AP Macro: Economic Models and Graphs Study Guide

Economic Conditions

Recession

Price Level

LRAS SRAS

PL_1

AD

Y_1 Y_F Real GDP

Serious Inflation

Price Level

LRAS SRAS

PL_1

AD

Y_F Y_1 Real GDP

Full Employment with Mild Inflation

Price Level

LRAS SRAS

PL_1

AD

Y_F Real GDP

Stagflation

Price Level

SRAS2 LRAS SRAS1

PL_2

PL_1

↓ SRAS
Cost-Push
Inflation

AD

Y_2 Y_F Real GDP

Effects of <u>Expansionary Monetary Policy</u>

Interest Rate

S_{m1} S_{m2}

i_1 ↓
i_2

Dm

Q1 Q2 Q of Money

Interest Rate

i_1
i_2 ↓

I_D

Q1   Q2   Q of Investment $

Price Level

LRAS SRAS

PL_2
PL_1

AD2

AD1

Y1 YF   RGDP

↑ MS → ↓i   ↓i → ↑ I (and C)—————————→ ↑ AD → ↑PL ↑ GDP
   (Sm)   ↓ unemployment

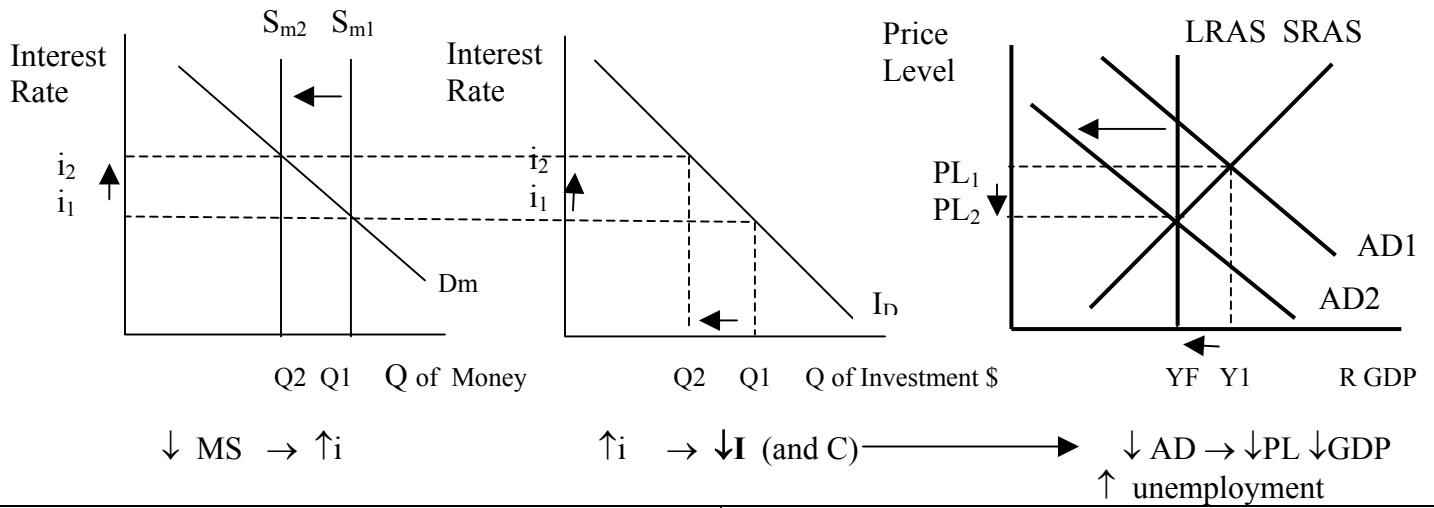| Expansionary Monetary Policy actions by FED:	Short Run vs Long Run Effects
↓ reserve requirement ↓ discount rate **Buy U.S. government bonds/securities** (Open Market Operation)	**Short Run**: ↓ i →↑ I →↑ AD (shift right)→ ↑ PL and output and ↓ unemployment; net export effect: ↑Xn **Long Run eco growth**: ↑ I→↑ LRAS (shift right – same as shift right of PPC curve)

Effects of Contractionary Monetary Policy

S_{m2} S_{m1}

Interest Rate

Interest Rate

Price Level

LRAS SRAS

i_2 ↑
i_1

i_2 ↑
i_1

PL_1 ↑
PL_2 ↓

Dm

I_D

AD1

AD2

Q2 Q1   Q of Money

Q2   Q1   Q of Investment $

YF Y1   R GDP

↓ MS → ↑i   ↑i → ↓I (and C) ————————▶ ↓ AD → ↓PL ↓GDP
                                                                     ↑ unemployment

Contractionary (Restrictive) Monetary Policy actions by FED:	Short Run vs Long Run Effects
↑ reserve requirement ↑ discount rate **Sell U.S. bonds/securities** (Open Market Operation)	**Short Run**: ↓I → ↓AD (shift left)→↓ PL ↓ output ↑unemployment; Net export effect: ↓ Xn **Long Run Eco. growth**: ↓ I → ↓ LRAS (shift left – same as shift left of PPC curve)

Effects of Expansionary Fiscal Policy: ↑G ↓T (creates deficit; government must borrow $ to spend)

S_m

Interest Rate

Interest Rate

Price Level

LRAS SRAS

i_2 ↑
i_1

i_2
i_1

PL_2
PL_1 ↑

Dm2

Dm1

I_D

AD2

AD3

AD1

Q1   Q of Money

Q2   Q1   Q of Investment $

Y1 YF   RGDP

↑Dm → ↑i   ↑i → ↓I (and C)
        (Crowding out effect)

Crowding out **weakens** the impact of expansionary fiscal policy
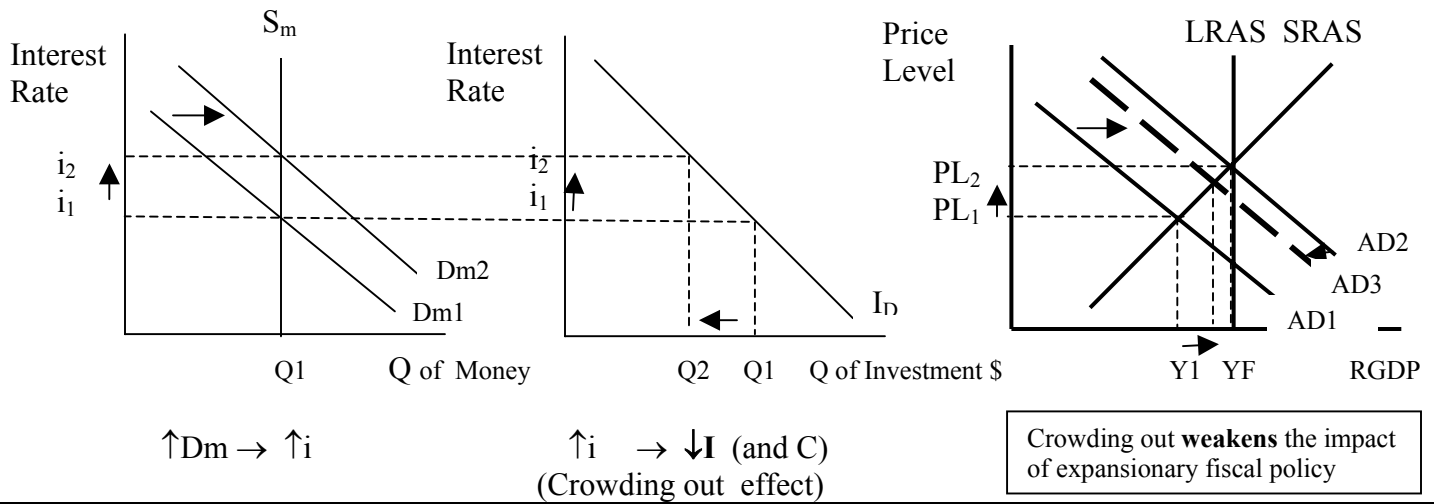
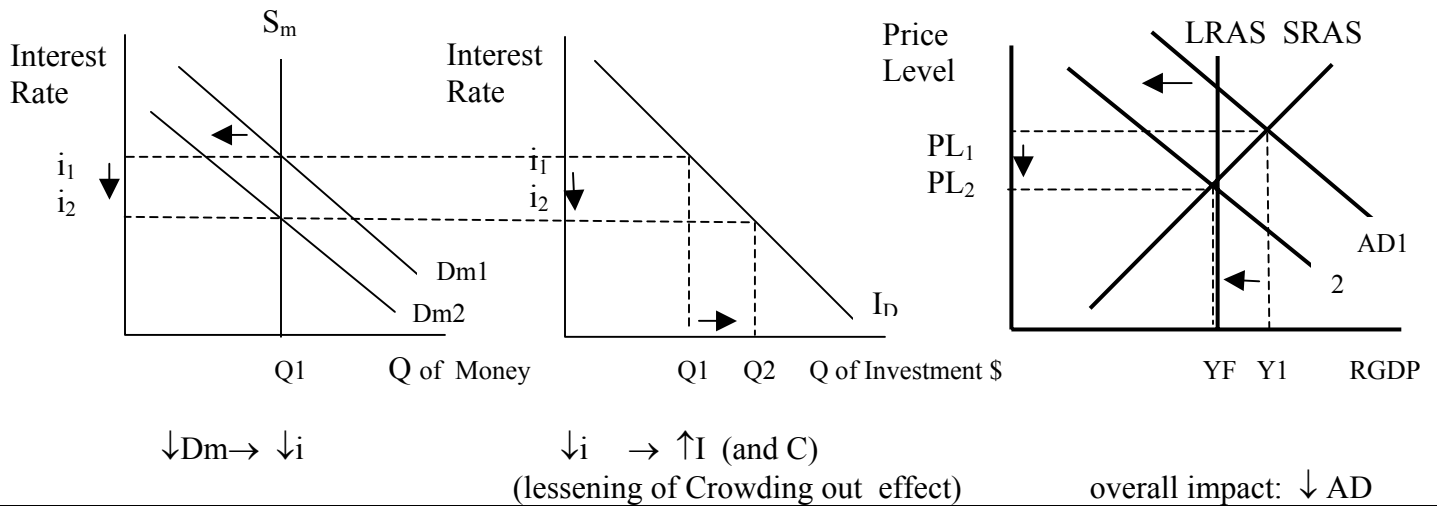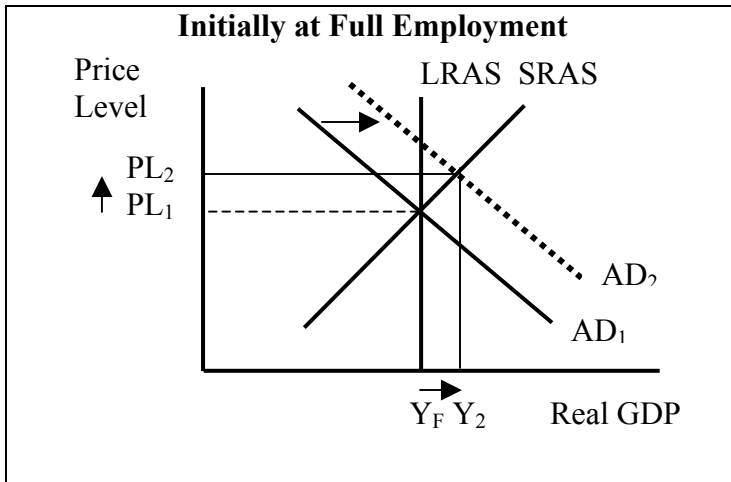| **Expansionary Fiscal Policy actions:**	Short Run vs Long Run Effects of Expansionary Fiscal Policy
Increase in G directly increases AD as G is a component of AE. Decrease in **T** increases **Yd (disposable income)** and more spending (C) occurs. Overall impact is increase in AD (increase in output, employment and PL). **Side Effect**: Deficit spending increases the demand for money and pushes up interest rates. Higher interest rates **crowd out** some business investment and interest rate sensitive spending by consumers. To the extent that crowding out occurs, the expansionary impact of the fiscal policy will be weakened.	**Short Run**: increases AD (shift right): ↑ PL and output; ↓ unemployment. Deficit → ↑Dm→↑i → ↓I due to **crowding out effect** and ↓Xn due to **net export effect** (↑I → D foreign demand for bonds →appreciation of $ ↓Xn) **Long Run Economic Growth**: decrease I decreases LRAS (shift left – same as shift left of PPC curve) (depends on the amount of crowding out that occurs)

Effects of <u>Contractionary Fiscal Policy</u>: ↓G ↑T (moves budget toward surplus; less borrowing)

