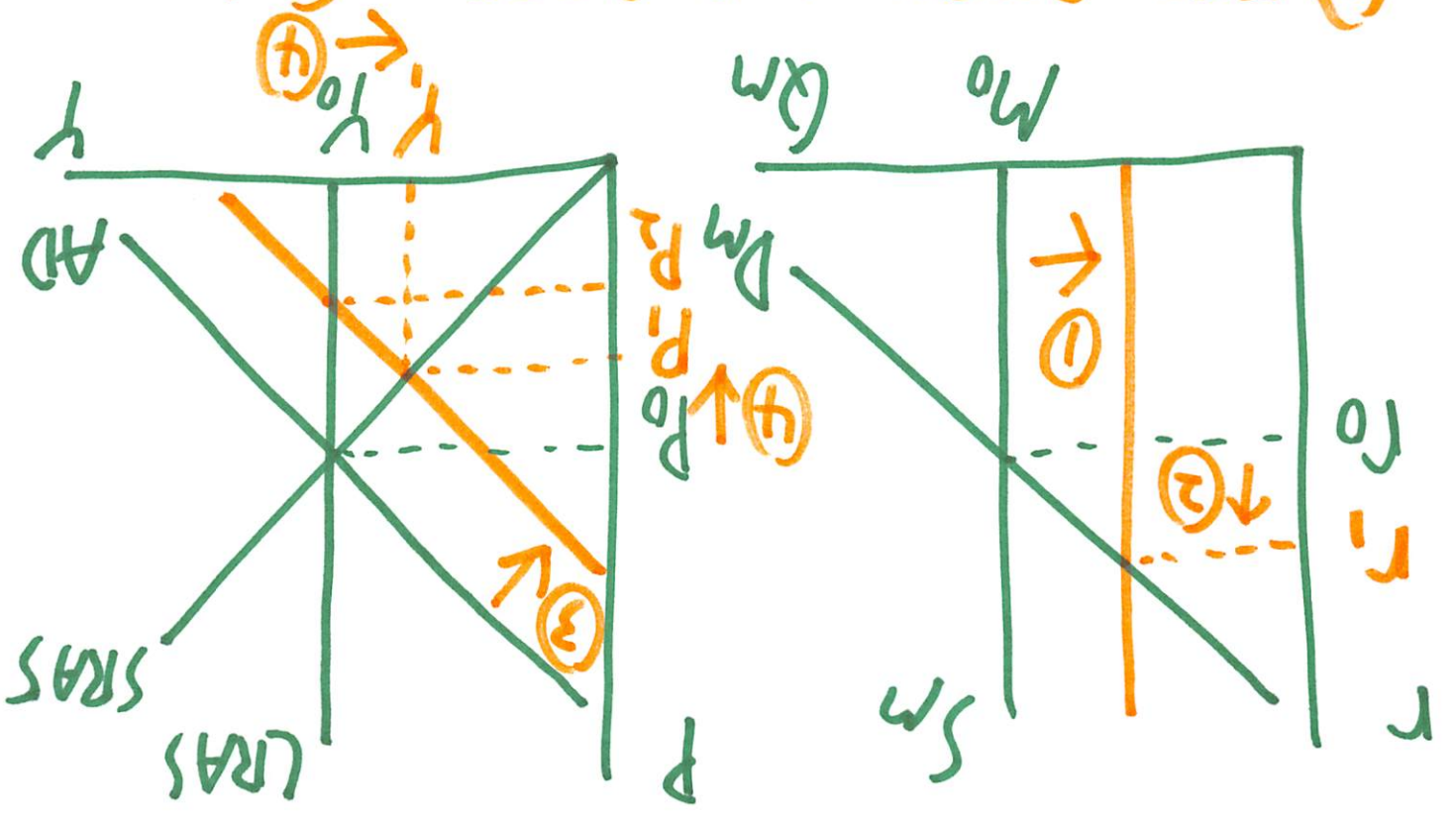
STAGFLATION



REVERSE STEPS : 1-4 :  $r_0, P_0, Y_0$   
 [B] LOWER INT. RATES BACK TO ORIGINAL LEVEL

RATES HIGH :  $r_1, P_1, Y_1$   
 [A] KEEP INT. :  $r_0, P_2, Y_1$   
 [4] SR:  $r_1, P_1$   
 [5] LR: [A] KEEP INT. :  $r_0, P_2, Y_1$

(1) FED RAISES INT. RATES  $\rightarrow S_M \downarrow$   
 (2)  $r_0 \rightarrow r_1$   
 (3)  $r \downarrow \rightarrow I \uparrow \rightarrow AD \rightarrow$   
 (4)  $r_1 \rightarrow r_0$



**[H. 21]**

FISCAL POLICY

- GOV'T SPENDING + TAXATION
- (CREATE (NOURISH) ECONOMIC OPPORTUNITIES

- KEYNES

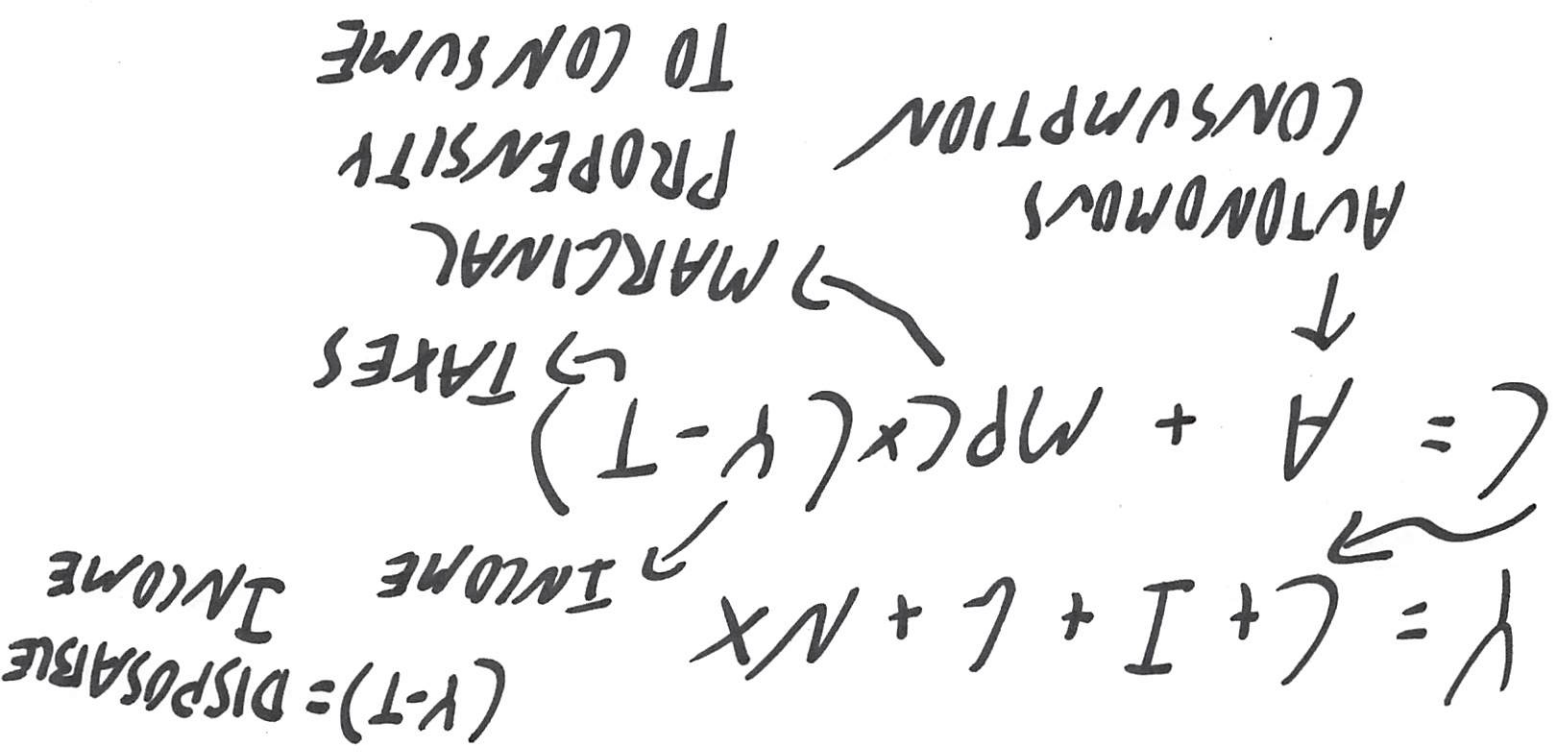
① GOV'T SPENDING MULTIPLIER = 1.5?

