

LI - Intro.

Factors of production

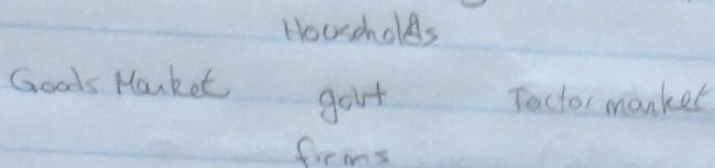
- Labour
- Land
- Capital

Econ problems.

- What to produce
- How to produce it
- How to distribute

Types of Economic Systems

- Tradition
- Command
- Market: Econ decisions made by individuals & firms. Works bc of property rights



Costs.

- Accounting: out of pocket expense of activity
- Sunk cost: has no relevance to decision
- Opportunity cost: value foregone
- Economic Cost: Sum of all accounting costs.

Statements:

- Positive: can be verified
- Normative: subject to judgement

Prediction: general statement about future

Forecast: probability analysis to estimate future events

4- Unemployment

Labor force $LF = E + U$

Cyclical
caused by the
fluctuation of
the business cycle

frictional
due to the
transition in
the workforce

Structural & Seasonal
permanent change
in industry or
out of season

$$NR = \frac{S_0 + F_0}{LF} \text{ when } C_y = 0$$

3 main measurement problems.

- Discouraged workers who left the workforce
- Unrealistic wage expectations (artificially unemployed)
- Involuntary PT. workers

Costs of unemployment

- Loss of potential output
OKUN'S law: 1% UR = 2% GDP.
- Loss of human capital (Job skills): Education value ↓
- Increase in crime & healthcare costs
- Loss of tax revenue

L2- Inflation

Prices indexed.

- CPI
- PPI
- GDP price deflator

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{Price index Current}} \times \text{Price index Base}$$

Inflation Severity.

- Creeping: < 10%
- Double Digit: > 10%
- Galloping: 20-60%/yr
- Hyper: 50%/mth.
- Deflation

Spending ↑ during inflation

Unanticipated inflation:

Financial Assets \downarrow \Rightarrow Real Assets \uparrow

Excess demand \rightarrow Shortages \rightarrow more inflation

Excess Demand inflation: typically when $UR \rightarrow NR$

$S \downarrow$ $r \uparrow$ $I \downarrow$ $Y \downarrow$

Supply Shock inflation:

• Price of 1 item \uparrow

• Reduced spending on most things. $C \downarrow$ Production \downarrow $UR \uparrow$

$M \uparrow$ from Govt debt

$M \uparrow$ without $Y \uparrow$ Danger of hyperinflation.

L2. GDP.

GDP: Value of final goods & services within borders

GNP: " by Canadian producers worldwide

GDP Exclusions

- Previously produced goods.
- Financial transactions (Savings, transfer payments).
- No recorded transactions (black market, motherhood)

GDP trends \uparrow

- Population growth.
- Advancement in technology
- Spread of technology

Recession: 2 Qs of ^{Real} GDP ↓
 Recovery: GDP ↑ again.

Business cycle.

Recession: GDP ↓ UR ↑ slows inflation.

Recovery: UR ↑ then ↓ for few yrs. When UR = NR shortages: inflation ↑

GDP:
 Real > Nominal

Base year

GDP:
 Real < nominal

injections/withdrawals.

Firm:

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

Household:

$$Y = C + S + T$$

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

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

private inv. trade bal. gov budget

L3 AE

AE: Total planned spending

AE > Y: inventories ↑ production ↑

Household:

Consumption: $C = \underline{100} + 0.8(1-t)Y$

Autonomous Marginal propensity

Savings $S = \overline{100} + (1-t)0.2Y$
 MPS.

Econ
 P04

$$MPS + MPC = 1$$

Business sector

$I = f(r)$, Net Y .

$r \uparrow \Rightarrow I \downarrow$.

All together.

$$+ C = 150 + 0.9(1-t)Y$$

+ I

+ G

- (T)

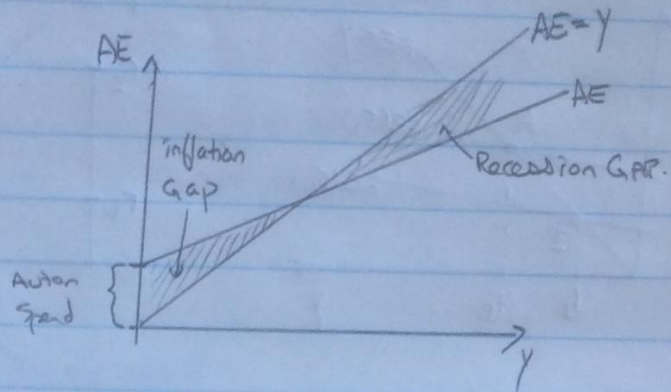
+ X

$$- (M = 20 + 0.2Y)$$

$$AE = 500 + 0.6Y$$

Autonomous
spending

$\beta =$ marginal propensity
to buy domestic goods.