S_m
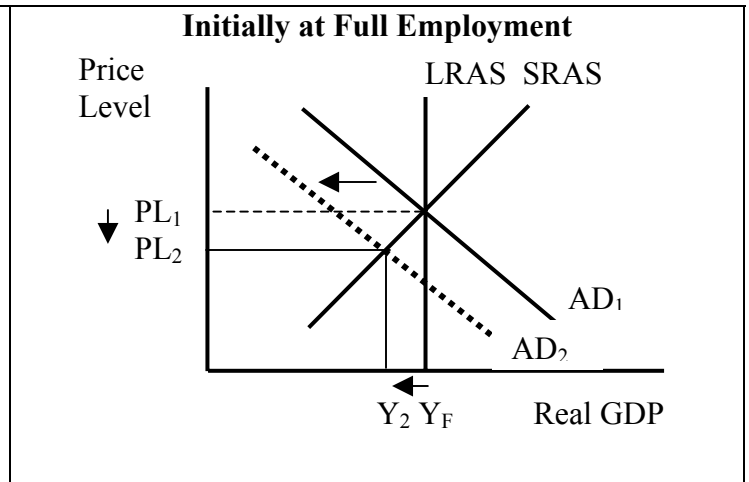
Interest Rate

Interest Rate

Price Level   LRAS SRAS

i_1 ↓
i_2

i_1 ↓
i_2

PL_1
PL_2

Dm1
Dm2

I_D

AD1
2

Q1   Q of Money

Q1 Q2   Q of Investment $

YF Y1   RGDP

↓Dm→ ↓i

↓i → ↑I (and C)
(lessening of Crowding out effect)

overall impact: ↓ AD

Impact of Monetary and Fiscal Policies on Interest Rates and Business Investment Spending

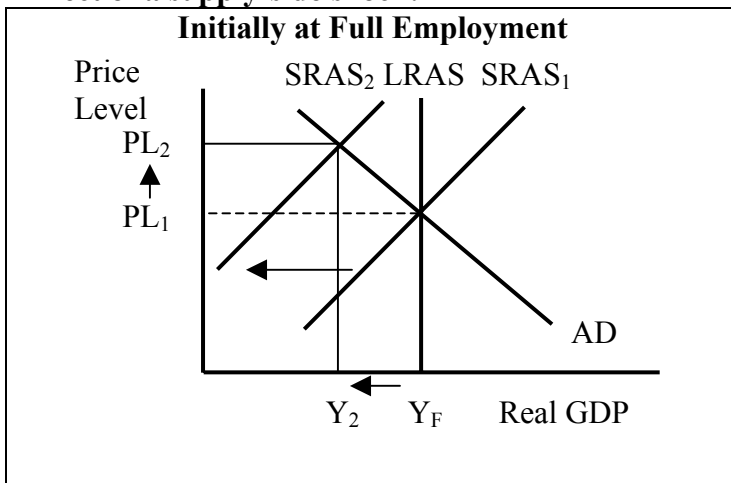| Policy	Money Market	Interest Rates	Investment (I)
Expansionary Monetary Policy	Increase supply of money	decrease	increase
Expansionary Fiscal Policy	Increase demand for money	increase	decrease
Contractionary Monetary Policy	Decrease supply of money	increase	decrease
Contractionary Fiscal Policy	Decrease demand for money	decrease	increase

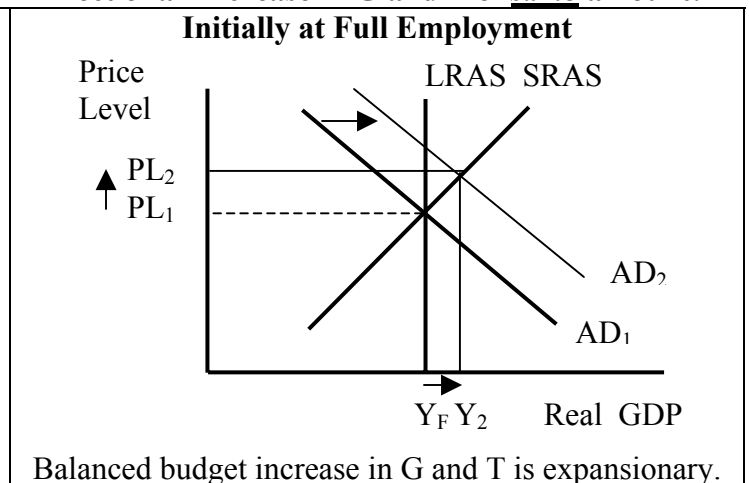**Effect of an increase in G or decrease in T**

Initially at Full Employment

Price Level   LRAS SRAS

PL_2 ↑
PL_1

AD_2
AD_1

Y_F Y_2 Real GDP

Effect of a decrease in G or increase in T

Initially at Full Employment

Price Level   LRAS SRAS

↓ PL_1
PL_2

AD_1
AD_2

Y_2 Y_F Real GDP

Effect of a supply-side shock:

Initially at Full Employment

Price Level $SRAS_2$ LRAS $SRAS_1$

PL_2
↑
PL_1

AD

Y_2 Y_F Real GDP

Effect of an increase in G and T of _same_ amount: *

Initially at Full Employment

Price Level   LRAS SRAS

↑ PL_2
PL_1

AD_2
AD_1

Y_F Y_2 Real GDP

Balanced budget increase in G and T is expansionary.
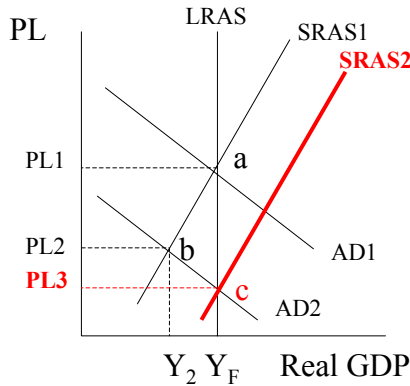
* If G and T were decreased by the **same** amount, the effect would be contractionary (↓ AD

Short Run vs Long Run Adjustments

Short Run --- not enough time for wages to adjust to price level changes. Changes in PL, output and unemployment occur.
Long Run --- enough time for wages to adjust; key effect is on PL.

$\downarrow$ AD $\rightarrow$ $\downarrow$ PL and output and $\uparrow$ unemployment in SR

Over time lower PL and surplus of labor put downward pressure on wages.

$\downarrow$ Wages lower business costs and $\uparrow$ SRAS.
LR: Lower PL. (a $\rightarrow$ c)

If PRICES AND WAGES ARE **FLEXIBLE** --- NOT STICKY!

Short Run vs Long Run Adjustments

If PRICES AND WAGES ARE **FLEXIBLE** --- NOT STICKY!
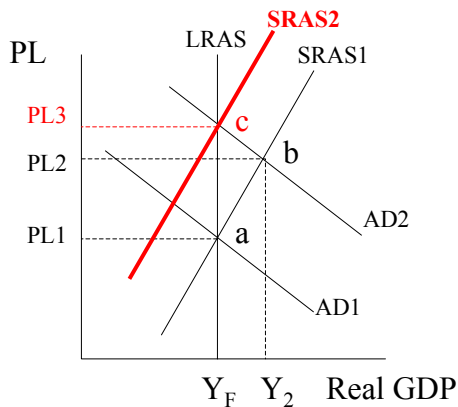
$\uparrow$ AD $\rightarrow$ $\uparrow$ PL and output and $\downarrow$ unemployment in SR

Over time higher PL and shortage of labor put upward pressure on wages.

$\uparrow$ Wages raise business costs and $\downarrow$ SRAS.
LR: Higher PL.

$C + I + G + Xn = \textbf{AE} \rightarrow AD \rightarrow GDP$ (Direct relationship between any component of AE and AD and GDP)

Factors that **Shift AD Curve**   Factors that **Shift the SRAS**

Factors that Shift AD Curve			Factors that Shift the SRAS	
↓ personal taxes (↑ Yd)	↑C	↑AD	↑ resource availability	↑ SRAS
↓ corporate income taxes (↑ profit exp.)	↑I	↑AD	↓ **WAGES** (or any other resource cost)	↑ **SRAS**
↑ government spending (exp. Fiscal)	↑G	↑AD	New technology	↑ SRAS
↑ G and T by same amount . ↑ G offsets the ↓ C. Effect = 1 x ↑G.	←	↑AD	↑ **PRODUCTIVITY**	↑ **SRAS**
↑ profit expectations of businesses	↑I	↑AD	↓ government regulation	↑ SRAS
↑ wealth or ↓ consumer indebtedness	↑C	↑AD	↑ government subsidies	↑ SRAS
↑exports / ↓ imports	↑Xn	↑AD	↓ business taxes (sales/excises)	↑ SRAS
$ depreciates	↑Xn	↑AD	↓ costs of production	↑ SRAS
↑ money supply → ↓ interest rates Net export effect ⟶	↑**I** ↑**C** ↑Xn	↑AD		
↓ deficit spending → ↓DLF and/or ↓ Dm → ↓interest rates (i)	↑**I**	↑**AD**		
↑ in personal taxes (↓ Yd)	↓C	↓AD	Supply-side shock (↑ energy prices)	↓ SRAS
↑ corporate income taxes (↓profit exp.)	↓ I	↓AD	↓ resource availability	↓ SRAS
↓ government spending (contr. Fiscal)	↓ G	↓AD	↑ **WAGES** (or any other resource cost)	↓ **SRAS**
↓ G and ↓T by same amount . ↓ G offsets the ↑C. Effect = 1 x ↓G.	↓ G	↓AD	↓ technology	↓ SRAS
↓ profit expectations of businesses	↓ I	↓AD	↓ **PRODUCTIVITY**	↓ **SRAS**
↓ wealth or ↑ consumer indebtedness	↓C	↓AD	↑ government regulation	↓ SRAS
↓ exports / ↑ imports	↓ Xn	↓AD	↓ government subsidies	↓ SRAS
$ appreciates	↓ Xn	↓AD	↑ business taxes (sales/excises)	↓ SRAS
↓ money supply → ↑ interest rates Net export effect ⟶	↓**I** ↓**C** ↓Xn	↓AD	↑ costs of production	↓ SRAS
↑ deficit spending → ↑DLF and/or ↑ Dm → ↑ interest rates (i)	↓ I	↓AD	↑ inflationary expectations → ↑ wages	↓ SRAS

INCREASE = SHIFT RIGHT   DECREASE = SHIFT LEFT   (APPLIES TO BOTH CURVES)

Reasons for the inverse relationship between the price level and the quantity of real output purchased (negative slope of the AD curve):

- **Interest rate effect:** ↑PL → ↑Dm → ↑i → ↓ quantity of I and C (real output purchased) (opposite true if ↓PL)
- **Wealth/Real balances effect:** ↑PL →↓ purchasing power of wealth/real balances →↓ quantity of C
- **Foreign Purchases effect:** ↑PL →↓ exports (seem more expensive) and ↑ imports (seem cheaper) → ↓Xn