$$\frac{\% \text{ CHANGE IN } Y}{\% \text{ CHANGE IN } G} = \frac{1}{1 - MPC}$$

MPC: MARGINAL PROPENSITY TO

~~CONSUME~~ CONSUME

(HOW MUCH OF AN ADDITIONAL \$ DO YOU ACTUALLY SPEND)



$$Y = A + MPC(Y-T) + I + G + NX$$

$$Y = A + MPC(xY - MPC(xT) + I + G + NX - MPC(xY)$$

$$Y - MPC(xY) = A - MPC(xT) + I + G + NX$$

$$Y = \frac{(1-MPC)}{1-MPC(x)} (A - MPC(xT) + I + G + NX)$$





② TAX MULTIPLIER = -0.5

$$\frac{\% \text{ CHANGE IN Y}}{-MPC} = \frac{\% \text{ CHANGE IN T}}{1-MPC}$$

③ KEYNESIAN POLICY

$$\rightarrow G = T$$

$$\rightarrow \frac{1}{1-MPC}$$

$$= \frac{MPC}{1-MPC}$$

$$= \frac{1-MPC}{1-MPC}$$

↓

↓ ↓

↓ ↓

TAX + SPEND!

WHAT COULD GO WRONG?

- (ROUNDING OUT EFFECT

$G \uparrow \rightarrow C \downarrow, I \downarrow$

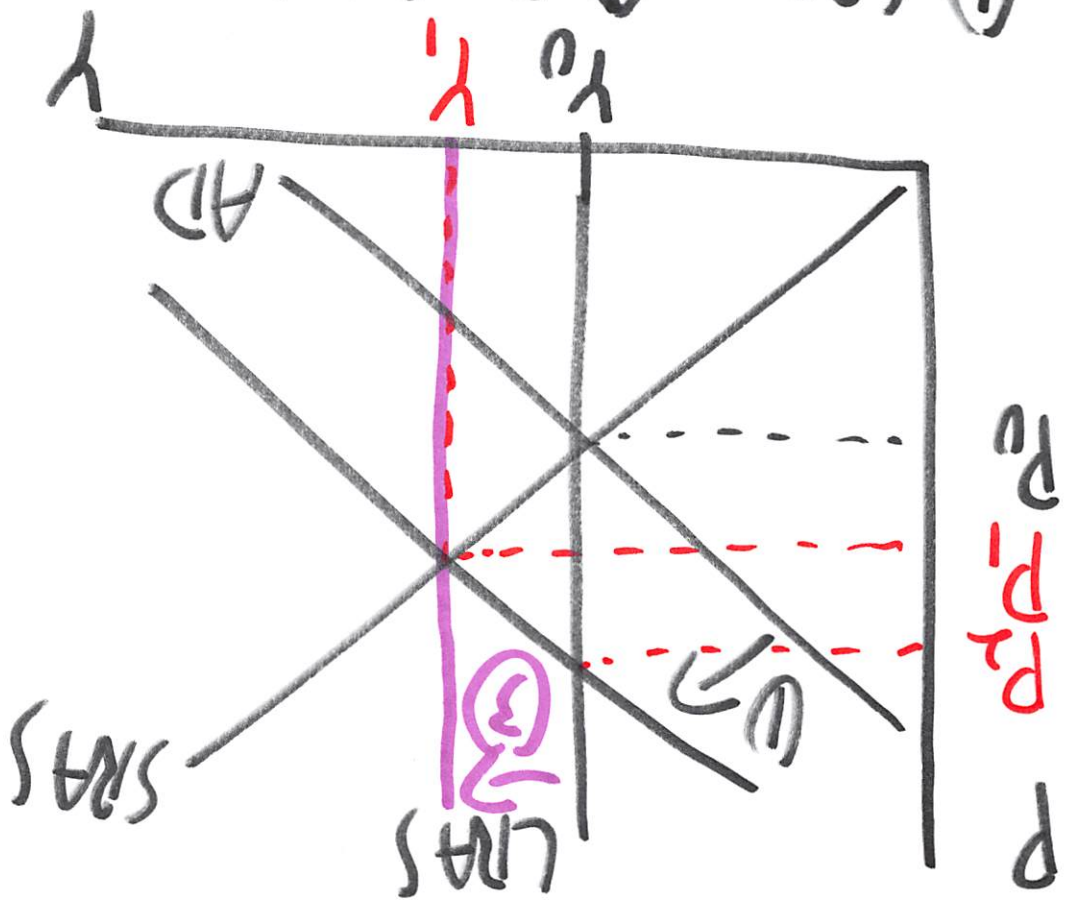
NO NET EFFECT ON Y?

- LAFFER CURVE

TAX RATES (CAN'T GO  
TO 100%

- MALINVESTMENTS

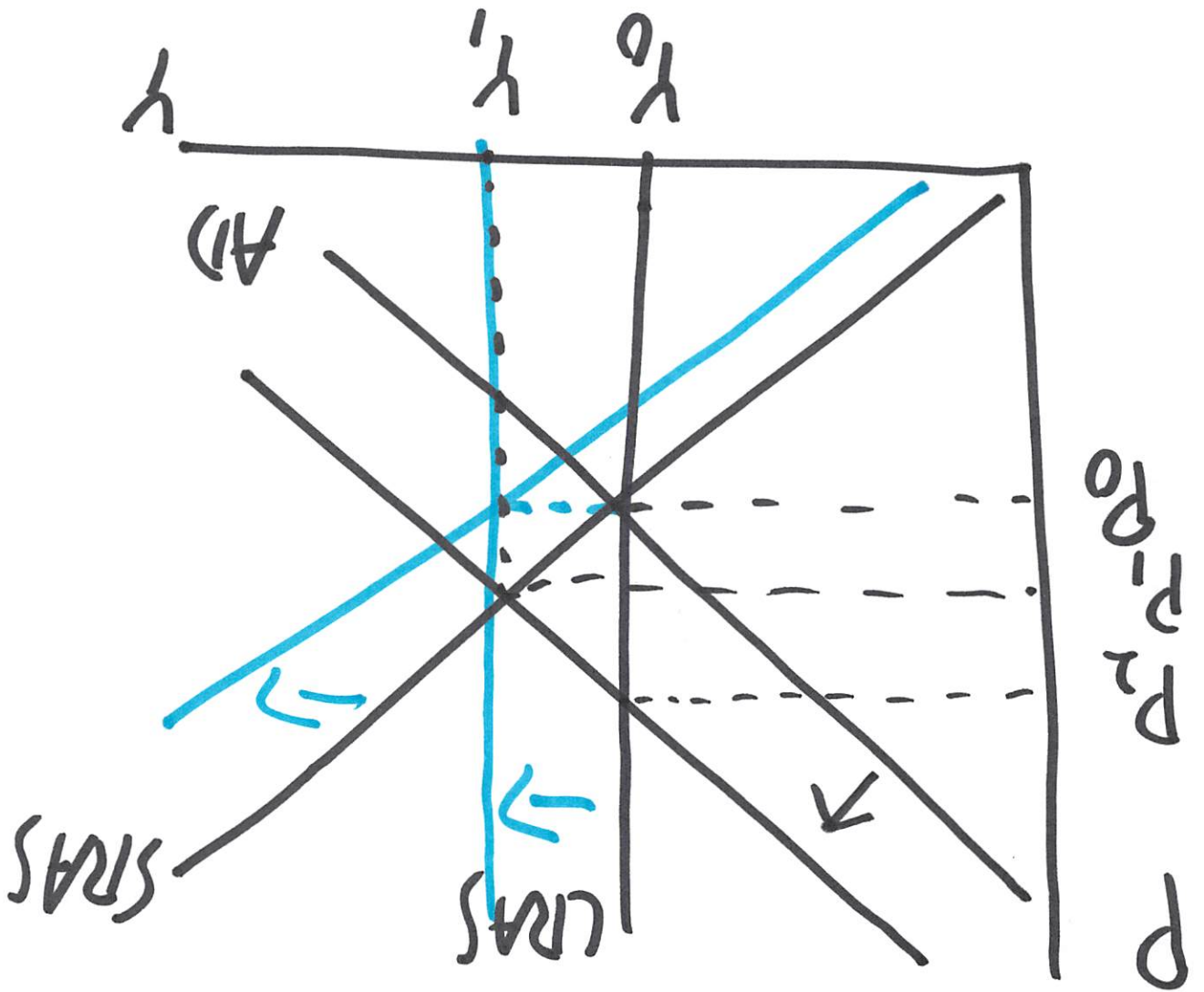
- ① GROW  $\rightarrow$   $C \rightarrow AD \rightarrow$
- ② MORE EDUCATION SPENDING  
SR:  $y_1, p_1$  LR:  $y_0, p_2$
- ③ TRANSPORTATION INFRASTRUCTURE  
SR:  $y_1, p_1$  LR:  $y_1, p_1$