$$AE = A + \beta Y.$$

$$\text{Multiplier } K = \frac{1}{1-\beta}.$$

$$Y_{eq} = K \times A.$$

Kinds of shock to economy

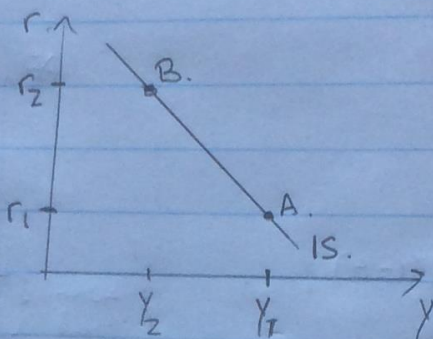
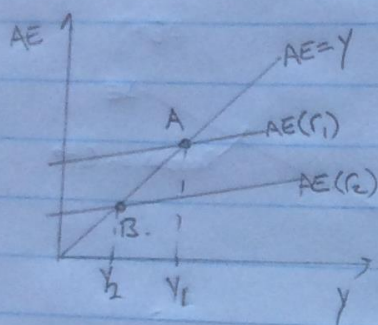
Δ MP to spend

Δ Autonomous spending

$$\text{Govt Budget} = tY + T - G.$$

LA IS-LM

IS (Investment Spending): combination of r & AE when Y_{eq} .



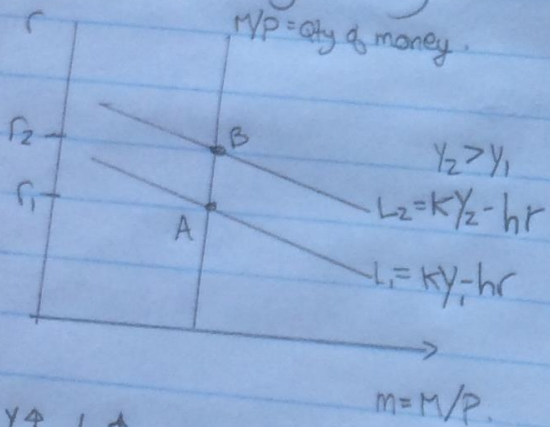
$\beta \uparrow$ IS steeper

$$AE = (A - br) + \beta Y$$

Interest elasticity of IS curve

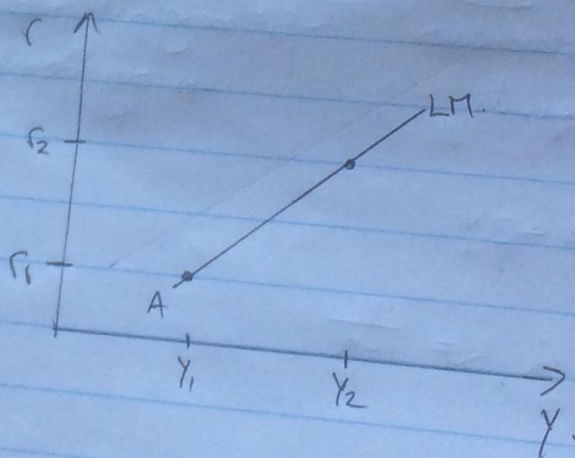
LM - Liquidity Money

$M/P = \text{qty of money}$



if $Y \uparrow$, $L \uparrow$.

$k \propto$ Slope



L5 - Balance of PMTs.

Current Accounts. Q2: -12,3

Trade in Goods

Trade in Services.

Investment income.

Financial Accounts. Q2: -15,4

Direct investments.

Portfolio in US.

Foreign Currency Reserves.

Better to have surplus in Current Acct

- Contracts are long term & support employment
- Provides flexibility for BoC to Δr .

Current Acct deficit.

- $r \uparrow$ to attract investors. $\rightarrow I \downarrow Y \downarrow$

Twin Deficit Problem

- Govt Debt
- $r \uparrow$
- Foreign investors buy Can. Bonds.
- Capital Acct \uparrow
- CAD \uparrow .
- Exports more expensive $X \downarrow$
- Current Acct Deficit

L6 FOREX

Floating: rate determined by supply & demand

Managed: floating but central bank intervenes to prevent speculators

Fixed: central bank buy/sell to maintain peg, or revalue

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POF.

L7 - Fiscal Policy - Debt

Discretionary: Deliberate change to govt spending or tax.

Automatic Stabilizers: EI & tax (fiscal drag of recovery)

Bond: maturity > 1 yr

Bill: maturity < 1 yr

Money Financing

- Gov sells bonds to BoC; BoC increases acct of Gov
 - Gov spends $\$$; $G \uparrow$ so $Y \uparrow$
 - Repayment: since crown corp, interest is free
- \Rightarrow Issue $G \uparrow$ and MST risk of hyperinflation

Internal Debt Financing

- Borrowing: $S \downarrow$ $r \uparrow$ $I \downarrow$ But $G \uparrow$ so Y neutral \Rightarrow Crowding out business
 - Repaying: $T \uparrow$ to repay principal + interest, but $G \uparrow + I \uparrow$ from interest
- $T \uparrow$ $C \uparrow$ $I \uparrow$ Y neutral \Rightarrow Uneven redis