Reason for the positively sloped AS curve (direct relationship between the PL and the quantity of real output produced): higher PL needed to encourage higher production.
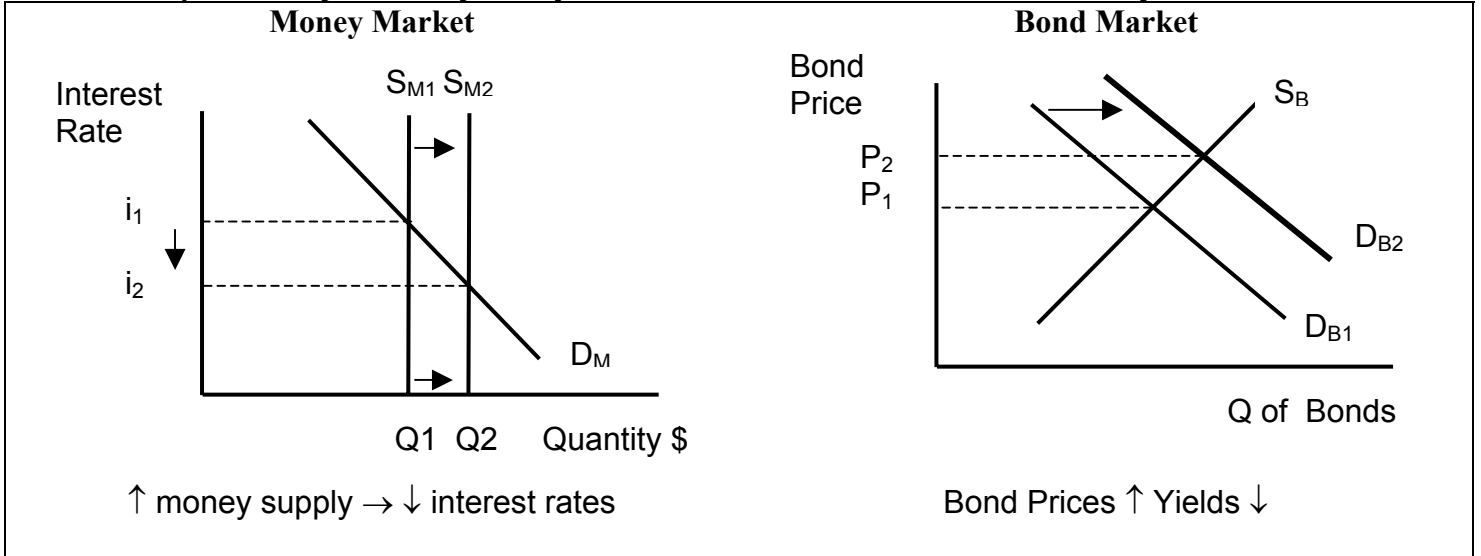**Demand-pull inflation**: ↑AD → ↑PL (**too much money chasing too few goods**)
Cost-push inflation: ↓ SRAS → ↑PL (**stagflation**)
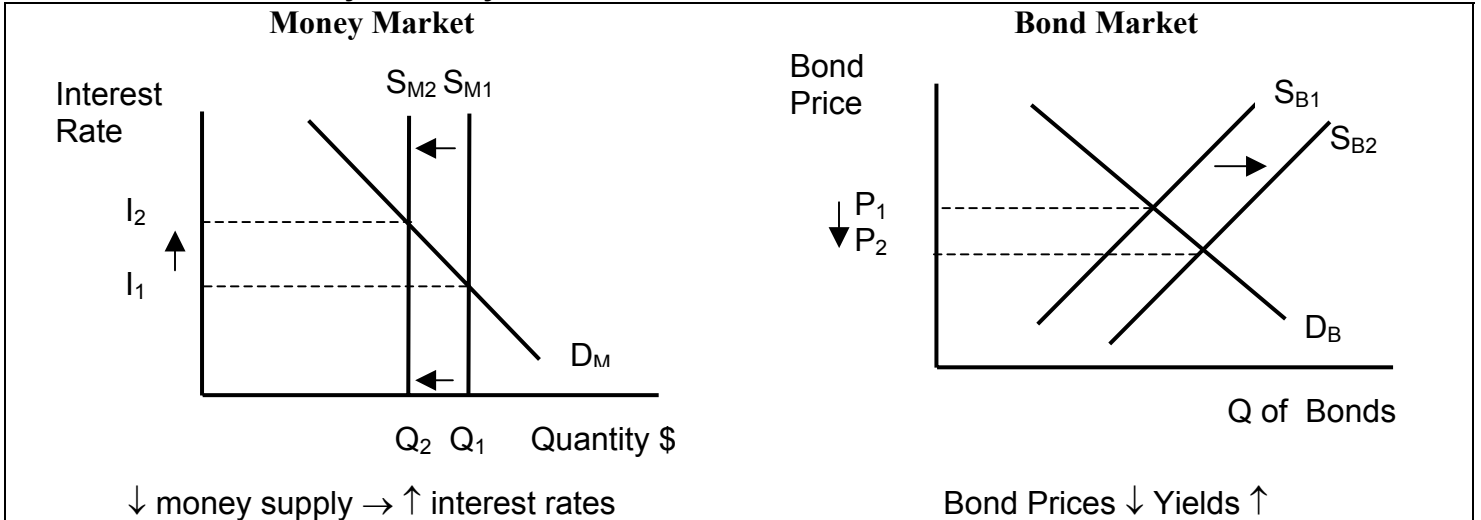
If ↑AD → no Δ in PL but increases in output and employment, the economy is operating in the horizontal (Keynesian) portion of its AS curve. High unemployment allows businesses to hire more workers without putting pressure on wages or prices. If **↑AD → ↑ PL but no Δ in output and employment,** economy is operating in the vertical (classical) range of its AS curve. Increased demand puts pressure on prices only as economy is operating at its maximum of output and employment.

Key Idea: Interest Rates and Bond Prices Vary Inversely
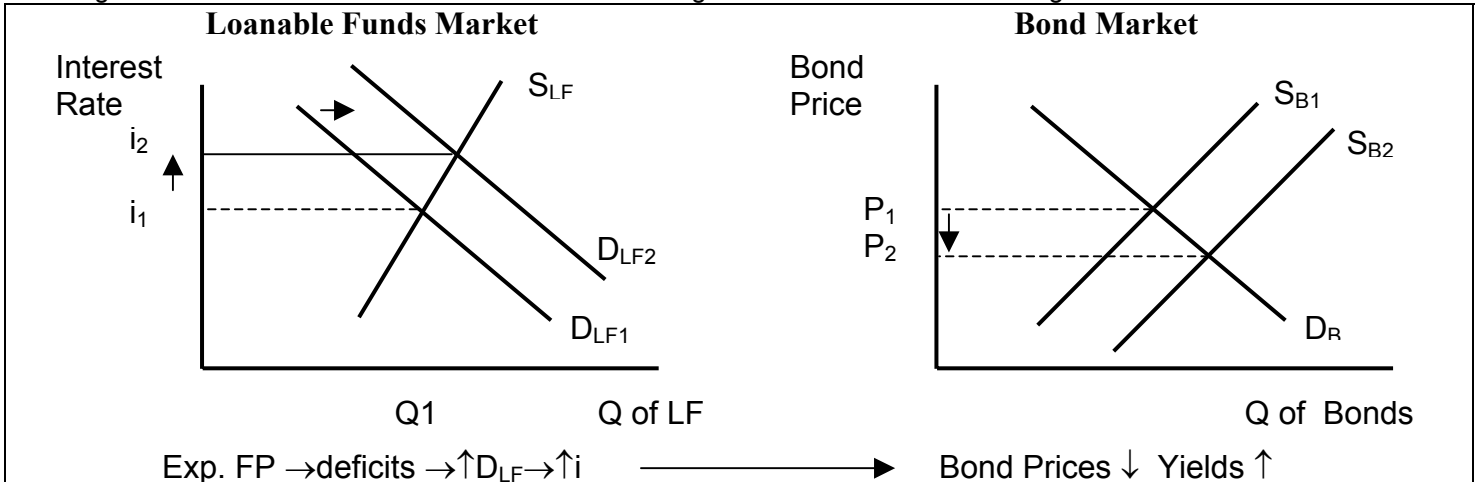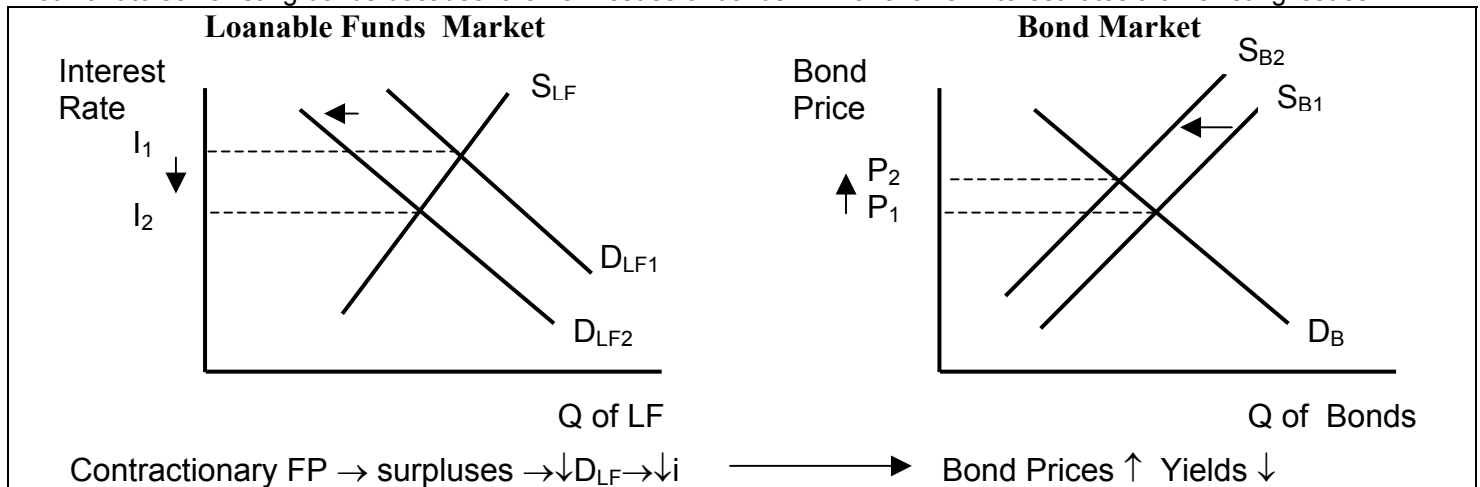
Effect of Expansionary Monetary Policy

Money Market

Interest Rate

S_{M1} S_{M2}

i_1

i_2

D_M

Q1 Q2   Quantity $

↑ money supply → ↓ interest rates

Fed buys bonds

Bond Market

Bond Price

S_B

P_2
P_1

D_{B2}

D_{B1}

Q of Bonds

Bond Prices ↑ Yields ↓

Effect of Contractionary Monetary

Money Market

Interest Rate

S_{M2} S_{M1}

I_2

I_1

D_M

Q_2 Q_1 Quantity $

↓ money supply → ↑ interest rates

FED sells bonds

Bond Market

Bond Price

S_{B1}

S_{B2}

P_1

P_2

D_B

Q of Bonds

Bond Prices ↓ Yields ↑

Effect of **Expansionary Fiscal Policy** ⟶ Treasury sells bonds to fund deficit and bondholders sell existing bonds because the new issues of bonds have higher interest rates than existing issues.

Loanable Funds Market

Interest Rate

S_{LF}

i_2

i_1

D_{LF2}

D_{LF1}

Q1   Q of LF

Exp. FP → deficits → ↑D_{LF} → ↑i ⟶

Bond Market

Bond Price

S_{B1}

S_{B2}

P_1
P_2

D_R

Q of Bonds

Bond Prices ↓ Yields ↑

Effect of **Contractionary Fiscal Policy** ⟶ Treasury ↓ bond sales due to surpluses and bondholders do not want to sell existing bonds because the new issues of bonds will have lower interest rates than existing issues.

Loanable Funds Market
Interest Rate
I_1
I_2
S_{LF}
D_{LF1}
D_{LF2}
Q of LF

Bond Market
Bond Price
S_{B2}
S_{B1}
P_2
P_1
D_B
Q of Bonds

Contractionary FP → surpluses →↓D_{LF}→↓i ⟶ Bond Prices ↑ Yields ↓

Conclusion: Interest Rates and Bond Prices Vary Inversely

Changes in the domestic money markets:

Supply of Money is fixed by the FED (vertical) ---- S_M changes as a result of FED Actions

Fed Action: (Monetary Policy Tools)	Δ S_M	Δ Interest Rates	Δ I_g and C	Δ AD
Inflation				
↑ reserve requirement	↓	↑	↓	↓
↑ discount rate	↓	↑	↓	↓
Open Market Operation: **Sell U.S. Bonds**	↓	↑	↓	↓
Recession				
↓ reserve requirement	↑	↓	↑	↑
↓ discount rate	↑	↓	↑	↑
Open Market Operation: **Buy U.S. Bonds**	↑	↓	↑	↑

Fiscal Policy affects the Demand for Money (money market) and/or the Demand for Loanable Funds (loanable funds market)

Expansionary Fiscal Policy increases Dm in money market. **Why**: 1) Deficit spending increases government demand for money. (Also, **↑D_LF in loanable funds market**); 2) increases in AD resulting from expansionary fiscal policy increase the price level and GDP. A rising nominal GDP increases demand for money to purchase the output (Dm in Money Market). In both the money market and the loanable funds market, the demand curves shift right and interest rates rise --- possibly creating a **crowding-out effect** (↓I).

Contractionary Fiscal Policy ↓ Dm in the money market. 1) a reduction in deficit spending or surpluses decrease government demand for money. In the loanable funds market, government needs to borrow less; therefore, **↓D_LF**. 2) decreasing price level and nominal GDP result in less money demanded to purchase output, thus ↓ Dm in the money market. In both markets, contractionary fiscal policy shifts the demand curve to the left and interest rates fall – possibly encouraging business investment spending (lessening the crowding-out effect).