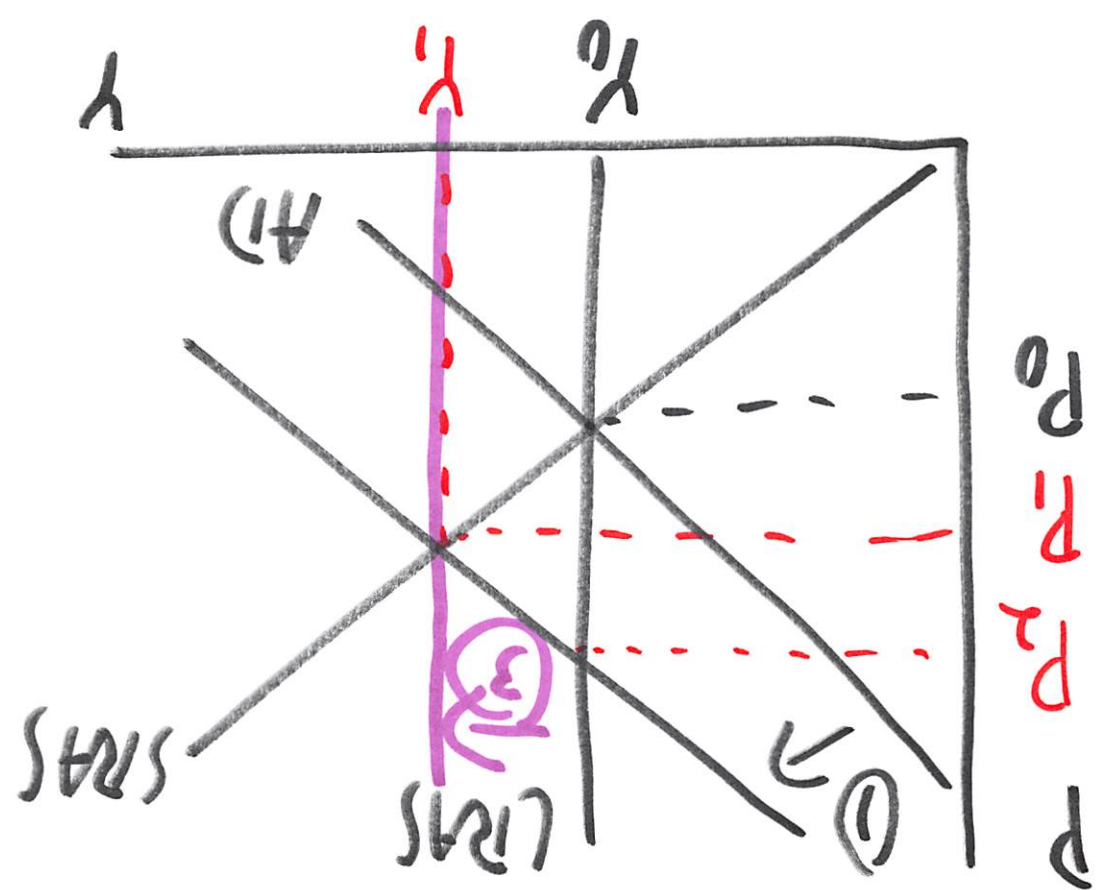


③ TRANSPOSITION INFRASTRUCTURE  
 $\downarrow$  AD  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  
 $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR

② EXTRA \$ TO SOCIAL SECURITY  
 $\downarrow$  AD  $\downarrow$  SR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR  $\downarrow$  LR

① Grow  $r_i$   $\downarrow$





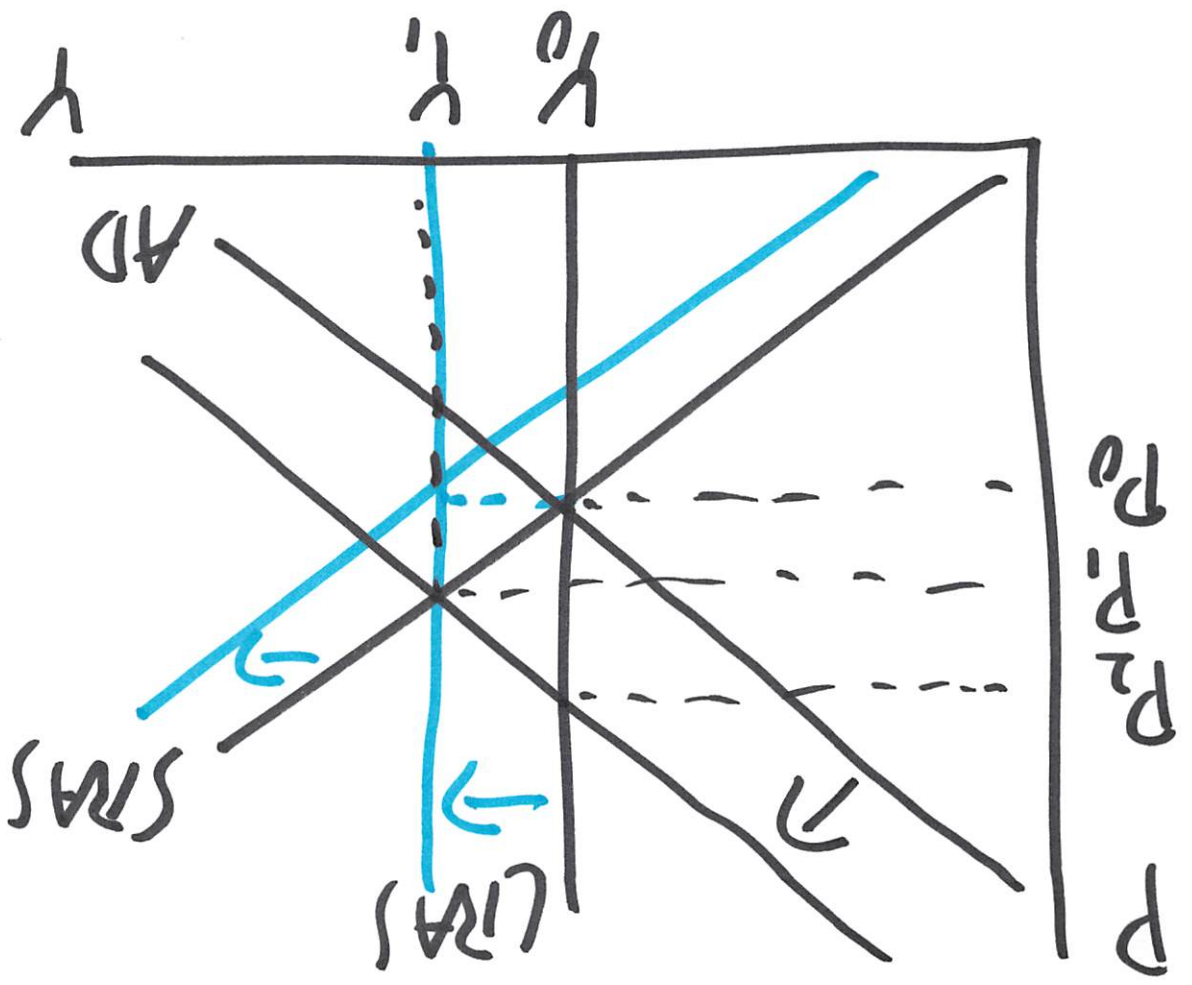
① LRAS  $y \rightarrow T \rightarrow AD \downarrow$

② DECREASE ESTATE TAX (DEATH TAX)  
 SR:  $y, P_1$  LR:  $y_0, P_2$

③ CUT CORPORATE INCOME TAX  
 SR:  $y, P_1$  LR:  $y, P_1$   
 $\rightarrow I \rightarrow K \rightarrow LRAS \downarrow$