Issues:

- Crowding out business sector ($S \downarrow$ $r \uparrow$ $I \downarrow$)
- Uneven redistribution of wealth (tax all but interest to wealthy)

External Debt Financing

- Borrowing: $G \uparrow$; $Y \uparrow$ by amount $\times K$.
 - Repaying: $T \uparrow$ by amount $\times K$
- Good: avoid crowding out, keep $r \downarrow$ & $I \uparrow$
- Cons: Net effect is contractionary
- Since no immediate effect on r , makes it easy for govt to overspend & build debts

To repay debt

- $Y \uparrow$ so $tY \uparrow$
- Keep $r \downarrow$ to contain interest
- Surplus must exist & grow each yr.
- Surplus must be used on debt

L8 - Money & Banking

Currency: Notes & Coins

Deposits: Checking & daily interest Acct

M2: M1 + Savings

Reserve/Deposit: (R/D) Set by B.o.C.

Currency Deposit: (C/D) Set by firms

Deposit multiplier $D/M = \frac{1}{R/D}$

Money multiplier $MM = \frac{1+C/D}{R/D+C/D}$

Functions of B.o.C.

- Manage monetary policy
- Control Canada's MS.
- Banker to Chartered & Commercial Banks
- Support financial system, reduce uncertainty
- Banker & financial adviser to GOC

Tools B.o.C.

- OMO.
- Change bank Rate
- Govt deposit switch
- R/D.

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BoC tools.

① OMO. BoC buys Gov. T-bills

Increases bank's cash reserve; $R/D \uparrow$

Banks compete to lend additional money $r \downarrow$

Since Bond price \uparrow , interest on bonds \downarrow

② Bank Rate & Banker's deposit rate

BoC lends @ Bank Rate

Borrows @ Deposit rate = Bank rate - $\frac{1}{2}\%$.

* Prime Rate = interest charged by chartered banks to their customers

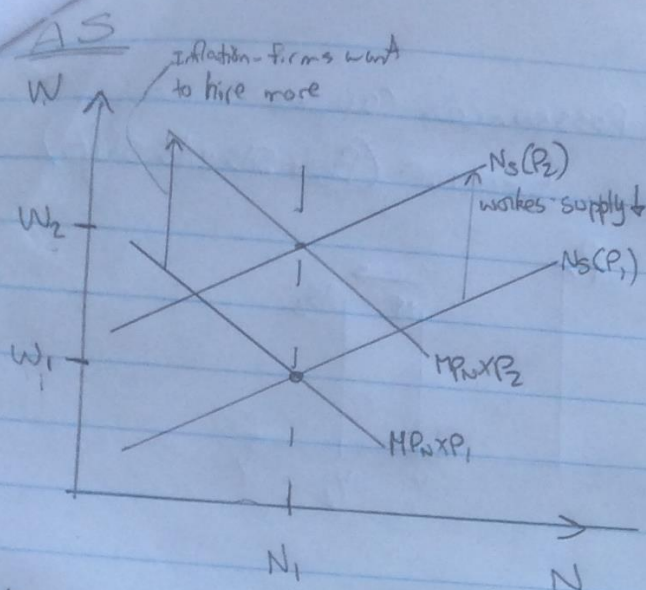
③ Govt deposit shifting

Redeposit: Send Govt accts to commercial banks

Banks $R/D \uparrow$, $r \downarrow$, more lending $MS \uparrow$

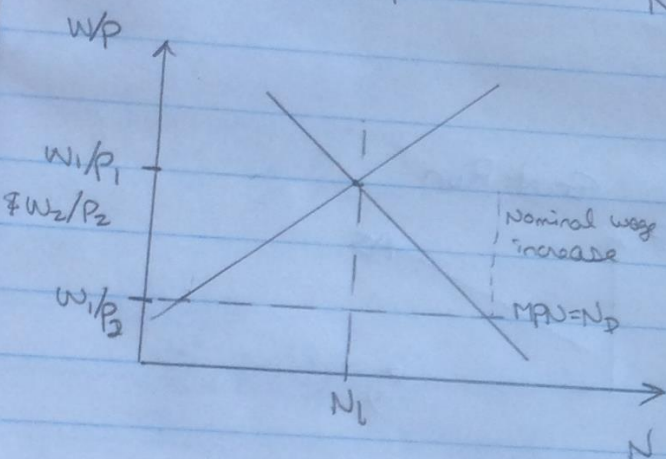
Drawdowns: shift gov deposits from commercial bank to GOC

④ Changes in R/D .