Money, Banking and The FED

Key Terms:

Money	Anything acceptable as a medium of exchange that is portable, durable, stable in value, and divisible.
Barter System	Requires a double coincidence of wants
Functions of Money	Medium of exchange; store of value; unit of account or standard of value
M1	Most narrow definition of money; consists of currency and checkable deposits
M2	M1 + small time deposits and noncheckable savings deposits
M3	M2 + large time deposits and institutional money market funds
Transactions Demand	Money demanded for transactions; insensitive to interest rates (perfectly inelastic); **changes directly with nominal GDP**.
Asset Demand (Speculative)	Demand for money as a money balance ---varies inversely with interest rates - ↑ interest rates ↑ opportunity cost of holding money, so people reduce money balances; a ↓ in interest rates ↓ the opportunity cost of holding money so people hold more. Negatively sloped.
MV = PQ	Equation of Exchange
M	Money Supply
V	Velocity of money --- number of times $ is spent
PQ	Nominal GDP
Fractional Reserve System	System in which banks loan out a portion of their actual reserves (keep some in bank vault or on deposit at the FED, loan out the remainder).
Actual reserves	Money held by the bank (money in bank reserves is not counted in circulation)
Required Reserves	Percentage (actual $) of deposits banks must keep in bank vault or on deposit at the FED
Reserve Ratio or Reserve Requirement	Percent (%) of deposits FED requires banks to keep in bank vault or on deposit at the FED.
Excess Reserves	Reserves in excess of required reserves; amount available for loans. Actual reserves – required reserves = excess reserves.
Deposit Multiplier	The multiple by which the banking system can create money; = 1/RR
Loans	Means by which banks can create money.
Demand Deposit	Checkable deposit
The FED (Federal Reserve System)	Independent regulatory agency of the U.S. government—our nation's central bank; controls the money supply through monetary policy, provides services to member banks; supervises the banking system; etc.

Banks and Money Creation:

Key Principles:
- A **single bank** can create money (through loans) by the amount of its **excess reserves**
- The **banking system** as a whole can create money by a **multiple** (deposit or money multiplier) of the **initial excess reserves.**
- Reserves lost to one bank are gained by other banks in the system (under the assumptions below)
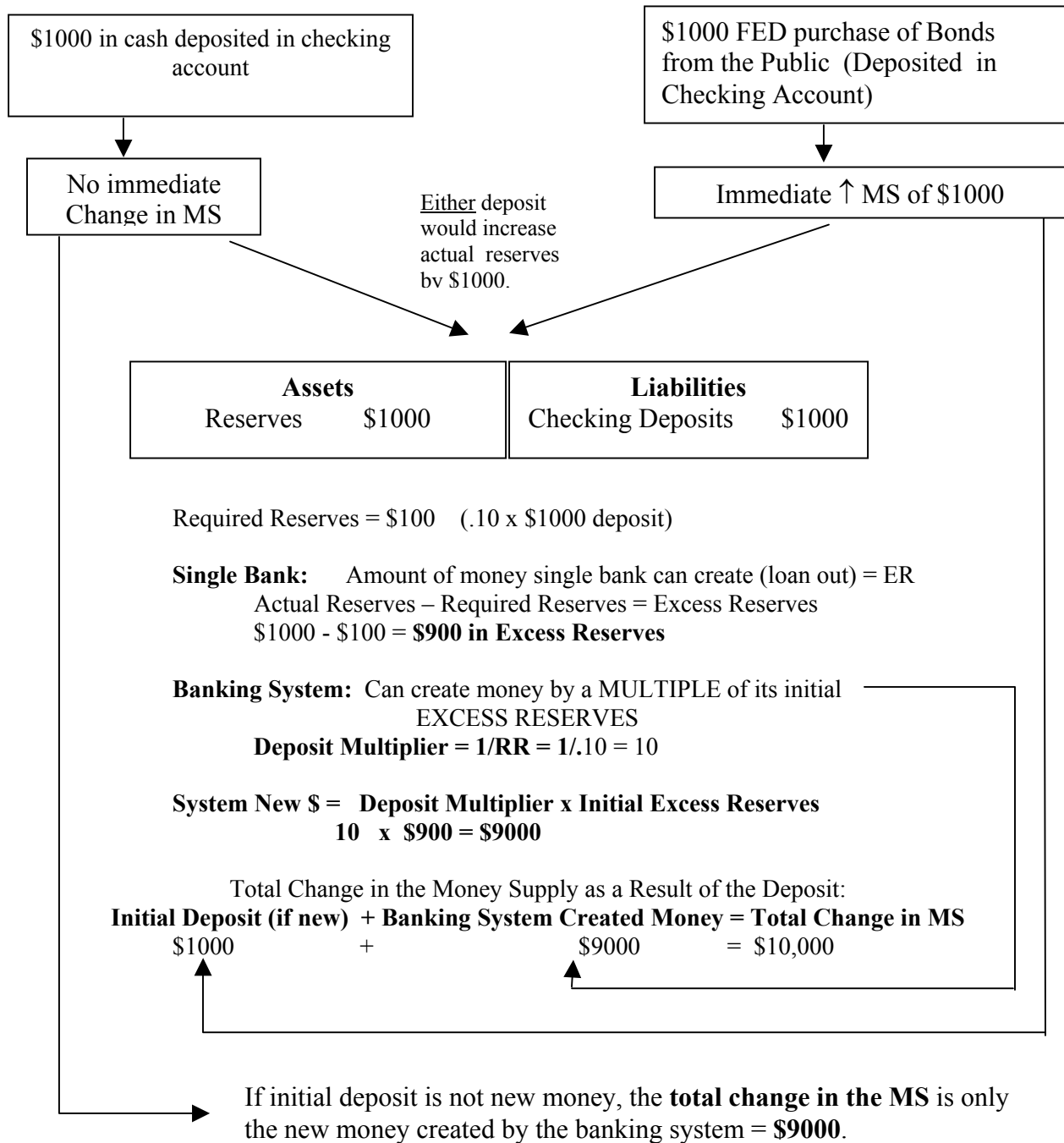
Key Assumptions for banking system to create its maximum potential:
- **Banks loan out all of their excess reserves**
- **Loans are redeposited in checking accounts rather than taken in cash.**

Initial Deposit	New or Existing $	Bank Reserves	**Immediate** Change in MS
cash	Existing	Increase (amount of deposit)	No; changes M1 composition from cash to currency.
FED Purchase of a bond from public	New	Increase (amount of deposit)	Yes; money coming out of FED is new $ in circulation
Bank Purchase of a bond from the public	New	Increase (amount of deposit)	Yes; money coming out of bank reserves is new $
Buried Treasure	New (has been out of circulation)	Increase (amount of deposit)	Yes.

If initial deposit is new money, the MS increases immediately by the amount of the deposit in the bank.

Money Creation Process (Assume 10% reserve requirement)

$1000 in cash deposited in checking account	$1000 FED purchase of Bonds from the Public (Deposited in Checking Account)

No immediate Change in MS

Immediate ↑ MS of $1000

Either deposit would increase actual reserves by $1000.

Assets	**Liabilities**
Reserves $1000	Checking Deposits $1000

Required Reserves = $100   (.10 x $1000 deposit)

Single Bank: Amount of money single bank can create (loan out) = ER
           Actual Reserves – Required Reserves = Excess Reserves
           $1000 - $100 = **$900 in Excess Reserves**

Banking System: Can create money by a MULTIPLE of its initial
                             EXCESS RESERVES
           Deposit Multiplier = 1/RR = 1/.10 = 10

System New $ =   Deposit Multiplier x Initial Excess Reserves
              10   x $900 = $9000

Total Change in the Money Supply as a Result of the Deposit:
Initial Deposit (if new) + Banking System Created Money = Total Change in MS
       $1000   + $9000   = $10,000

If initial deposit is not new money, the **total change in the MS** is only the new money created by the banking system = **$9000**.

Additional key terms and things to know:

FED Funds Rate --- interest rate banks charge each other for temporary (overnight) loans. The FED usually targets this interest rate with its open market operations.

Although each tool of the FED theoretically can work to increase or decrease the money supply, the most used tool of the FED is OPEN MARKET OPERATIONS (buying or selling government securities on the open market).

Changes in the reserve requirement are not frequently made because they can be destabilizing. The Discount Rate is relatively insignificant because banks are more likely to borrow from each other and pay the FED funds rate rather than borrow from the FED (lender of last resort). Discount rate changes usually simply act as a signal of the direction the FED is taking with monetary policy: expansionary (↓ discount rate) or contractionary (↑ discount rate).

Elasticity and Macroeconomics

Elasticity: degree of responsiveness of quantity demanded or quantity supplied to a change in price; in macro it is often referred to as a "**sensitivity**" (relatively elastic) or **lack of sensitivity** (relatively inelastic) of quantity to a change in interest rates, PL, prices, etc.   Macro applications of elasticity are found below:

Money Market Supply Curve

i S_M

Q_M
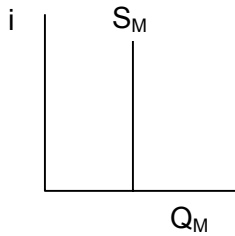
S_M in the money market is **"fixed" by the FED**; therefore, it is **perfectly inelastic** (vertical) indicating a lack of sensitivity of Q_M to interest rate changes. Interest rate changes do not change the quantity of money supplied; however, changes in the S_M do change interest rates.

Loanable Funds Supply Curve

i S_{LF}

Q_{LF}
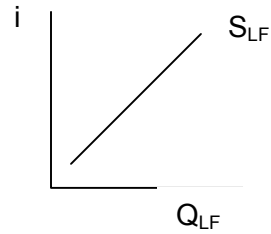
S_{LF} in the loanable funds market reflects a sensitivity between interest rate changes and the quantity of loanable funds supplied. At higher interest rates, there is more saving to provide a pool of loanable funds; at lower interest rates, saving declines. Therefore, **the quantity of loanable funds varies directly with interest rates making the S_{LF} curve positively sloped.**

It is important to make the above distinction in supply curves when drawing graphs of the markets above. Failure to draw the S_M curve as a vertical line and the S_{LF} curve as a positively sloped (upward sloping) line will cost you points on the free response.

AS Curve in the Classical View

PL   AS

AD

AD

Y_F GDP_R
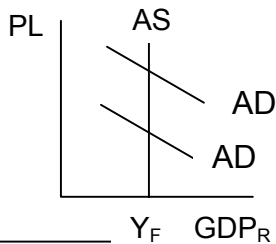
The classical school of thought depicts the AS curve as **vertical** (output/employment are not sensitive to price level changes – **perfectly inelastic** curve) at full employment, reflecting the belief that changes in AD cause only temporary instability and the economy adjusts back to full employment through price/wage flexibility. AD has its greatest effect on PL --- not output and employment, and supply creates its own demand (Say's Law).

AS Curve in the Keynesian View

PL

AS

AD   AD

Y Y GDP_R
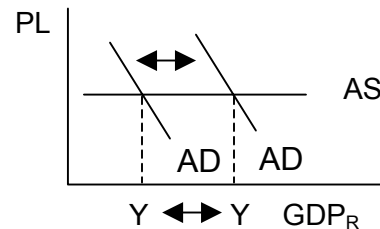
Keynesians view the AS curve as **horizontal** (**perfectly elastic**) at output levels below full employment. This reflects their belief that prices and wages are inflexible downward and that increases in AD at less than full employment do not put upward pressure on the price level due to large numbers of unemployed workers. Changes in AD have their greatest effects on output and employment, not PL.
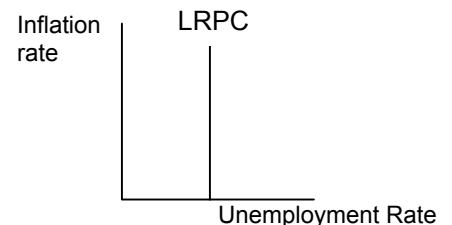
LRAS Curve

PL   LRAS

Y_F GDP_R
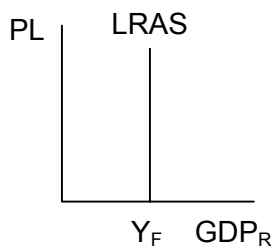
The LRAS is vertical (perfectly inelastic) at Y_F representing a maximum productive potential at any point in time; in the LR, only the PL changes.

Short-Run Phillips Curve

Inflation rate

PC
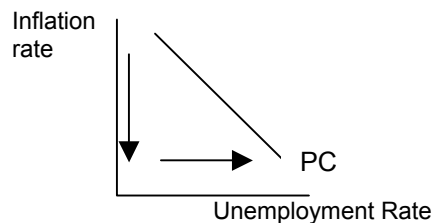
Unemployment Rate

The PC reflects a trade-off between inflation and unemployment – ↑ PL → ↓ unemployment

Long-run Phillips Curve

Inflation rate   LRPC

Unemployment Rate

The LRPC (vertical) reflects the same point as the LRAS curve – no trade-off exists between PL and output and unemployment in the LR --- only the PL changes.