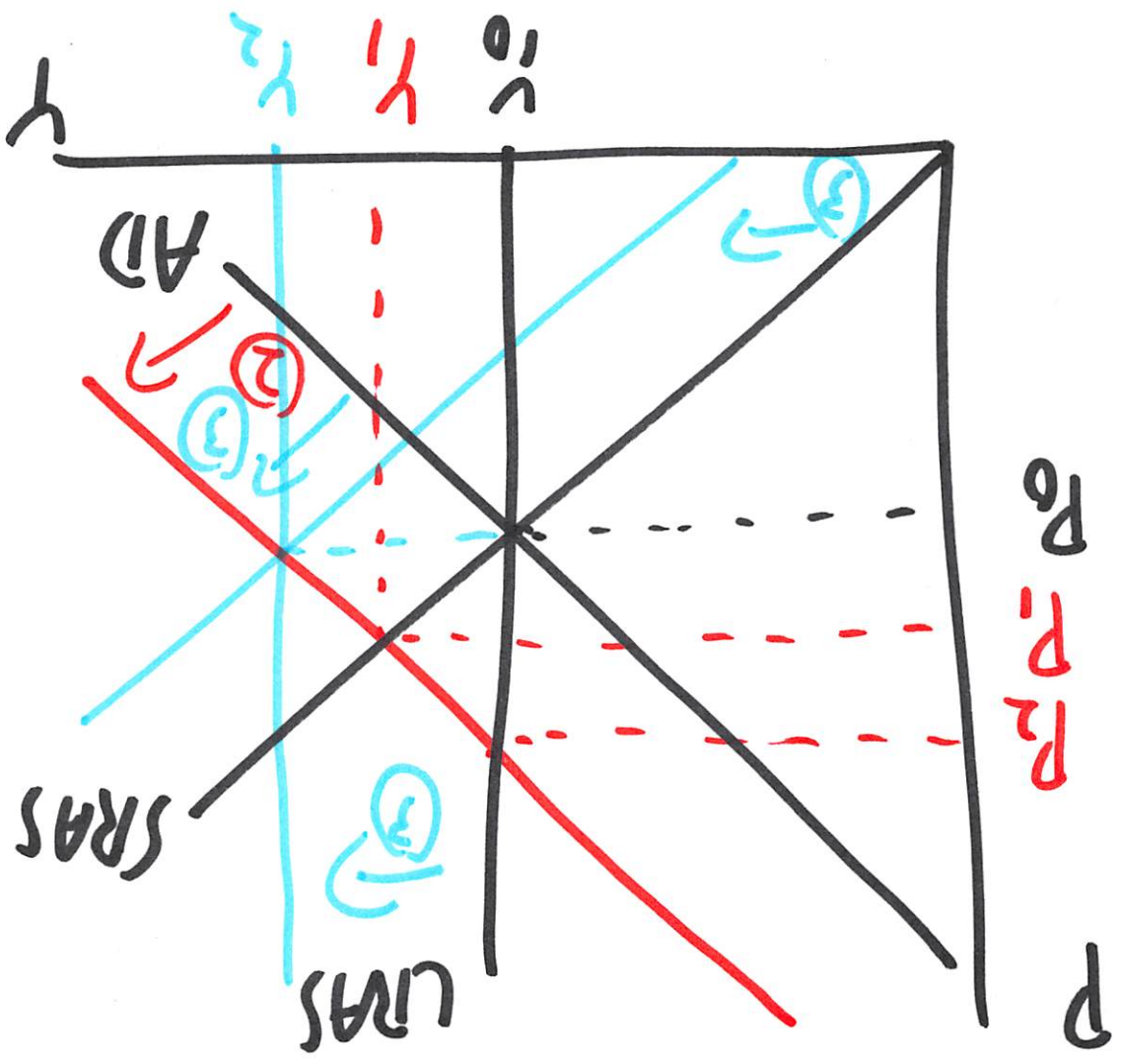
- ①  $LR \rightarrow ?$   $TV \rightarrow$
- ② (UI ESTATE TAXES (DEATH TAX))  
 $\rightarrow AD \rightarrow$   $SR: Y, P, LR: Y, P$
- ③ (UI CORPORATE INCOME TAX)  
 $\rightarrow AD \rightarrow$   $\rightarrow K \rightarrow$   $\rightarrow SRAS \rightarrow, LRAS \rightarrow$   
 $SR+LR: Y, P$



③ MORE INFRASTRUCTURE  
 ↳  $G \rightarrow AD \uparrow$ : (SR OR LR)  $P_0, Y_2$   
 ↳  $I \rightarrow K \rightarrow SRAS \downarrow, LRAS \downarrow$

② MORE SOCIAL SECURITY BENEFITS  
 ↳  $G \rightarrow AD \uparrow$ :  $Y_1, P_1$  (SR)  
 $Y_0, P_2$  (LR)

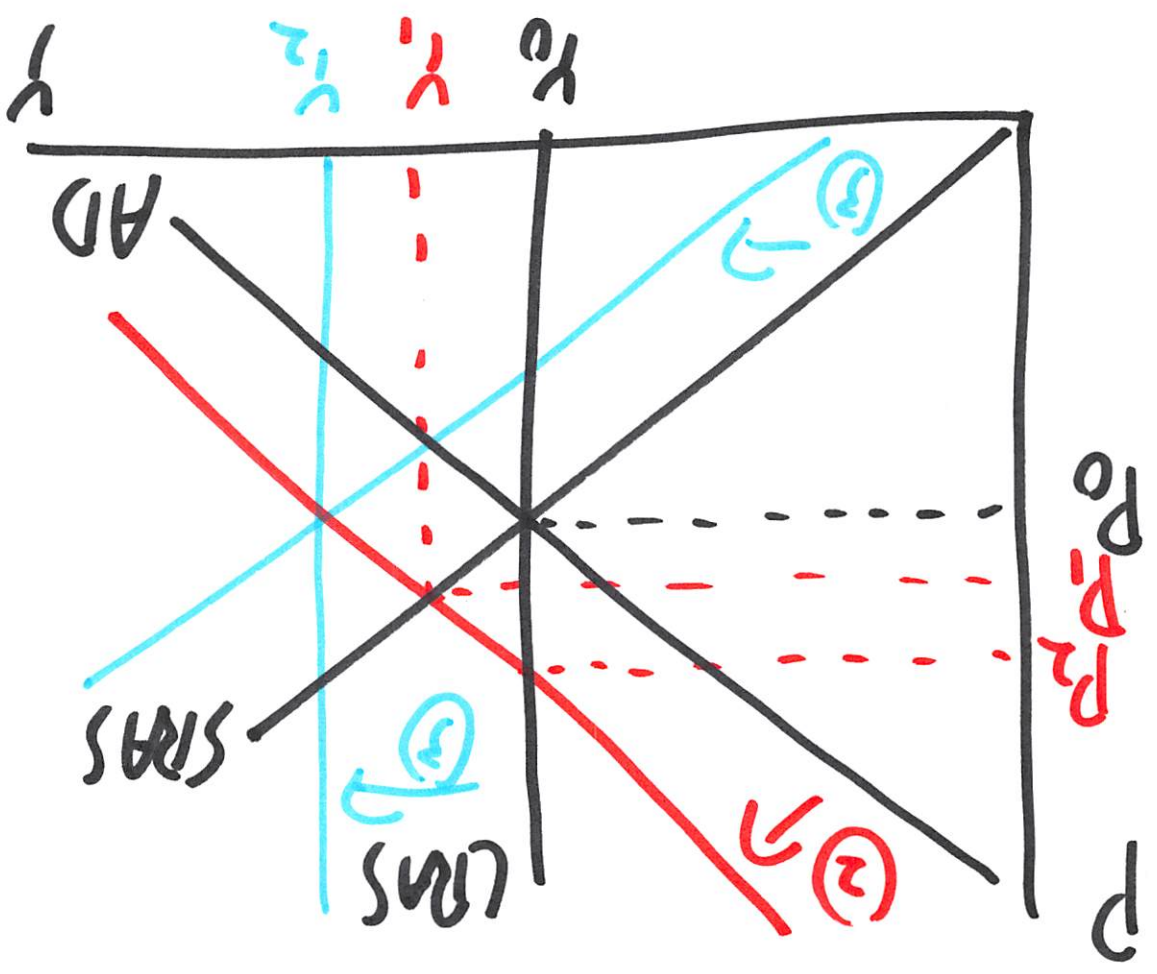
①  $G \rightarrow AD \uparrow \rightarrow Y \uparrow$ ?