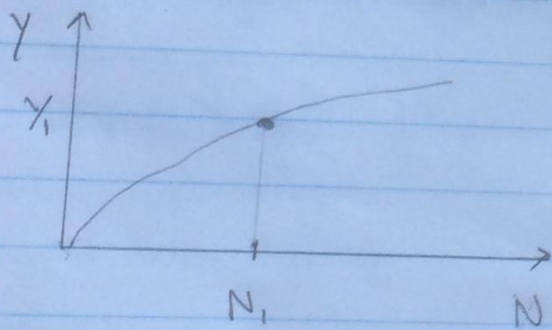
Prices ↑

- Firms hire: $MP_N \times P$ shifts left
- Workers don't see value of work $N_s(P)$ shifts right
- Equilibrium N_1 unchanged

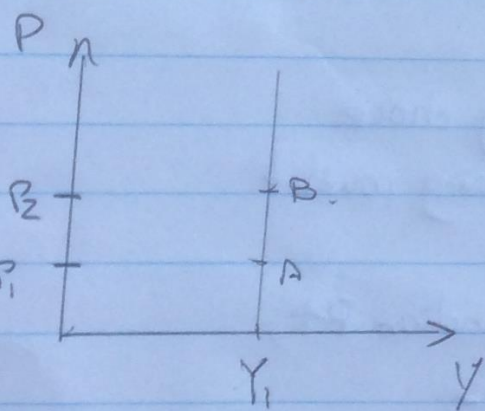


- Real wage w_1/P_1 falls to w_1/P_2
- Since $P_2 > P_1$
- Shortage of labor
- Nominal wage ↑ from w_1 to w_2
- Until original real wage prevails.

Production Function



At a given N_1 , there is a corresponding $Y = f(N)$

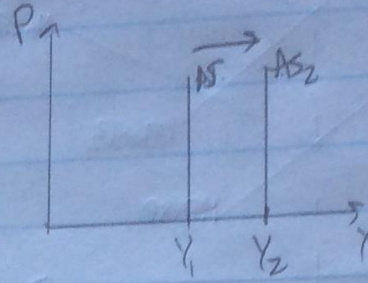
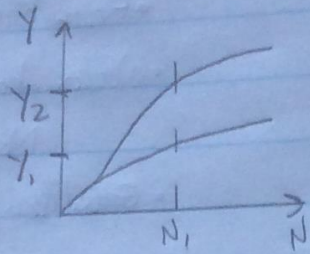
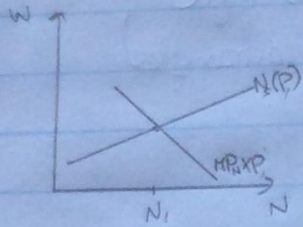
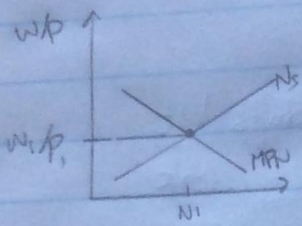


LAS curve is vertical.

Short term $P \uparrow$ causes $N \uparrow$ then $Y \downarrow$ but self adjusted as $w \uparrow$ until $w_2/P_2 = w_1/P_1$ where $N_2 = N_1$ therefore $Y_2 = Y_1$

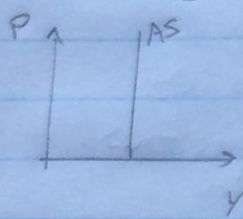
Shifts in A.S.

new technology or Resources causes shifts in production function (Both SAS & AS shift)

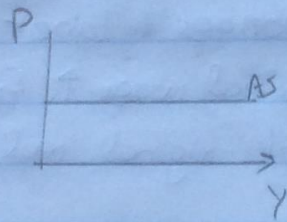


Shapes of AS

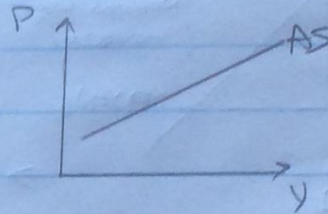
Full employment



Depression

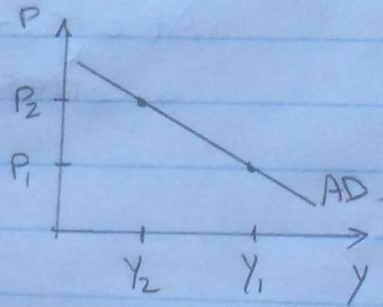
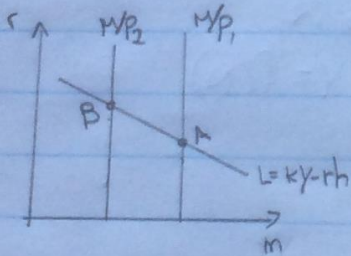


Short Run



AD

Therefore as $P \uparrow$, $M \downarrow$ so $Y \downarrow$



$P \uparrow$ is the equivalent of $M \downarrow$

Other shifts

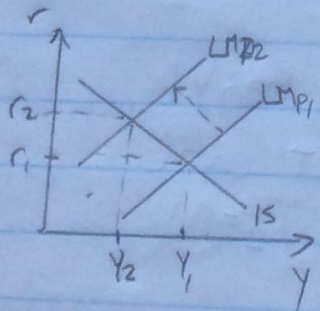
Wealth effect: Negative supply shock

$C \downarrow$ and $I \downarrow$ since purchasing power \downarrow

International

Substitution effect: if only Canadian $P \uparrow$,

$X \downarrow$ and $M \uparrow$ so $X - M$ falls.