Interest Rate Sensitivity and Money Demand

Interest rates

DmA

DmB

Quantity of $
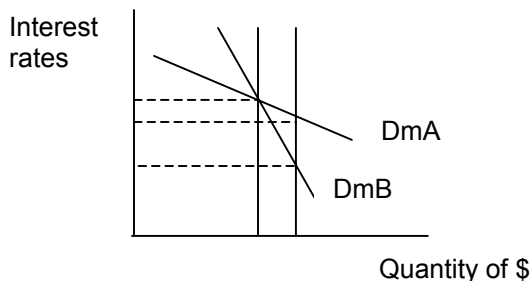
An ↑ Sm results in a small change in interest rates if the Dm is more elastic (DmA) and a larger change in interest rates if the Dm is more inelastic (DmB). If investment demand is sensitive to interest rates, the change in Ig, AD, output, etc., will be greater the more inelastic the money demand curve.
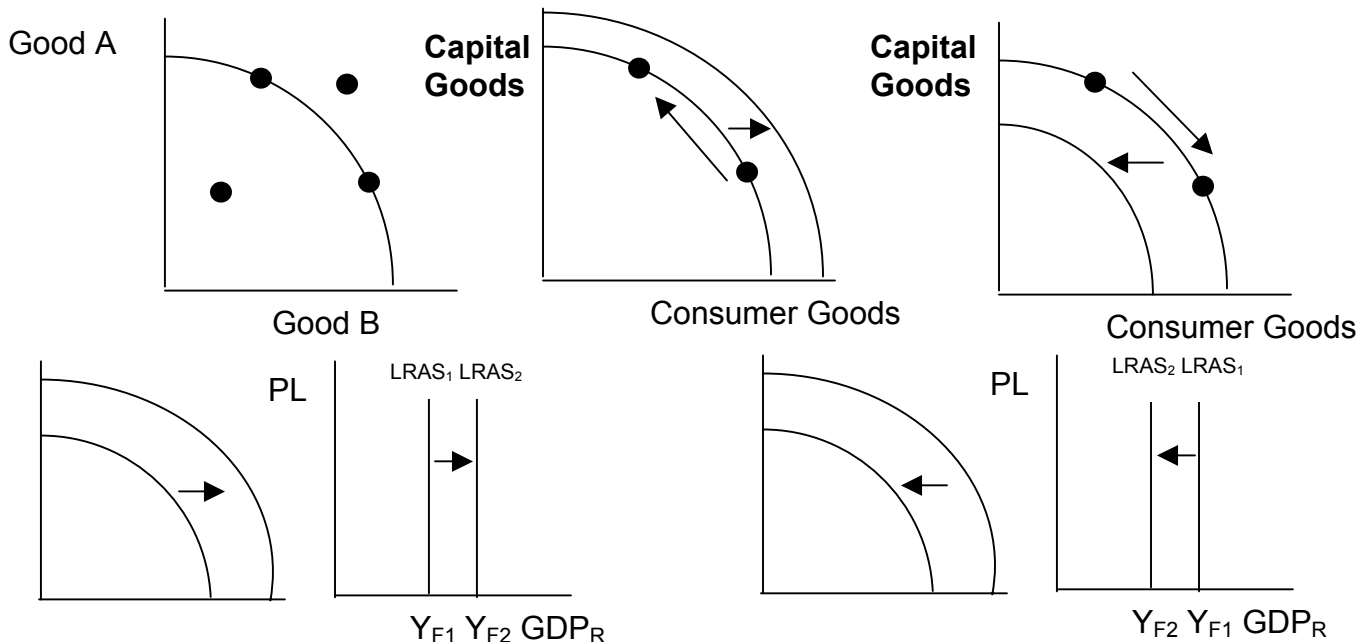
Interest Rate Sensitivity and Investment Demand

Interest rates

i_1

i_2

D_{IA}

D_{IB}

Q_{I1} Q_{I2} Q_{I3} Quantity of I$
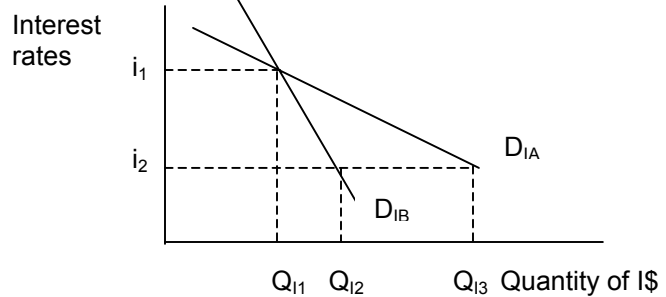
A change in interest rates from i_1 to i_2 results in a much **larger** increase (Q1 to Q3) in business investment spending (I) if the Investment Demand curve is **more elastic** (D_{IA}) than if the Investment Demand curve is **more inelastic** (less sensitivity to interest rate changes results in Q_{I1} to Q_{I2}).

Production Possibilities Curves and Connections to the AD-AS Model.

- PPC represents potential (maximum combinations of output given resources/technology) to produce output. (LRAS in the AD-AS model.)
- Points on curve are possible combinations of output **if all resources are used fully/efficiently**. (LRAS at Y_F in the AD-AS model)
- Movement on the curve results in **trade-offs and opportunity costs** --- to **produce more of one/the other must be given up.**
- **Opportunity cost** --- what is given up when making a choice; the most valued alternative not taken (capital goods vs. consumer goods; guns vs. butter).
- **Points under (inside or to the left)** the PPC represent less than full employment (**unemployment**) or inefficient use of resources (**underemployment**). Correlates to **recession** in the AD-AS model.
- **Points outside (to the right of or outside) the PPC** are not possible given resources/technology available. (Inflationary or overheated economy in the AD-AS model --- not sustainable over time – adjusts back to YF).
- **Shift right of the PPC curve** (add resources – land/labor/capital; improve productivity with education/training/technology; improve technology). (**Shift right of the LRAS** curve for same reasons). Economy has greater potential to produce --- **real economic growth**.
- **Shift left of the PPC curve** (↓ resources, technology, productivity). **Shift left of the LRAS** in the AD-AS model.

Good A

Good B

Capital Goods

Consumer Goods

Capital Goods

Consumer Goods

PL

LRAS₁ LRAS₂

Y_{F1} Y_{F2} GDP_R

PL

LRAS₂ LRAS₁

Y_{F2} Y_{F1} GDP_R

Long –run economic growth depends on: • Supply of labor • Supply of capital • Level of technology	**Short run- but not the long-run:** Temporary changes in production costs (OPEC) Inflationary expectations

Factors that can influence the above:
- Saving --- saving supplies loanable funds for business investment in capital (I)
- Research --- funds for research provide a basis for technological development
- Comparative advantage in trade - encourages more efficient use of global resources
- **Education/training** --- improves the quality of labor resources and ↑ **productivity**
- Business taxes that actually dampen profit expectations and investment in capital
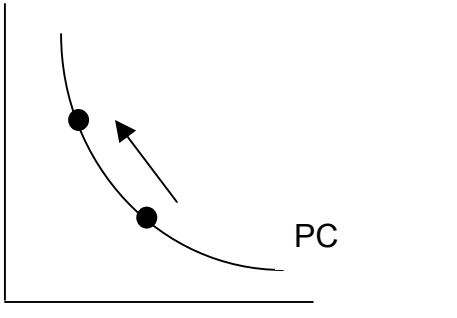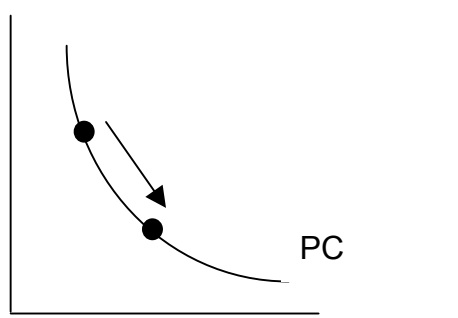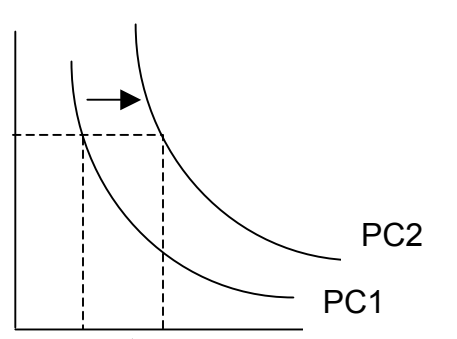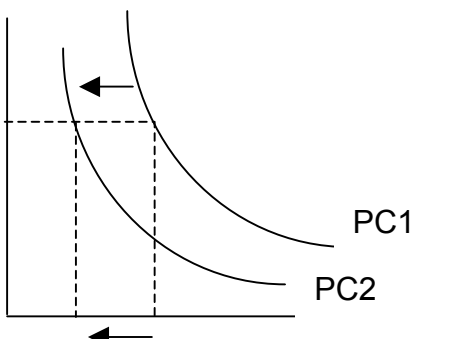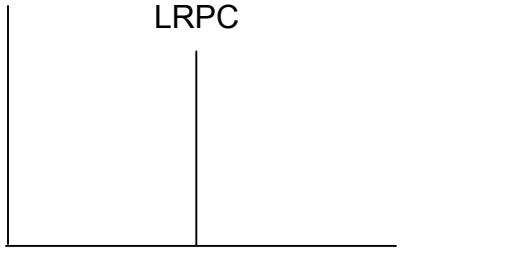
Business investment spending (I) increases AD in the short run as purchases of capital are made; however, after new plant/equipment is operational (the long-run) **the additional capital changes the LRAS**. If asked to determine the **impact of government policies on long-run economic growth, determine the impact of the policy on business investment spending (I).**

Key Concepts related to Fiscal Policy

Fiscal Policy	Actions taken by Congress and the President to stabilize the economy with changes in G and/or T.
deficit	Budget shortfall; occurs when expenditures > revenues
surplus	Occurs when expenditures are < revenues
balanced budget	Expenditures = Revenues
National debt	Accumulated deficits over time; deficits are funded by the selling of government securities.
Automatic stabilizer	Automatically moves the budget toward a deficit (if the economy is moving toward a recession) or a surplus (if the economy is expanding) **without action taken by Congress or the President.** Nondiscretionary --- system is already in place and works automatically without action by Congress. **Ex. Progressive tax system and unemployment compensation**
discretionary	Requires action by Congress or the President ---- changes in G or T.
Crowding-out effect	**Decreases in business investment spending** resulting from **high interest rates** due to **government deficit spending** (increases in government demand for loanable funds / increases in demand for money drive up interest rates and discourage business investment spending)

The Phillips Curve

Key Idea: A tradeoff exists between inflation and unemployment in the short run.

Inflation
Rate

Unemployment Rate

PC

An increase in AD in the AD-AS model results in an increase in PL and a decrease in unemployment as shown by movement up the SR Phillips curve.

Inflation
Rate

Unemployment Rate

PC

A decrease in AD in the AD-AS model results in a decrease in PL and an increase in unemployment as shown by movement down the SR Phillips curve.

Inflation
Rate

PC2

PC1

Unemployment Rate

A decrease in SRAS in the AD-AS model results in an increase in PL and an increase in unemployment (stagflation) as shown by a shift right in the SR Phillips curve. The shift right of the Phillips curve indicates that a specified rate of inflation now is associated with a higher rate of unemployment.

Inflation
Rate

PC1

PC2

Unemployment Rate

An increase in SRAS in the AD-AS model results in a decrease in PL and a decrease in unemployment as shown by a shift left in the SR Phillips curve. The shift left of the Phillips curve indicates that a specified rate of inflation now is associated with a lower rate of unemployment.

The Long Run Phillips Curve

Inflation
Rate

LRPC

Unemployment Rate

The LRPC can be associated with LR adjustments in the AD-AS model assuming **price-wage flexibility** and no government intervention. Increases and decreases in AD in the LR affect only the price level and not output and unemployment.