③ CORPORATE INCOME TAX ↓  
 ↑ → I → → ADD ↓ (SR OR LR)  $y_2, P_0$   
 ↘ K → → SRAS ↓, LRAS ↓

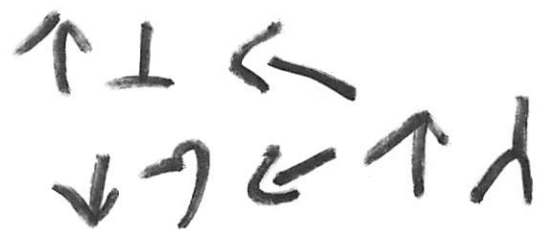
② REMOVE ESTATE TAX  
 ↑ → C → → ADD ↓: (SR)  $P_1, y_1$   
 (LR)  $P_2, y_0$

① TV → ADD ↓ (C, I, NX) →  $y_2$  ↓



FISCAL POLICIES "ALL" ECONOMISTS  
AGREE ON

- ACTIVE STABILIZATION SHOULD BE  
AUTOMATIC IN NATURE



- BIG LAGS ARE BAD!

- MARGINAL TAX RATES THAT

RISE WITH INCOME

- UNEMPLOYMENT COMPENSATION

- UNEMPLOYMENT INSURANCE

- ACTIVE STABILIZATION ~~SHOULD~~ <sup>(SHOULD)</sup>  
INCREASE  $L, K, H, A, N$



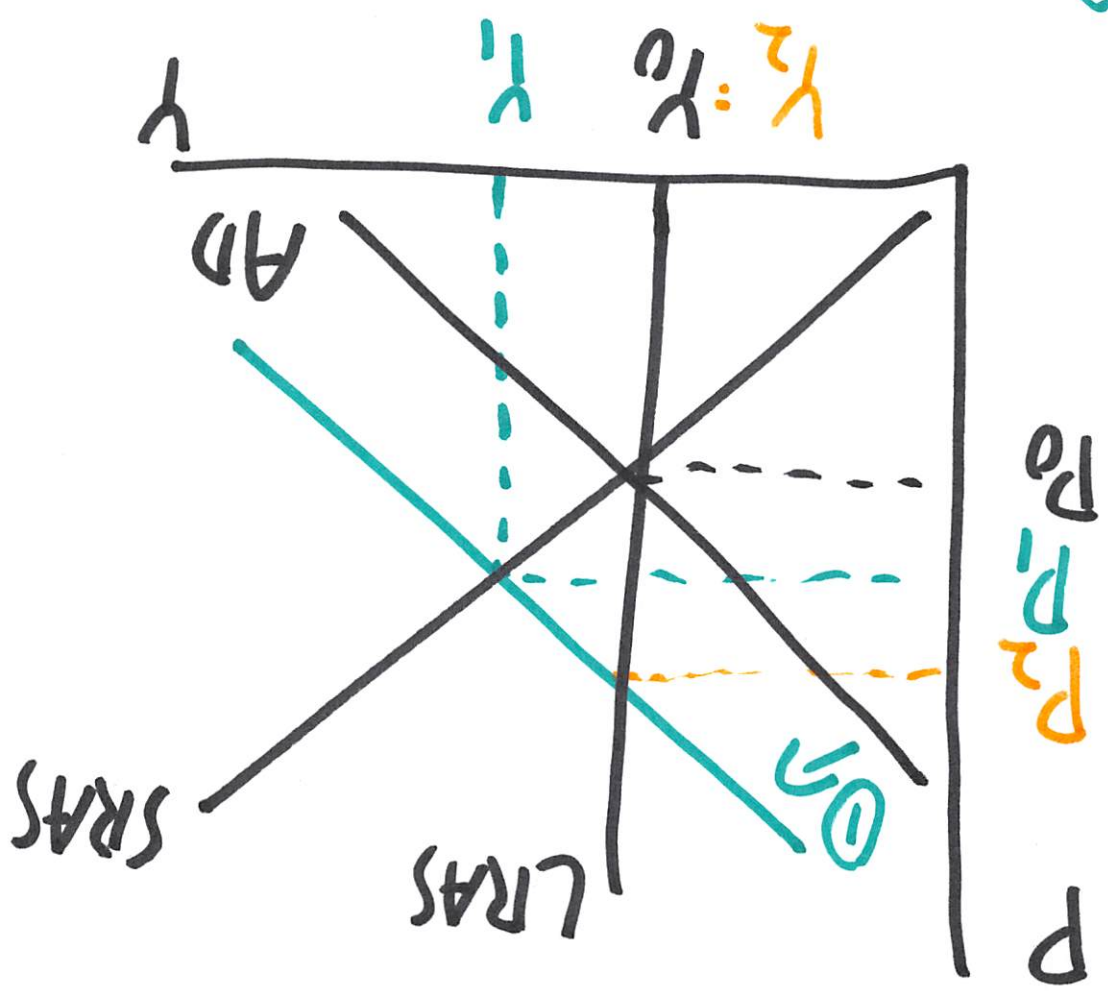
(H.22) INFLATION + UNEMPLOYMENT

- IN THE SHORT-RUN THERE IS A TRADEOFF BETWEEN INFLATION + UNEMPLOYMENT

(INF.  $\uparrow$   $\leftrightarrow$  UNEMP.  $\downarrow$ )