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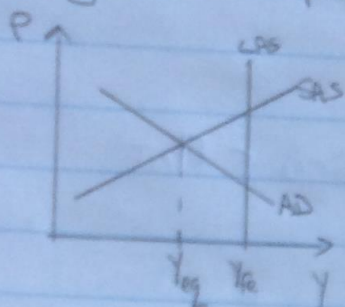
PIA

Long Run Supply Curve LRAS.

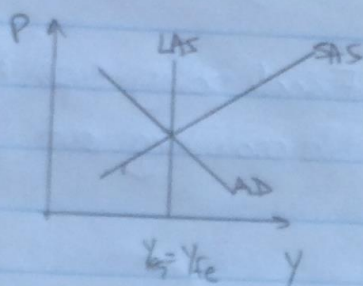
- Does not respond to price levels or Δ Prod. costs
- Shifts w/ Δ Resources or Δ Technology

3 cases.

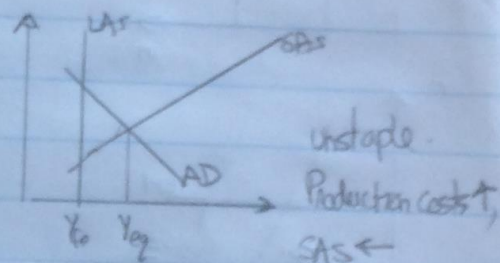
Cyclical Unemployment



Full employment



Temporary Overemployment



Shifts.

AD shift: Changes to G, I, T, X or M for reasons other than P .

Since fiscal & Monetary policy only affect AE , they can only shift AD .

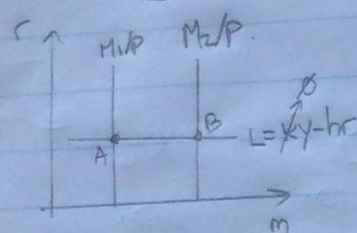
SAS shift: Country wide change in input prices (wage, energy)

SAS & LAS shift: Shock in resources or technology, country's ability to produce

BP Curve.

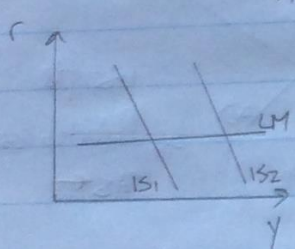
BoC increases MS. PPI buy bonds. $PB \uparrow, r \downarrow, I \uparrow, Y \uparrow, AD \rightarrow$

Liquidity Trap (Depression)

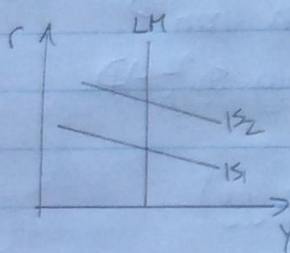


Changing MS has no impact on r .
Monetary policy can't $r \downarrow I \uparrow Y \uparrow$

Fiscal policy super effective.
No crowding out if $G \uparrow$ since r flat



Classical Case



$L = KY - hr; h = \emptyset.$

$L = KY$ or $M/P = KY$. $M = K \frac{\text{Nominal GDP}}{P}$

therefore $M \propto \text{Nominal GDP}$.

for a given Y , set target for MS, not r

Quantity theory of Money Equation

LM Vertical $\uparrow \frac{LM}{P} \rightarrow \uparrow \frac{MS}{P}$ Nonmoney illusion (ppl are aware to ΔMS & inflation)

$MV = PY$.

$V = \frac{PY}{M} = \frac{\text{Nominal GDP}}{M_1}$

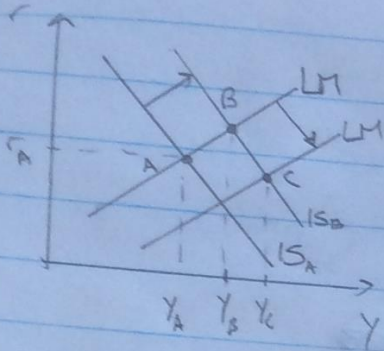
How much money is required to finance a certain level of GDP.

or $P = \frac{MV}{Y}$ Target inflation rate

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Can't have persistent inflation unless MS \uparrow proportional to inflation rate.

Inflation & M/P.



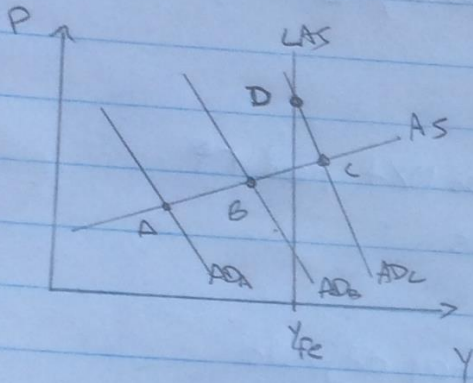
Excess spending, $IS \rightarrow B$.

$r \uparrow$ so I should slow, stabilizing @ B.

If $M/P \uparrow$, LM shifts to C.