Policy Mixes

Policy Interaction	PL	Output	Unemployment	Interest Rates
Expansionary Monetary and Fiscal	↑	↑	↑	?
Contractionary Monetary and Fiscal	↓	↓	↓	?
Expansionary Monetary/Contractionary Fiscal	?	?	?	↓
Contractionary Monetary / Expansionary Fiscal	?	?	?	↑

Explanations:
- **Expansionary monetary and fiscal policies** have different effects on interest rates. Monetary policy increases the money supply and lowers interest rates. Fiscal policy increases the demand for loanable funds (due to deficit spending) and drives up interest rates. The actual impact on interest rates depends on the relative strength of each policy.
- **Contractionary monetary policy** decreases the money supply and increases interest rates. A **contractionary fiscal policy** lessens deficit spending and moves the budget toward a surplus; therefore, government demand for loanable funds decreases and interest rates fall. The actual impact would depends on the relative strength of each policy.
- **Expansionary monetary (↑AD) and contractionary fiscal (↓AD)** policies move price level, output, and unemployment in opposite directions, thus the actual change in each would depend on the relative strength of each policy action. Both policies, however, decrease interest rates. Expansionary monetary policy actions increase the money supply and reduce interest rates. Contractionary fiscal policy (surpluses) reduces government demand for loanable funds, also putting downward pressure on interest rates.
- **Contractionary monetary (↓AD) and expansionary fiscal (↑AD)** policies move price level, output, and unemployment in opposite directions, thus the actual change in each depends on the relative strength of each policy action. Both policies, however, increase interest rates. Contractionary monetary policy decreases the money supply and increases interest rates. Expansionary fiscal policies increase government demand for loanable funds and drive up interest rates.

Effects of Government Policies on Interest Rates, Xn, Business Investment and LR Economic Growth

Policy	Interest Rates	Net Exports	Business Investment (I)	Long Run Economic Growth
Expansionary Fiscal	↑	↓	↓	↓
Contractionary Fiscal	↓	↑	↑	↑
Expansionary Monetary	↓	↑	↑	↑
Contractionary Monetary	↑	↓	↓	↓

Factors to consider when explaining the above:
- Fiscal policy affects the demand for money and/or demand for loanable funds; monetary policy affects the supply of money. Changes in the supply and demand for money (and supply and demand for loanable funds) affect interest rates
- Net export effect of changes in interest rates
- Crowding out effect of government deficit spending
- Changes in capital stock (business investment decisions) and LR economic growth
- Changes in business investment spending affect AD in the short run, but AS in the long run.

Measurement of Economic Performance

GDP: measures OUTPUT of goods and services

GDP (Gross Domestic Product)	GNP (Gross National Product)
Total value of all final goods and services produced in the United States in a year	**Total value of all final goods and services produced by Americans in a year.**
Includes: all production or income earned within the U.S. by U.S. and foreign producers. **Excludes:** production outside of the U.S., even by Americans.	**Includes:** production or income earned by Americans anywhere in the world. **Excludes**: production by non-Americans, even in the U.S.

Two approaches to measuring GDP: Expenditures or Income

Expenditures for G&S produced = Income generated from production of G&S

Expenditures Approach: C + Ig + G + Xn (Expenditures for output
Income Approach: Add all the income (R,W,I,P) generated from the production of final output plus indirect business taxes and depreciation charges.
National Income: sum of rent, wages, interest and profits earned by Americans (excludes net foreign factor income)
Disposable Income (Yd): personal income minus taxes (income that can be spent or saved; Yd = C +S

What is included/excluded in GDP calculation:

Included	Excluded
Final Goods and Services	**Intermediate** Goods (avoid double counting)
Income earned (Rent, wages, interest, profit)	**Transfer (public and private) Payments** (social security, unemployment compensation; personal money gifts)
Interest payments on **corporate** bonds (part of income earned)	Purchases of stocks and bonds (**purely financial transactions**)
Current production of final goods	**Second-hand sales** (avoid double counting)
Unsold output (business inventories) – counted as Ig	**Nonmarket transactions** (legal and illegal non-recorded transactions --- illegal drugs, prostitution, doing your own housework or repair jobs, babysitting, growing your own vegetables for personal consumption (etc.)
Leisure time --- understates GDP Quality improvements --- understate GDP Underground economy ---- understates GDP Gross National Garbage --- overstates GDP	

Expenditures approach to GDP: C + Ig + G + Xn

C = Consumption = purchases of final durable and nondurable goods and services by consumer households.
Ig = Gross Private Domestic Investment = purchases (spending) by businesses of **capital goods**, all **construction** and changes in **inventories** (unsold output)
- Increases in inventories are added to GDP (represent output currently produced)
- Decreases in inventories are subtracted from GDP (selling goods produced in previous years)

- Gross Investment – Depreciation = Net Investment
  - Positive net investment = increases in capital stock = shift right in PPC
  - Negative net investment = decreases in capital stock = shift left in PPC
  - Zero net investment = stable capital stock = static economy (unchanging in productive capacity)

G = government expenditures for goods and services (missiles, tanks, etc.)
Xn = **Net** Exports (exports – imports) [X – M]

GDP and price level changes:

Nominal GDP	Real GDP
Unadjusted for price level changes	Adjusted for price level changes
GDP in current dollars	GDP in constant dollars
P X Q	(Nominal GDP / GDP Price Index) x 100 GDP Price Index = GDP Deflator
Less accurate measure of output because price level changes are included.	More accurate measure of output because price level changes have been adjusted to reflect base (reference) year prices.

If the price level is rising, nominal GDP may increase, but output may be increasing or decreasing or remaining stable.

Changes in the price level: MEASURED BY PRICE INDEX

Price level changes (changes in the rate of inflation) are measured by price indexes. A price index relates expenditures of a group of goods (market basket) in a given year to expenditures for the same group of goods in a base (reference) year.

Price indexes are used to adjust nominal GDP and nominal income to obtain real GDP or real income.

Price Index # = [Expenditures in Given Year / Expenditures in Base Year] x 100.

Real GDP =   [Nominal GDP / GDP price index] x 100
Real Income = [Nominal Income / Consumer Price Index] x 100
Change in Price Level = [(b-a)/a] x 100 = [(Change in Price Index/Beginning Price Index) x 100]

Three Key Price Indexes:

Consumer Price Index (CPI)	GDP Price Index (Deflator)	Wholesale Price Index
A **weighted** index that measures expenditures for a specific **market basket of goods purchased** by a typical **urban consumer**; often used as a standard for labor contracts and COLAs (cost of living adjustments in social security, etc.)	A broader index than the CPI, it includes goods purchased by each sector of the economy: C, I, G, Xn. Used to adjust nominal GDP to obtain real GDP.	Measures changes in wholesale prices (producer/distributor to retailer); reflects changes in business costs due to price level changes.

Nominal vs. Real Income:

Nominal Income --- money income – actual dollar amount of income (unadjusted for price level changes)
Real Income ---- purchasing power of income – what a given income can comparatively purchase in goods and services; adjusted for price level changes.

Change in Real Income = Change in Nominal Income – Rate of Inflation

Example: If nominal income increases by 5% and inflation increases by 8%, real income will fall by 3%.
        If nominal income increases by 10% and the rate of inflation is 6%, real income will rise by 4%.

Nominal interest rate – percentage increase in money the borrower must pay the lender for a loan. For example, if the nominal interest rate is 5% on a $1000 loan, the borrower must pay the lender $50 or 5% of the loan.

Real interest rate – the percentage increase in purchasing power the borrower must pay the lender for a loan. For example, if the nominal interest rate is 5% and the rate of inflation is 6%, the $50 paid to the lender as interest on a $1000 loan provides the lender with less purchasing power (-1%) when repaid.

Unanticipated inflation: Nominal interest rate – inflation rate = real interest rate received

Anticipated inflation (Fisher Effect):   Nominal interest rate = Expected interest rate + inflation premium

Short Run vs. Long Run Changes in Nominal and Real Interest Rates

Assume an increase in the Supply of Money (Sm) by the FED:

Short Run:	Long Run:
↑ Sm → ↓ in both nominal and real interest rates	↑Sm →↑ AD →↑PL → creditors to add an inflation premium to expected interest rates → ↑ nominal interest rate and a return of real interest rates to the LR equilibrium. (Fisher Effect)
↓Sm → ↑in both nominal and real interest rates	↓Sm → ↓ AD →↓PL → ↓ nominal interest rates; real interest rates return to the LR equilibrium

Who is hurt/helped (loses/gains) by unanticipated inflation:

Fixed income recipients	hurt	Purchasing power falls as PL rises
Savers	hurt	Purchasing power of saving falls as PL rises
debtors	helped	$ paid back is worth less in purchasing power than $ borrowed
creditors	hurt	$ loaned is worth less in purchasing power than $ paid back
Flexible income recipient	uncertain	Depends on if the nominal income exceeds the rate of inflation
A buyer who pays fixed payments	helped	Rising inflation will decrease the purchasing power of the money paid; recipient of payment is hurt.

Measurement of Unemployment:

Labor Force	Employed + Unemployed
Employed	Worked for pay in the last week
Unemployed	**Looking for work** in the last month
Discouraged Worker	Given up looking for work (out of the labor force)
Part-time workers	Counted as full time; underemployed understate the unemployment rate
Labor Force Participation Rate	Labor Force as a percent of the population [(Labor force/population) x 100]
Unemployment Rate	(# of unemployed / labor force) x 100

Types of Unemployment:

Frictional	In-between jobs; looking for first job (temporary)
Structural	Workers skills are no longer in demand or obsolete: results from automation, foreign competition, changes in demand for products; can be lengthy and may require retraining or relocation to find a new job.
Cyclical	Caused by insufficient AD; associated with a recession; Actual unemployment is greater than the natural rate of unemployment; associated with a GDP gap
Natural Rate of Unemployment	Sum of frictional and structural unemployment; exists at Y_F (full employment); approximately 4-6%; associated with potential output
GDP gap	gap between actual and potential GDP; lost output; occurs when the economy falls below the full employment level of output (Y_F)
Okuns Law	Each 1% cyclical unemployment = 2% GDP Gap
Potential output	Output that could be produced if at full employment (Y_F)

Business cycle: ups and downs in business activity; 4 phases: recovery/expansion; peak/boom; contraction; and trough. Phases are not equal in duration.

The Circular Flow Model and Other Basic Concepts

Scarcity exists.	Unlimited Wants vs. Limited Resources
Capital Goods	Goods used to make other goods; machinery, equipment, factory, etc.
Consumer Goods	Goods for immediate consumption
Trade-off	To get something, you have to give up something
Opportunity Cost	What is given up when making a choice; the most valued alternative not taken; = sum of explicit and implicit (hidden) costs
Factors of Production	Land (natural resources); labor; capital (machinery, equipment); entrepreneurship
Factor Payments	Income or return for L, L,C, E: rent, wages, interest, profit (RWIP)
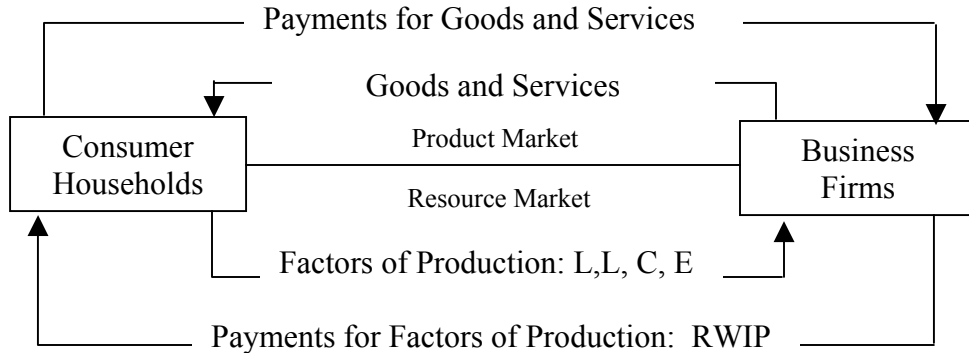
The Simple Circular Flow Model (diagram above):
- Consumers make expenditures for goods and services supplied by business firms in the product market.
- Consumers earn income by selling their factors of production in the resource market.
- Payment for factors of production in the resource market becomes income to consumers who make expenditures in the product market.
- Output can be measured by the expenditures for the goods and services or the income generated from the production of the goods and services.
- Government can influence the circular flow model through taxes, subsidies, transfer payments, factor payments for land, labor, capital; and provision of public goods and services.