- IN THE LONG-RUN THERE IS NO RELATIONSHIP BETWEEN INFLATION + UNEMPLOYMENT





① FED  $M \rightarrow AD \downarrow$

$Y \rightarrow \text{UNEMP.} \downarrow$

$P \rightarrow \text{INFLATION} \downarrow$

SR: UNEMP  $\downarrow$

$\rightarrow$  INFLATION  $\downarrow$

② LR:  $P_2 Y_2$

$P \rightarrow \text{INFLATION} \downarrow$

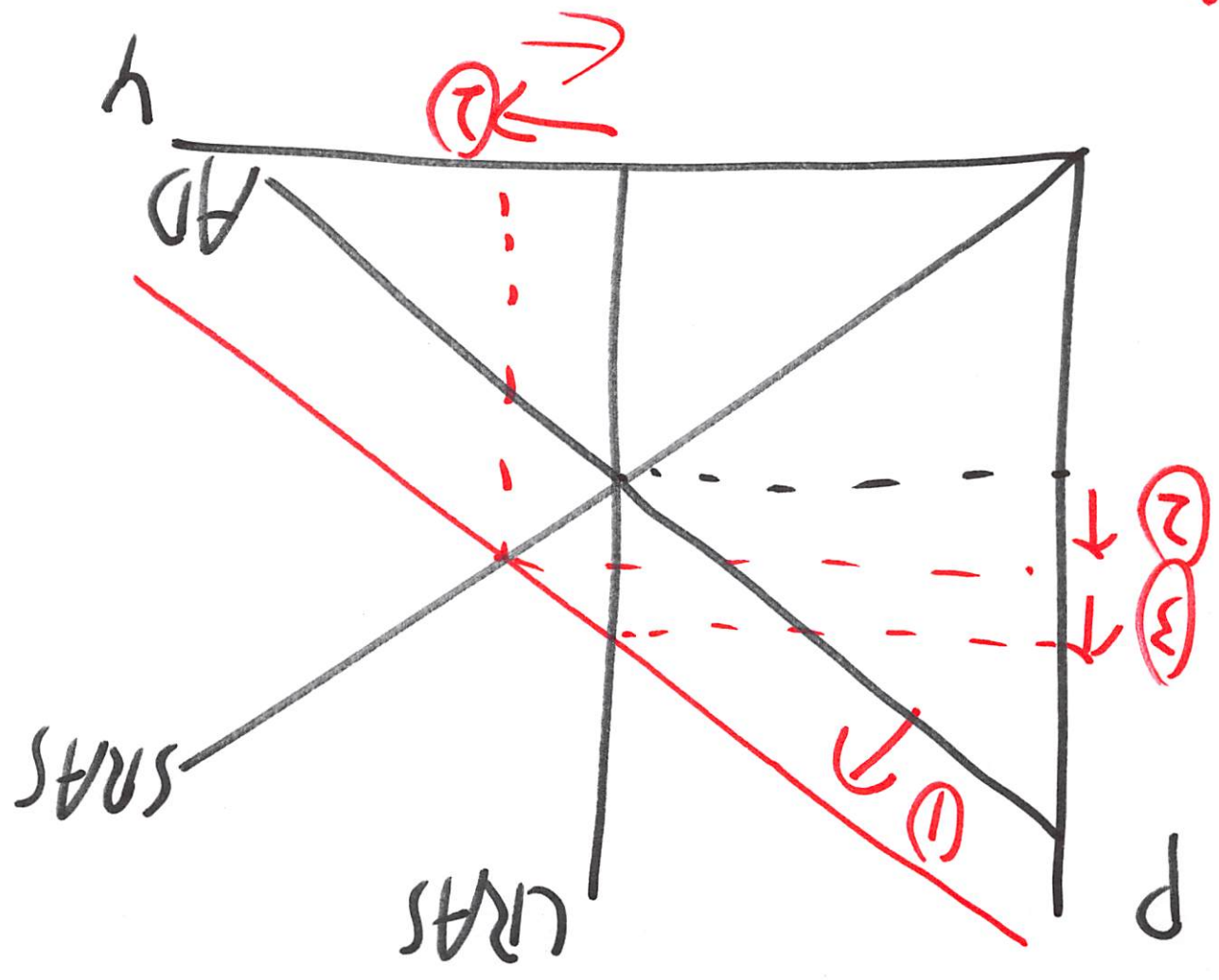
$Y \rightarrow \text{UNEMP.}$

LR: INFLATION  $\downarrow$

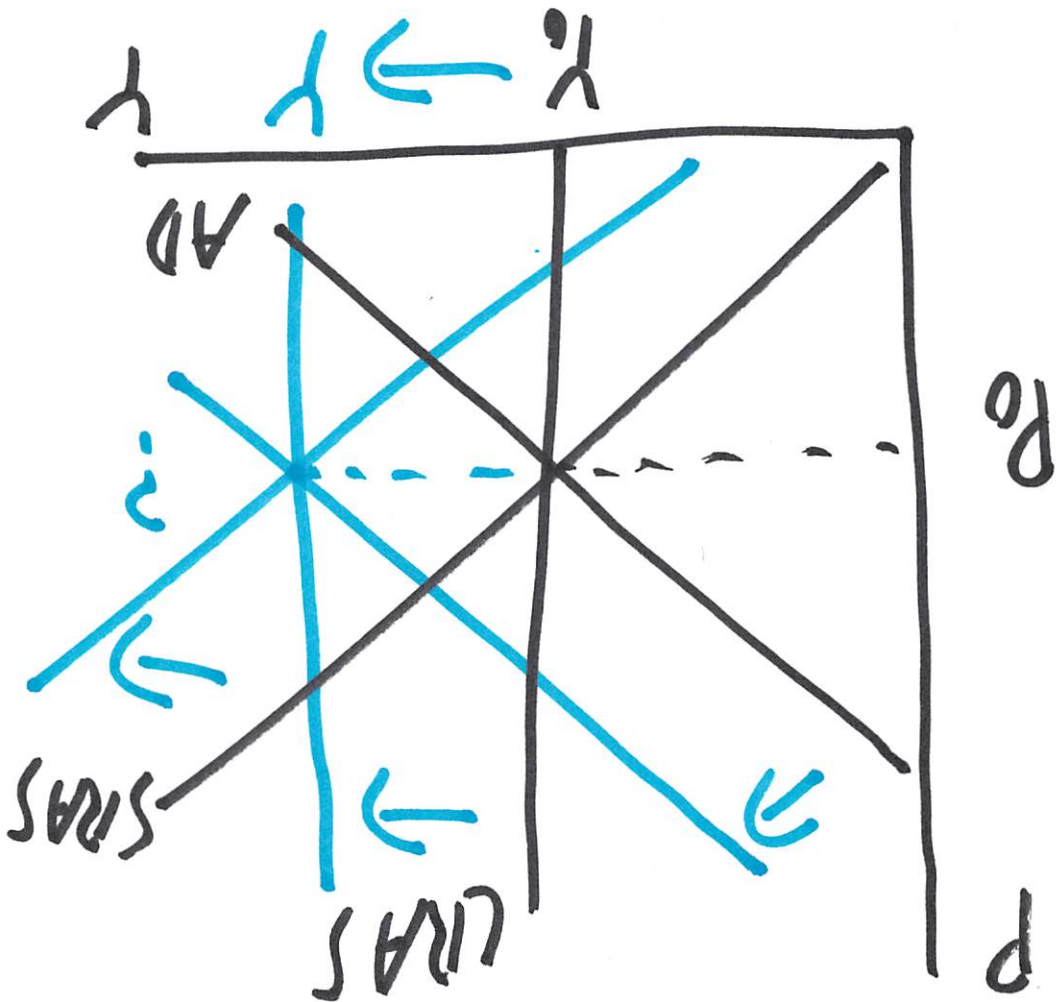
NO CHANGE

UNEMP.

- ①  $M \rightarrow$  HIRE WORKERS  $\rightarrow C \rightarrow AD \rightarrow$   
TO DIG DITCHES
- ②  $SR \rightarrow Y \rightarrow$  UNEMPLOYMENT  $\downarrow$   
 $\overline{P} \downarrow$
- ③  $LR \rightarrow Y$  UNCHANGED  $\rightarrow$  UNEMPLOYMENT UNCHANGED  
 $\overline{P} \downarrow$

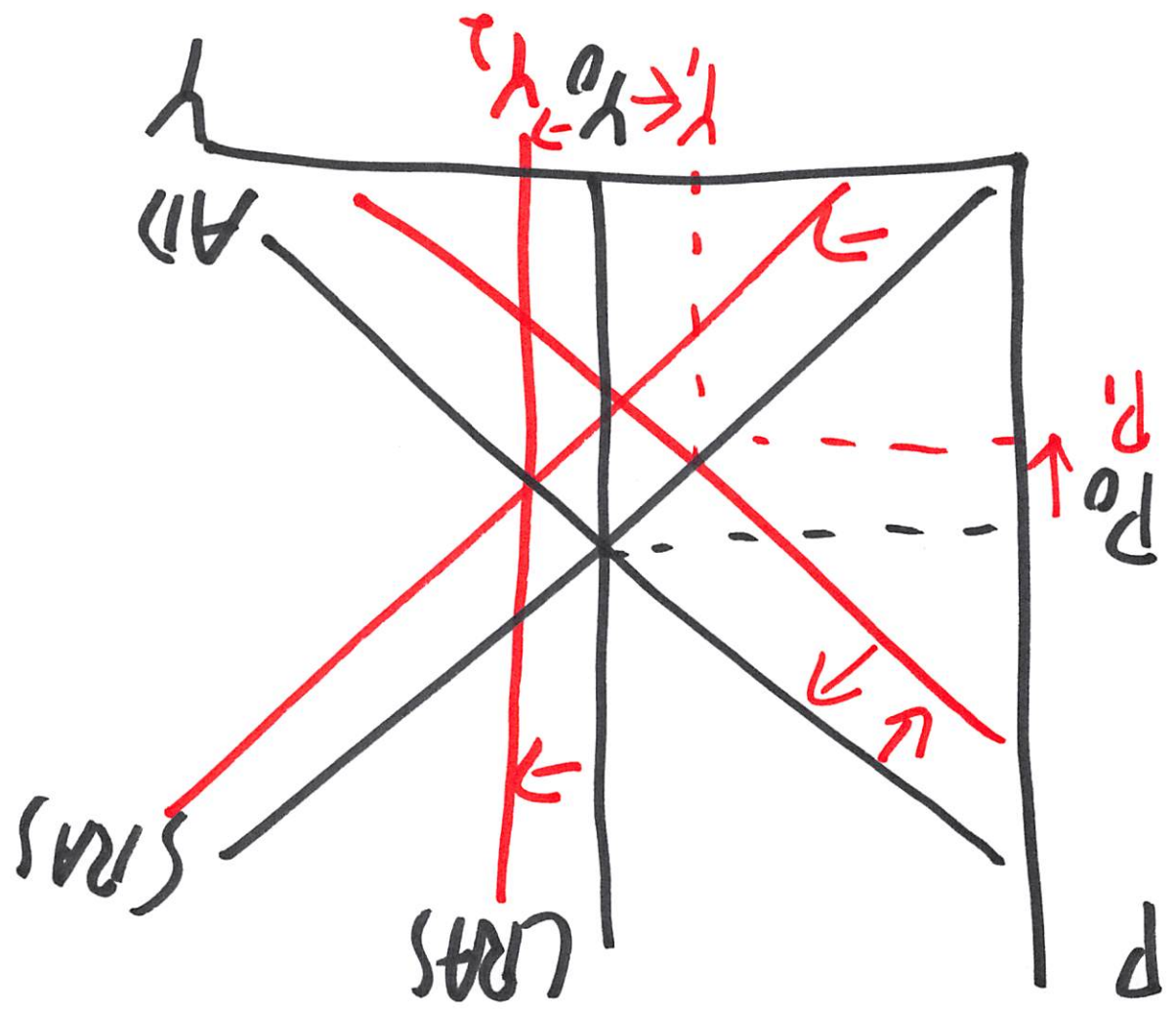


INVESTMENT IN  
 CELL PHONE INFRASTRUCTURE  
 $\hookrightarrow I \rightarrow \rightarrow AD \downarrow$   
 $\hookrightarrow K \rightarrow \rightarrow SRAS \downarrow, LRAS \downarrow$