$r \downarrow$ & $E \uparrow$ so $Y \uparrow$ further

ASAD



As $Y \uparrow$, $I \uparrow$, the excess spending pushes $AD_1 \rightarrow AD_2$

Increase in prices \Rightarrow Inflation

Letting M/P grow too much can push $Y > Y_{fe}$.

Drives Real wages \uparrow , $U \uparrow$ so $Y \downarrow$ back to Y_{fe} , Prices up to C.

2 Kinds of Shock to the Economy.

- Non Economic: wars, natural disasters
- Economic: ΔX .

Complexity of Policies

- Shocks can be unpredictable & of unknown duration
- Policy time lag
- Uncertainty about Y & size of K (0.9-1.5)

Lags

	Fiscal	Monetary	
Recognition	6 mth	6 mth	
Decision	Long	Daily	
Action	Annual budget	Daily	
outside Effect	instant multiplier effect	Δ effects long & uneven 6-9 mth first adj then ~2yrs for rest	ECON PIB

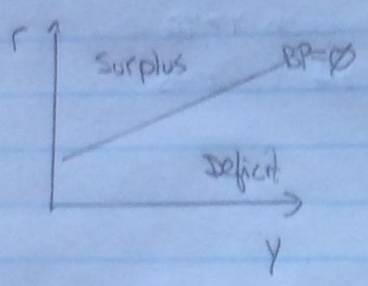
Implications of delays.

- Monetary policy needs to be applied gradually

Balance of Payments

Current Acct $f(NX)$ ← lags because long term contracts
 Capital Acct $f(r)$ ← Dominates because capital flow liquid

BP Curve

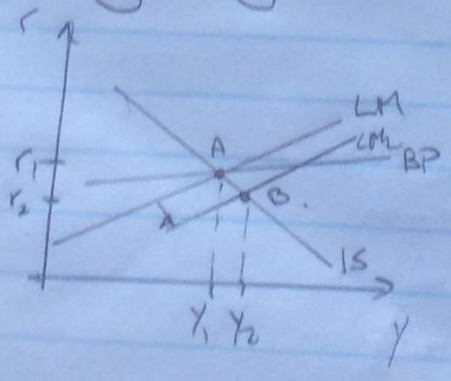


- Upwards since Y makes $M \uparrow$ so $NX \downarrow$ need $r \uparrow$ to encourage capital flows.
- Slope \propto MPM
- Shifts (flexible regime) currency adjusts to restore $BP=0$

Sterilization: Central bank buys (MS \uparrow) or sells (MS \downarrow) bonds in exchange for changes in bank cash reserve (OMO). Alternative to buying foreign currency

Fixed Exchange

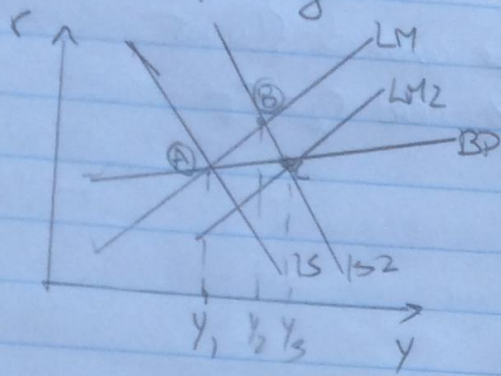
Monetary Policy



MS \uparrow , LM \rightarrow LM2, $r \downarrow$ therefore Bonds demand from int'l \downarrow , capital outflow, cap ACCT \downarrow .
 to prevent currency deval, central bank buys currency; MS \uparrow so back to A.

Monetary Policy has no effect

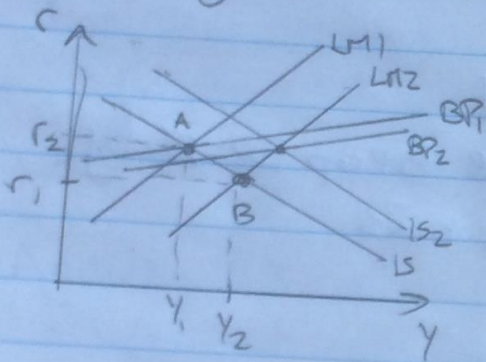
Fixed Ex. Rate
Fiscal policy



$G \uparrow, IS_1 \rightarrow IS_2, r \uparrow$, international D. for bonds \uparrow
inflow of money, currency \uparrow , C.B. sells
currency buys forex $M \uparrow, LM_1 \rightarrow LM_2$
 $r \downarrow, \text{\$} \uparrow, Y \uparrow$

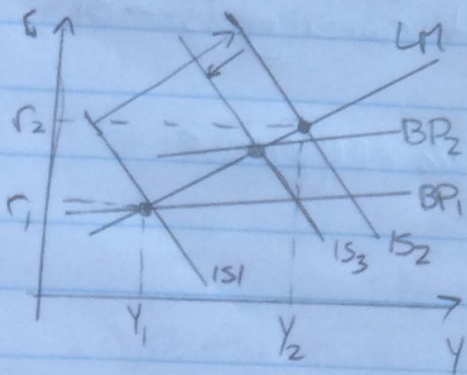
Total effect.