Economic Schools of Thought

Keynesian	Classical	Monetarists
AE = C+I +G+Xn Demand-siders **AE** is the main determinant of output and unemployment AS curve: **horizontal** **Prices/wages are inflexible downward** **Government action is needed** to "fix" the economy (monetary and fiscal policies) No inherent mechanisms exist to maintain full employment The economy **can be at equilibrium at less than full employment** Instability can be lengthy in duration	**Says Law: supply creates its own demand** **AS curve: vertical at Y_F** **Price/wages are flexible** **Laissez-faire** policy for government Instability is temporary The economy has **inherent mechanisms that can maintain full employment** levels of output Changes in AD are caused by changes in the MS and mainly have their **impact on PL.**	Neoclassical Main determinant of economic activity is money supply MV = PQ Velocity is stable The MS has a direct impact on nominal GDP Do not fine-tune economy with MS Follow the **Money Rule:** set the MS on a stable growth page of 3-5 % (rate of growth in GDP)
Supply-siders Main determinant of economic activity is AS Government should encourage people to work hard, save, invest Cut taxes and government regulations to increase AS Laffer Curve (Tax Rates vs. Revenues)	**Rational Expectations Theory** Informed expectations negate government policies; therefore, government actions are ineffective and destabilizing Economy adjusts immediately to changes Phillips Curve is vertical (no trade-off)	

Key ideas:

- **Aggregate Expenditures (C+I+G+Xn) are the main determinant of output, employment and price level.**
- **Income (Yd) is the main determinant of C and S. C and S vary directly with income.**

Key Terms:

Average Propensity to Consume (APC)	Fraction of income that is spent; C/Yd; varies inversely with Yd
Average Propensity to Save (APS)	Fraction of income that is saved; S/Yd, varies directly with Yd
Marginal Propensity to Consume (MPC)	Fraction of any change in income that is spent; $\Delta C/\Delta Yd$
Marginal Propensity to Save (MPS)	Fraction of any change in income that is saved; $\Delta S/\Delta Yd$
MPS + MPC = 1	
APS +APC = 1	
Multiplier Effect	Small changes in AE give rise to much larger changes in GDP and Yd
Spending Multiplier	1/MPS or 1/1-MPC or $\Delta GDPe/\Delta AE$
Key Multiplier formula:	Δ AE x Multiplier = Δ GDPe
Unplanned investment	Changes in business inventories
Planned investment	Business spending on capital goods; Ip = Saving at GDPe
If AE> GDP, then:	Inventories fall and production increases
If AE < GDP, then:	Inventories rise and production decreases
If AE = GDP, then:	Equilibrium in the Keynesian AE model
Inflationary Gap:	Amount by which spending exceeds the full employment level of output; Amount by which spending must be decreased to return to Y_F.
Recessionary Gap:	Amount by which spending falls short of the full employment level of output; Amount by which spending must be increased to close a GDP gap and return to full employment.
GDP gap	Amount by which actual output falls short of potential (Y_F) output.
At equilibrium:	GDPe = AE; Ip = S; $I_{unplanned}$ = to 0.
Balanced budget Multiplier =	1 times the change in G
↑ G and T by same amount	Expansionary by the amount of ↑G
↓ G and T by the same amount	Contractionary by the amount of ↓G

Multiplier Effect: a change in AE → change in Yd → change in C and S → change in Yd by the amount of the change in C → more spending → more income → spending → income . . .

If G changes by 50 billion and the MPS is = .20, then the change in GDPe = $250 billion [$\Delta$AE x M = Δ GDP]

Keynesian Expenditures Model (You do not have to draw this model for the free response, but you may have to interpret it on a multiple choice question).
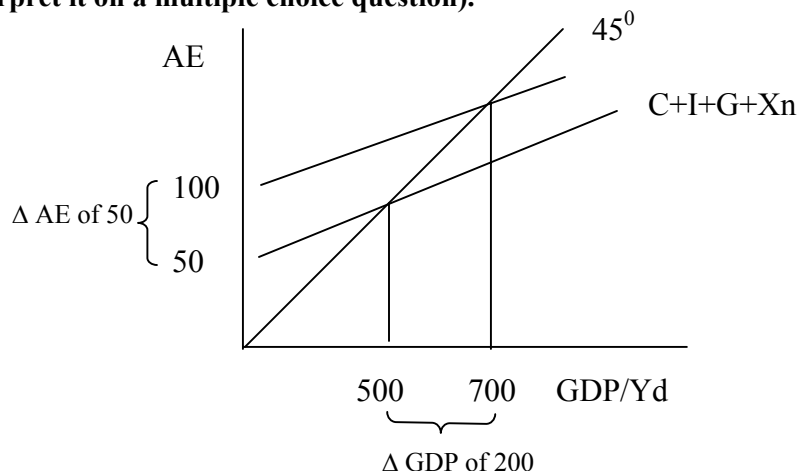
If a ΔAE of 50 gives rise to a Δ GDPe of 200, then the multiplier must be 4 and the MPS = .25 and the MPC = .75.

ΔAE x Multiplier = ΔGDPe
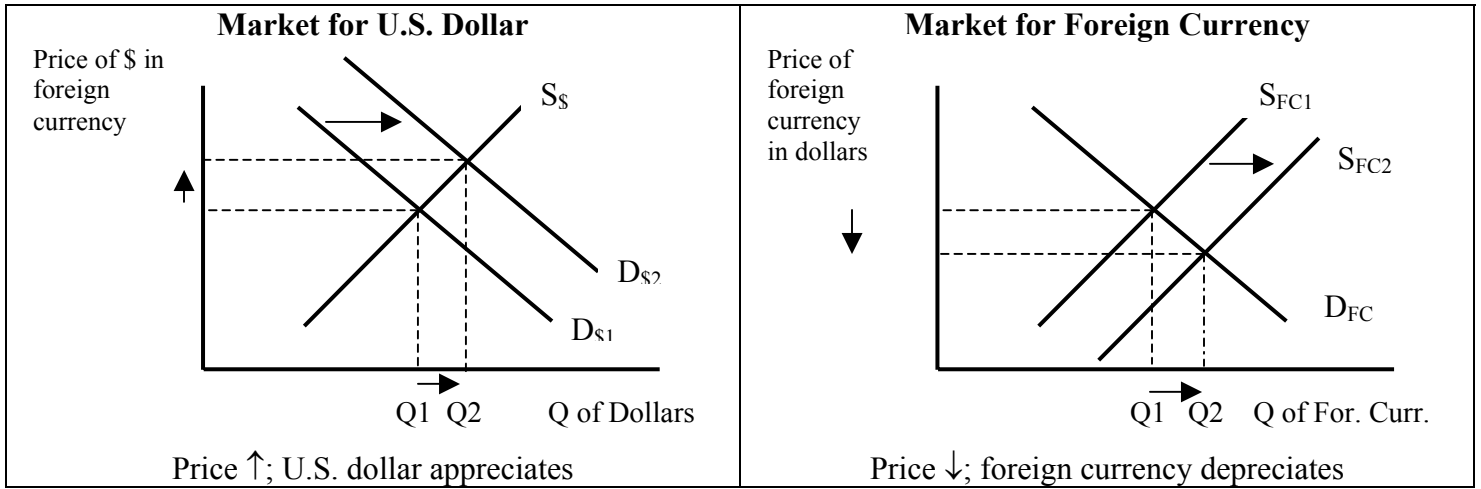50 x 4 = 200

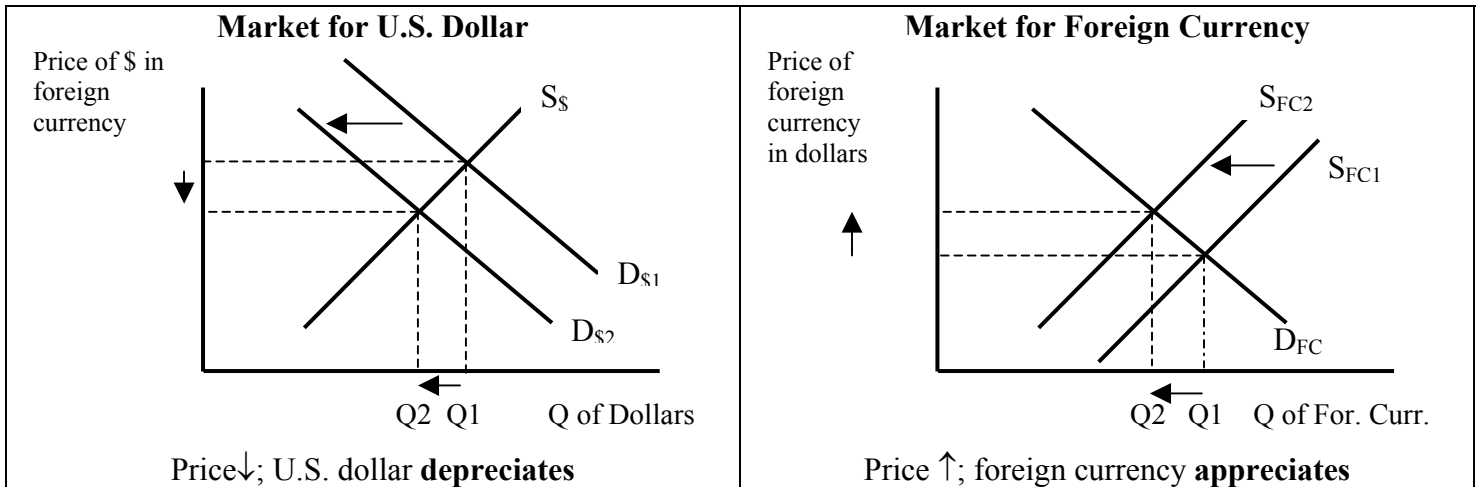If 700 represented YF, then a GDP gap of 200 would exist requiring an ↑G of 50 to close the gap.

A decrease in Taxes of $50 billion has a smaller impact on the economy as an increase in G of $50 billion. The decrease in taxes first changes Yd which then changes C and S. The change in spending C x the multiplier = the multiple effect of the change in taxes.

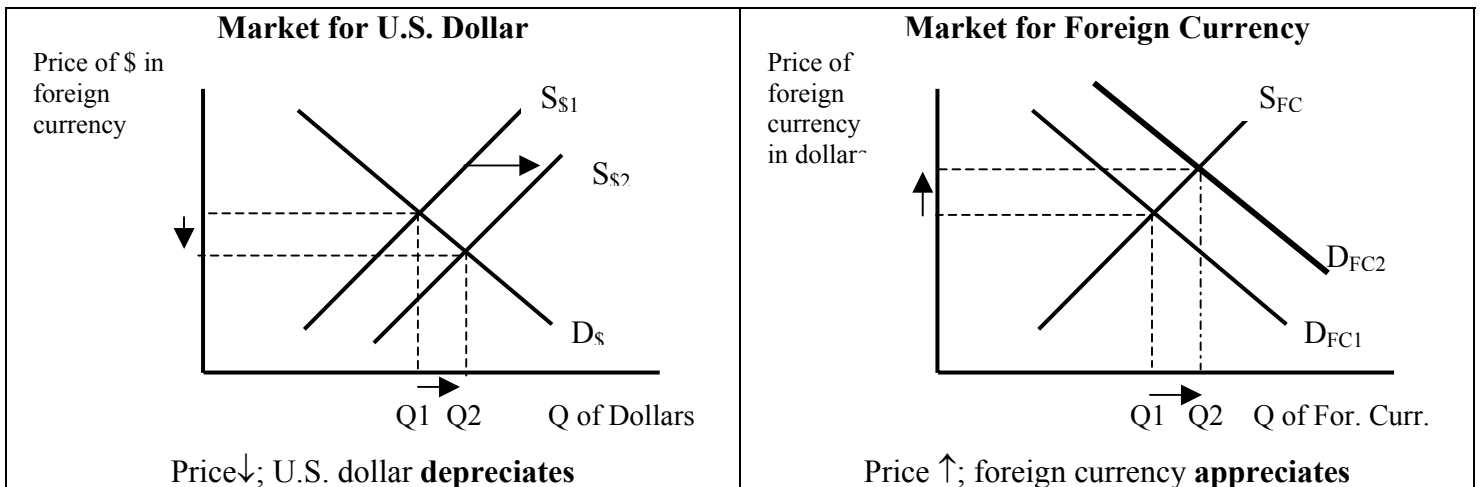# Foreign (Currency) Exchange Markets (International Money Markets)

↑ Foreign Demand for U.S. goods/services/investments → ↑ Demand for U.S. dollar and ↑ Supply of Foreign Currency.