PARADOX OF SAVINGS

INCREASE IN SAVINGS RATE  
 $\rightarrow S \downarrow \rightarrow AD \downarrow$   
 $\rightarrow I + MCO \rightarrow I \rightarrow AD \downarrow$   
 $\rightarrow K \rightarrow SRS \downarrow, LRS \downarrow$

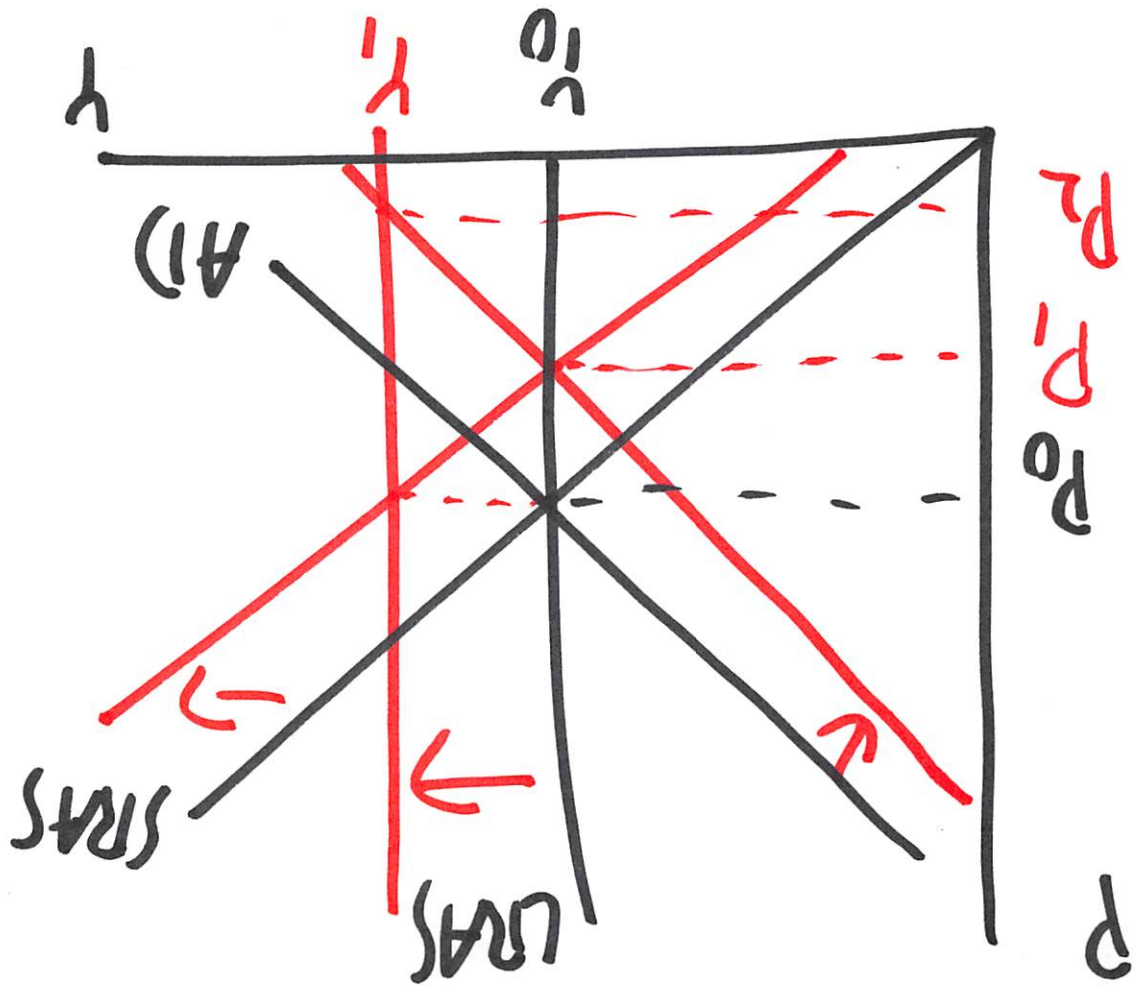




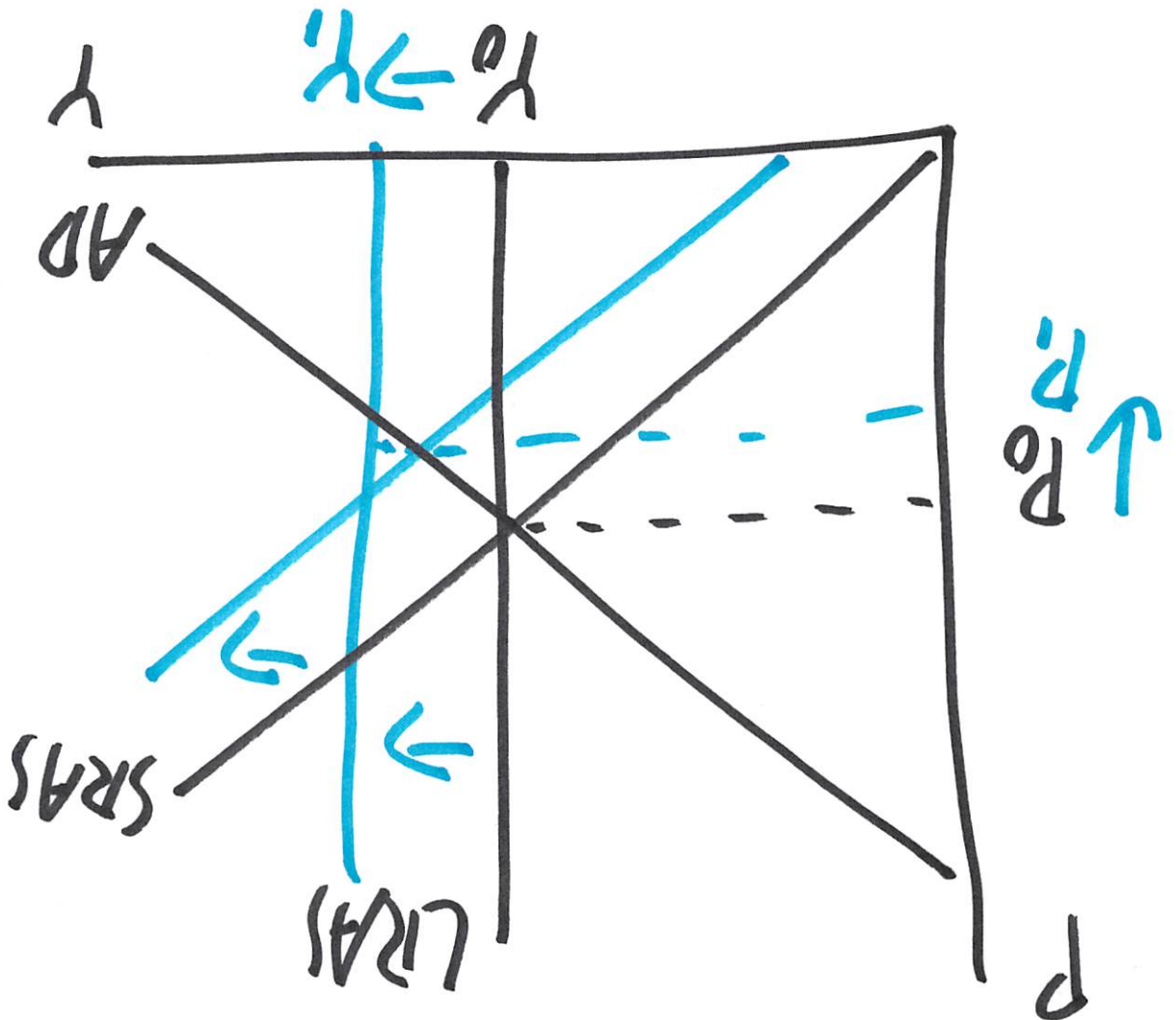
# PARADOX OF THIRTI

$\hookrightarrow S \downarrow \Rightarrow (\uparrow \Rightarrow AD) \downarrow$

$\hookrightarrow I \uparrow \Rightarrow K \uparrow \Rightarrow SRAS \uparrow, CRAS \uparrow$   
 $(SR) P_1, Y_0 \quad (LR) P_2, Y_1$