Floating Exchange
Monetary



$M \uparrow, r \downarrow, I \uparrow, Y \uparrow$ so $M \uparrow$; w/ $r \downarrow$, outflow of capital
currency devaluates, Cap Acct deficit
 $M \uparrow$ but currency \downarrow cancels, also $X \uparrow$ more attractive
Overall $NX \uparrow$, current Acct surplus.
Causes $BP_2 < BP_1$, and $X \uparrow$ causes $IS_1 \rightarrow IS_2$

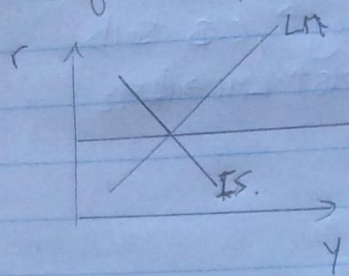
Fiscal



$G \uparrow$ so $IS_1 \rightarrow IS_2$. $r \uparrow$, inflow of $\text{\$}$, cap Acct surplus.
Currency \uparrow ; so $X \downarrow$ also since $Y \uparrow, M \uparrow$ so
 $NX \downarrow$ & current Acct deficit
Because $X \downarrow, IS_2 \rightarrow IS_3$ & New NX changed
 $BP_1 \rightarrow BP_2$

Partial crowding out

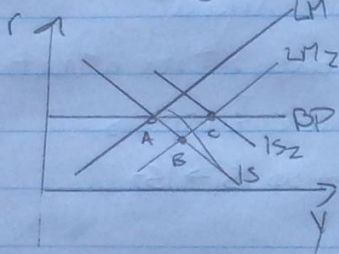
Perfect Capital mobility



tiny Δr = huge capital flows
to keep $BP=0$, need $r_d = r_f$

Fixed Regime in Perfect Capital mobility
 \Rightarrow Unchanged

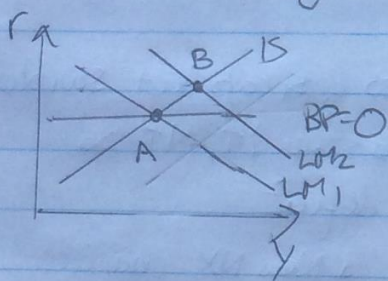
Monetary Policy



Same except BP is fixed.

Letting currency depreciate to keep $BP=0$ by
 $X \uparrow$ is equivalent to tariffs.
frowned upon

Fiscal Policy



$G \uparrow$, $IS_1 \rightarrow IS_2$, capital inflow, currency appreciation
currency \uparrow , $X \downarrow$, $M \uparrow$, $NX \downarrow$ causing $IS_2 \rightarrow IS_1$

Fiscal policy \Rightarrow 100% ineffective

No perfect Capital Mobility

- Countries have tax on intl investments
 - Transaction costs
 - Country risks
-) Damps forex movements

L11 Rules Discretion

Issues w/ Policy

- Detection lag: 3-6 month
- Hard to link causality
- Time lag to implement fiscal policy
- Time lag for monetary policy to take effect

Discretion: do whatever

Rule: Automate actions to maintain targets

For Discretionary

- Monetary & fiscal information advantage
- Public interest theory: lack of profit motive

Against Discretionary

- Sufficient info avail to public to cancel info advantage
- Public Choice theory: ppl might act for self interest or job security/satisfaction
- Time lag & information recognition problems

Monetary policy - Wage indexation

- Only work if inflation comes from excess spending, not Supply Shocks
- Costly to implement
- Indexation makes AS steeper

Monetary policy: Target growth rate of MS

Issues

- Aggregate equations for MS are unstable
- Need to predict changes in Y

Mon. Policy: maintain Credible Reputation

- Since 1980, target to keep inflation 1-3% been achieved
- Make gradual changes

Fiscal Policy - Rules of budgeting

- US - Automatic cuts w/ deficit reaches X
- CA - Use to have committee to dispense fed funds. Removed because slowed down govt - since then scandals
- Govt spending multiplier ~ 1

Exchange Rate policies

- Fixed FX rate: eliminates discretionary mon policy
- Not practical for industrialized countries. Have floating to protect ag. speculative attacks: credible fiscal & mon policies.

Floating FX Rate Risks in Asset valuation

- ① Accounting risk: $\Delta FX = \Delta$ value of goods even if P. fixed
- ② Transaction Risk: ΔFX increases chances that bank or lender default on loan
- ③ Currency risk: $\Delta FX = \Delta$ return on stocks & bonds.