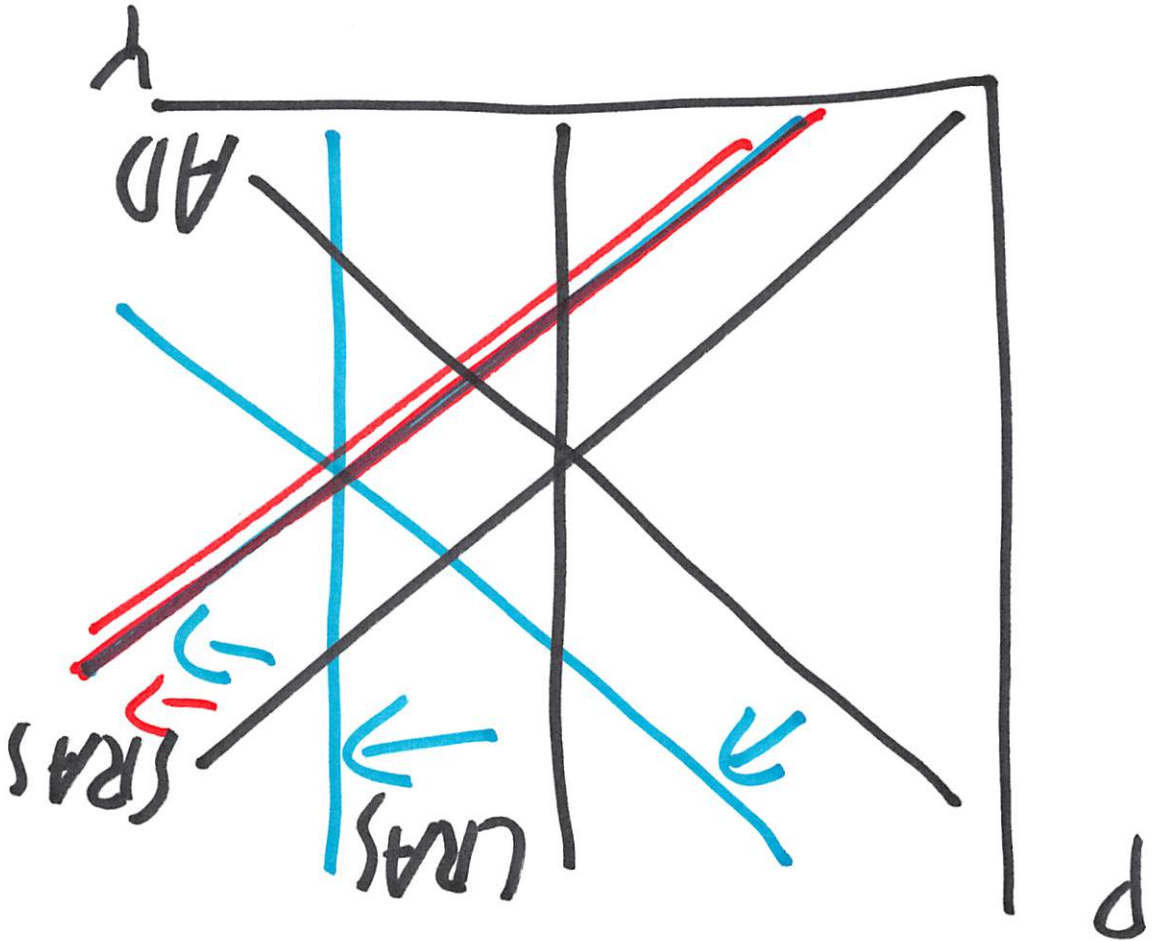


GERMANY PERMITS FRACKING  
↳ NT → SRAS ↓, LRAS ↓





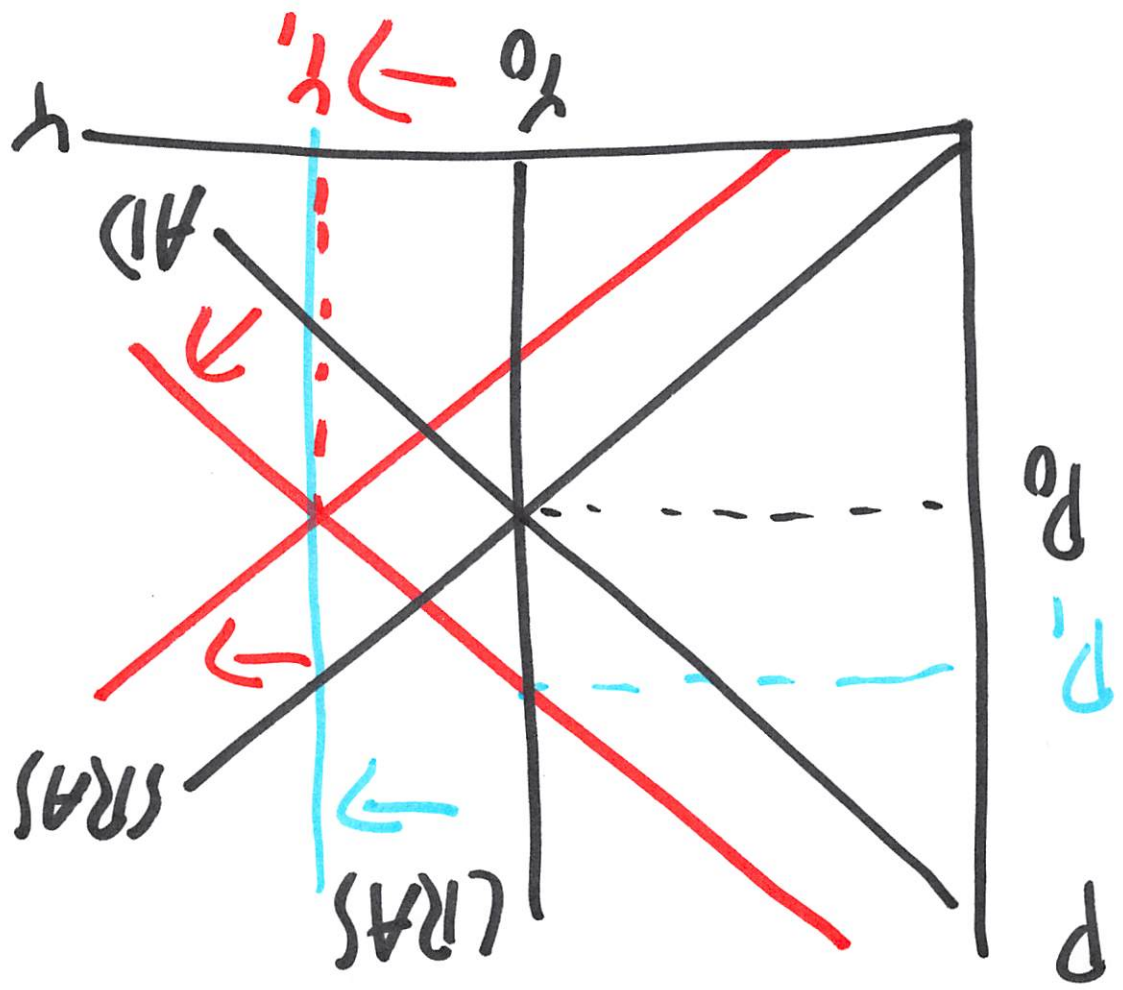
UNIVERSAL PRE-SCHOOL  
 (HCT (EXPECTATION)  
 → G → AD ↓  
 EXPECTED HCT → SRAS ↓, LRAS ↓  
 EXPECTATION FALSE → SRAS ↓



LR (NO HCN) = SCENARIO A:  $P_1, Y_0$   
 LR (HCN) = SCENARIO B:  $Y_1, P_0$

EXPECTATION

UNIVERSAL PRE-SCHOOL  
 $\hookrightarrow G \rightarrow \rightarrow AD \downarrow$   
 $\hookrightarrow HCN \rightarrow \rightarrow SRAS \downarrow$



NEW, AMAZING IPHONE  
 ↳ (→) AD ↓ (SR)  $y_1, P_1$   
 (LR)  $y_0, P_2$