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Forward contracts: Hedge against FX risks

Floating FX Rates are shock absorbers for bal. of payments

Eurocurrency market: trading securities in currencies other than the one where security is held
⇒ focus of global financial arbitrage

Future:

Dollorization: Abandon local currency & adopt US dollar. ex: US buys bonds from govt of Ecuador, gets his US\$. Downside = No more influence/control on monetary policy

Financial Crisis causes

- ① Currencies diverge from valuations based on fundamentals causing speculative attacks
- ② Anticipated divergences ⇒ Spec Attacks
- ③ Moral Hazard → lending based on relation to faulty ppl

IMF - Pool of funds ⇒ Jointly buying then IMF extends loans to countries in need. Conditional loans

ex-ante-conditionality: fix your shit BEFORE loan

ex-post-conditionality: fix your shit AFTER loan extended

World Bank: loans to dev countries to reduce poverty & improve O.D. living

LD-ENV

Economic Obs: improve human welfare through consumption of goods & services

Environment Obs: Protect integrity & resilience of ecological systems

Social Objective: Enrich human relationships & group aspirations

Economic policy impact on environment are either

- beneficial
- harmful
- Unknown

Liberalizing reforms: often lead to econ & sustainable gains

- ex: Remove price distortion: improve efficiency of energy related activity can limit pollution

Harmful impacts of Econ Policy: can be avoided by implementing complementary policy.

- Policy distortion: subsidize timber = deforestation
- Market Failures: water/air pollution cost not reflected in prices
- Institutional Constraints: poor accountability of crown corps, inadequate property rights

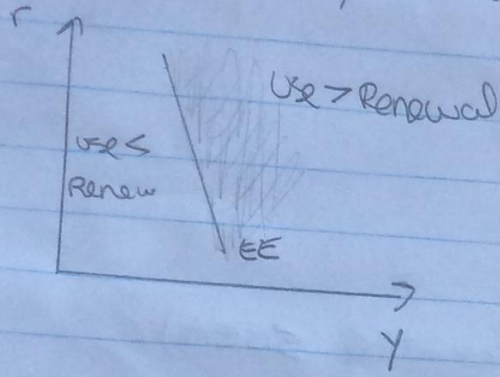
First best macroecon policies: only address econ issues. Do not maximize welfare if externalities exist

Second best: Allow time for complementary reforms

ECON

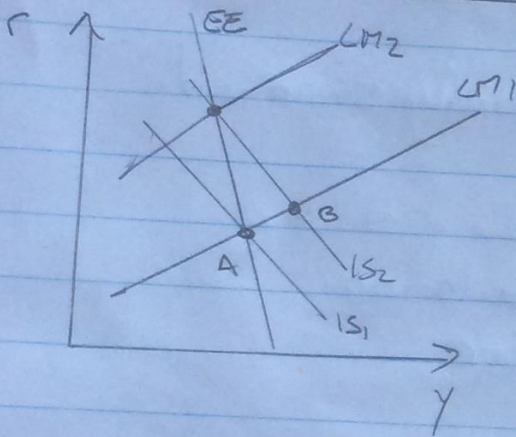
pg 2

Environmental Equilibrium



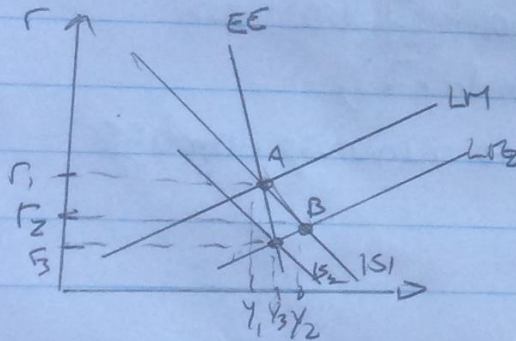
\$\rightarrow\$ Slope down n. $Y \uparrow$ need more resources
 Typically steep: ~~env~~ env. inv sensitive to r
 Shift w/ env. regulation

Expansion Fiscal Policy: if not accompanied by env measures, EE fixed



$G \uparrow, IS \rightarrow IS_2$; cross to use > Renewal
 if no env policy, need Contract Mop. policy
 $MST \downarrow, LM_1 \rightarrow LM_2$
 Now $Y \downarrow$ and $r \uparrow$

Monetary Policy



$MST \downarrow, LM_1 \rightarrow LM_2, Y_1 \rightarrow Y_2$, supply of MST so $r \downarrow$
~~Need Central Paired EE~~; use > Renewal
 Need Contract Fiscal.
 $G \downarrow$ so $IS_1 \rightarrow IS_2$, since $r_3 < r_1$, $I \uparrow$ so
 $Y \uparrow$; $Y_3 > Y_1$

Action Impact Matrix: screen problems & prioritize policies

	Objective	Impact on land	pollution Air	water
Macropolicy				
Complementary measures				

Measure Issues

GDP does not take into account

- Income distribution
- Non market activities
- Environmental effects

UN Integrated System of Environmental & Econ. Accounting (SEEA)

standardizing best approaches Framework

• Green GDP: GDP adjusted to reflect cost of resource depletion & pollution

• Green NDP (Net Domestic Product): Potentially sustainable income

• Total Wealth per capita: W/P $W =$ Value of stock of living & non living resources, $P =$ Population

• ISEW: Index of Sustainable Economic Welfare

Process to avoid Env. Damage

- ① AIM analysis
- ② Specific ex-ante based on forecast complementary measures
- ③ Contingency plans to deal w/ ex-post (after fact)
- ④ Review timing & sequencing of policies to minimize damage

Tunnel through EKC

- ① Adopt win-win policies
- ② Use complementary measures
- ③ Reshape policy if damage is significant