Market for U.S. Dollar	Market for Foreign Currency
Price of $ in foreign currency	Price of foreign currency in dollars
$S_\$$	S_{FC1}
$D_{\$2}$	S_{FC2}
$D_{\$1}$	D_{FC}
Q1 Q2 Q of Dollars	Q1 Q2 Q of For. Curr.
Price ↑; U.S. dollar appreciates	Price ↓; foreign currency depreciates

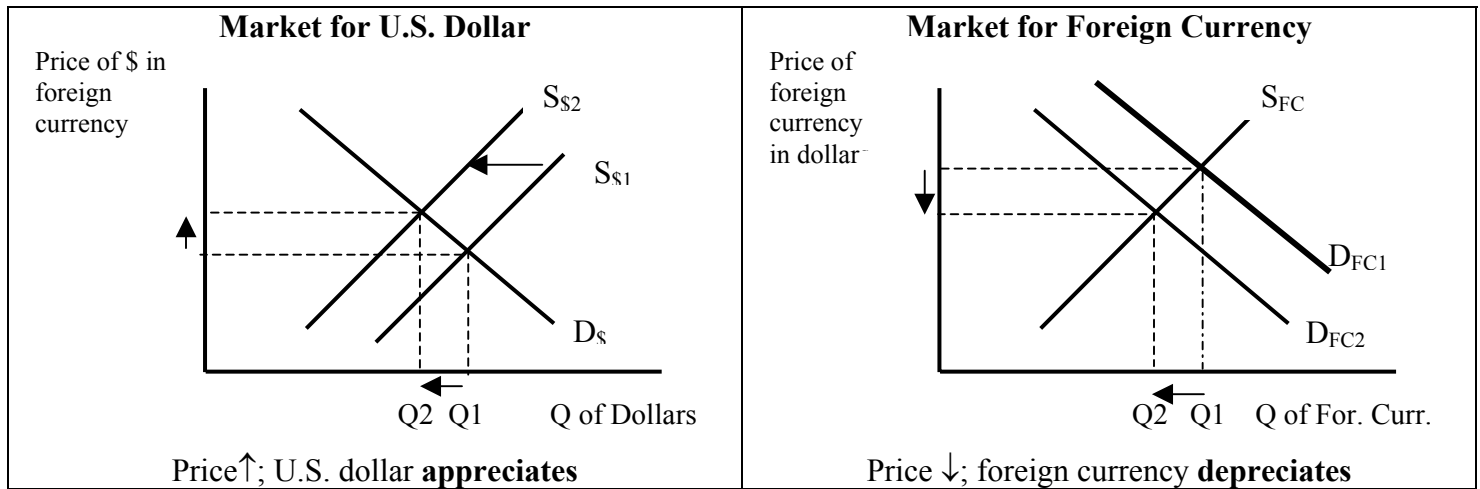**↓ Foreign Demand for U.S. goods/services/investments → ↓ Demand for U.S. dollar and ↓ Supply of Foreign Currency.**

Market for U.S. Dollar	Market for Foreign Currency
Price of $ in foreign currency	Price of foreign currency in dollars
$S_\$$	S_{FC2}
$D_{\$1}$	S_{FC1}
$D_{\$2}$	D_{FC}
Q2 Q1 Q of Dollars	Q2 Q1 Q of For. Curr.
Price↓; U.S. dollar **depreciates**	Price ↑; foreign currency **appreciates**

↑ U.S. Demand for foreign. goods/services/investments → ↑ Demand for Foreign Currency and ↑ Supply of U.S. dollar

Market for U.S. Dollar	Market for Foreign Currency
Price of $ in foreign currency	Price of foreign currency in dollars
$S_{\$1}$	S_{FC}
$S_{\$2}$	D_{FC2}
$D_\$$	D_{FC1}
Q1 Q2 Q of Dollars	Q1 Q2 Q of For. Curr.
Price↓; U.S. dollar **depreciates**	Price ↑; foreign currency **appreciates**

If the dollar appreciates, the foreign currency depreciates. If the dollar depreciates, the foreign currency appreciates.

↓ **U.S. Demand for foreign. goods/services/investments → ↓ Demand for Foreign Currency and ↓ Supply of U.S. dollar**

Market for U.S. Dollar	Market for Foreign Currency

Price of $ in foreign currency — S$2, S$1, D$ — Q2 Q1 Q of Dollars

Price of foreign currency in dollar — SFC, DFC1, DFC2 — Q2 Q1 Q of For. Curr.

Price↑; U.S. dollar **appreciates**   Price ↓; foreign currency **depreciates**

Dollar Value	Relative Price of U.S. Imports (M)	Explanation	M	Relative Price of U.S. Exports (X)	Explanation	X	Xn
Appreciate	cheaper	U.S. gives up fewer $ to purchase foreign goods	↑	more expensive	Foreign buyers give up more of their currency to buy American goods.	↓	↓
Depreciate	more expensive	U.S. gives up more $ to purchase foreign goods	↓	cheaper	Foreign buyers give up less of their currency to buy American goods.	↑	↑

Event	U.S. Dollar	Dollar Value	Foreign Currency	Value of For. Cur.	Xn
Higher price level in the U.S.	↓ demand	depreciates	↓ supply	appreciates	↑
Higher interest rates in U.S.	↑ demand	appreciates	↑ supply	depreciates	↓
Higher interest rates in foreign nation	↑ supply	depreciates	↑ demand	appreciates	↑
Higher foreign incomes	↑ demand	appreciates	↑ supply	depreciates	↓
Increased tourism in U.S.	↑ demand	appreciates	↑ supply	depreciates	↓
Increased tourism abroad by Americans	↑ supply	depreciates	↑ demand	appreciates	↑

Net export Effect ---- changes in interest rates:

Higher U.S. interest rates attract foreign investors seeking <u>a higher rate of return on interest-bearing investments</u> (bonds). **An inflow of foreign capital to the U.S. results from foreign purchases of U.S. bonds**. ↑ demand for U.S. bonds → ↑foreign demand for U.S. dollars and an ↑supply of foreign currency → The **dollar appreciates** and the **foreign currency depreciates** →foreign goods seem cheaper to American buyers (Americans give up fewer dollars for each unit of foreign currency) →U.S. imports ↑. A depreciation of foreign currency → U.S. goods seem relatively more expensive (foreign buyers must give up more currency for the U.S. dollar); →U.S. exports ↓. **Xn decreases.**

↓ **U.S. interest rates** → ↓ demand for U.S. bonds by foreign investors (why: lower rate of return on investment) → ↓ demand for U.S. dollar and ↓ supply of foreign currency. Foreign currency appreciates relative to dollar / dollar depreciates → U.S. exports seem cheaper / U.S. imports seem more expensive → ↑ Xn

Higher U.S. interest rates ----- financial capital flows to the U.S. from foreign nations (inflow of capital)
Higher foreign interest rates ---- financial capital flows from the U.S. to foreign nations (outflow of capital)
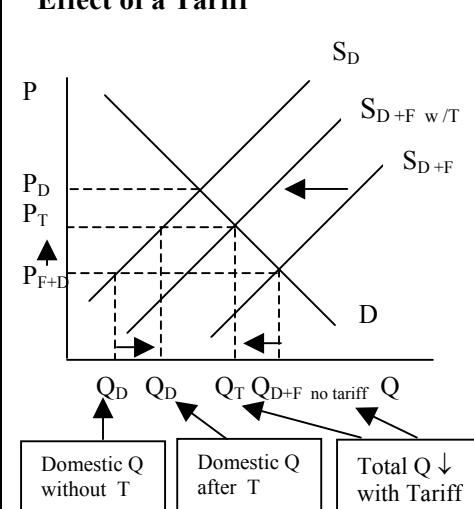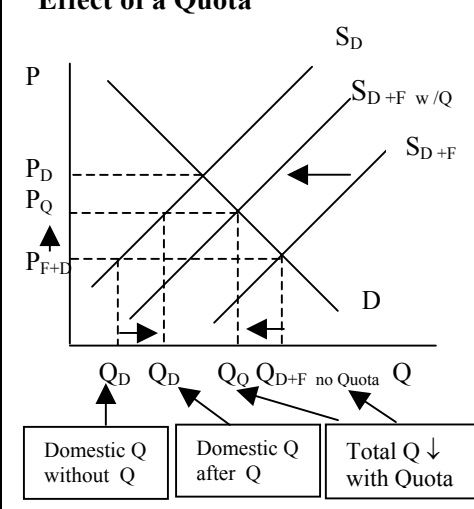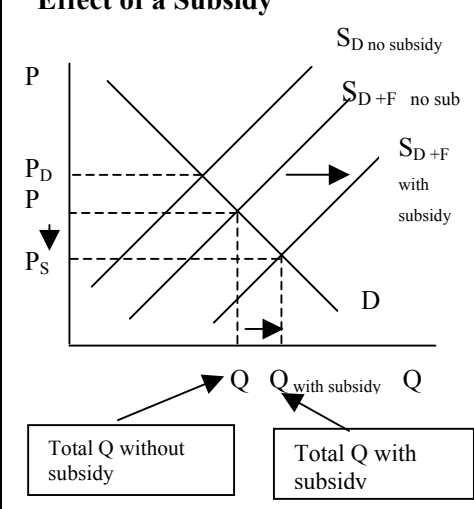
Balance of Payments

Balance of Payments: record of all payments made and received between two nations. **Must sum to zero**.

- + (credit: foreign payment to the U.S.   --- a credit means the U.S. earn supplies of foreign currencies)
- - (debit: U.S. payment to a foreign nation   --- a debit means the U.S. uses its reserves of foreign currency to make a purchase; foreign nations gain reserves of U.S. dollars)
- **Deficit** in the Balance of Payments --- U.S. is paying out more for foreign goods, services, investments etc., than it is receiving. U.S. is not earning enough foreign reserves to cover our purchases from foreign nations.
- **Surplus** in the Balance of Payments --- Payments to the U.S are greater than U.S. payments to foreign nations. U.S. is earning more in foreign currencies than it is using to purchase foreign goods, services, investments.

Current Account	Capital Account	Official Reserves
Balance on Goods (exports/imports of goods and services) **Balance on Services** (exports/imports of services) **Balance on Goods and Services** (balance of trade) **Net Transfer Payments** **Net Dividends and Interest** (net returns on previous investments) **Balance on the Current Account**	U.S. purchases of foreign real and financial assets (outpayments/outflows of capital) Foreign purchases of U.S.real and financial assets (inpayments / inflows of capital) **Balance on the Capital Account**	**+ reserves**: **if deficit** in balance of payments (official reserves of the FED are drawn down to balance the shortfall in foreign currency) **- reserves**: **if surplus** in balance of payments (official reserves of the FED increase to due to the excess in foreign currency) **Official reserves held by central banks (the FED in the U.S.) are the means by which the capital and current accounts are balanced to zero.**

Effects of Tariffs, Quotas and Subsidies in International Trade

U.S. tariffs and quotas ↓ the domestic supply of foreign goods and ↑their prices. In the short-run, domestic production ↑ due to the higher prices. Subsidies ↑ the supply of goods and ↓ their price in the short-run.

Effect of a Tariff	**Effect of a Quota**	**Effect of a Subsidy**
U.S. tariffs reduce the total world trade quantity and increase the market price. Domestic producers will produce more at higher price but consumers will still pay more and have less Q available after the tariff because the tariff restricts foreign supply available to U.S. consumers.	U.S. quotas reduce the total world trade quantity and increase the market price. Domestic producers will produce more at higher price, but overall price is higher/Q less for consumers because quota ↓ foreign Supply available to U.S. consumers.	Subsidies increase the total world trade quantity and decrease its price. The price is less for consumers and quantity is greater. Effect on domestic production depends on if subsidies are domestic (↑ due to lower production costs) or foreign (↓ domestic production due to lower costs of foreign competition and lower market price).

Absolute and Comparative Advantage and International Trade

Absolute advantage (AA): **can produce more with given resources**

      Input problem: nation that produces the same amount with **fewer resources** (i.e., less hours)

      Output problem: nation that produces the **greatest quantity of any product** given the resources

A nation can have an absolute advantage in the production of both products or a comparative disadvantage in both products, but a nation <u>can only have a comparative advantage in 1 product.</u>

Even if a nation has an absolute advantage in both products, it is more efficient and output gains can be achieved if the nation <u>specializes and trades according to comparative advantage.</u> When this occurs, the PPCs of each nation are extended by the trading possibilities.

Comparative advantage (CA): can produce more at a **LOWER domestic OPPORTUNITY COST** (give up less to produce) – relatively more efficient; **COMPARATIVE ADVANTAGE IS THE BASIS FOR SPECIALIZATION AND TRADE**. If all nations specialize according to comparative advantage, there will be a **more efficient use of global resources and gains from trade** (more can be produced given the resources)

To determine comparative advantage: Output problem (data in terms of products produced)

Set up the problem (see class handout for more details)

- Identify production **maximums** for each nation
- Reduce ratio of maximum production in each nation (reduce within nations not between nations)
- Determine domestic opportunity cost of one unit of each product **within** each nation (what is given up to produce **1** unit)
- Compare (nation to nation) opportunity costs of producing each product; **LOWEST OC should specialize**.
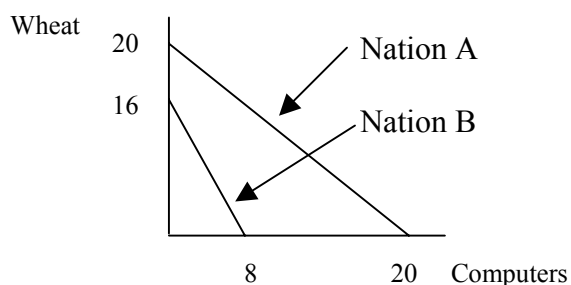
Nations	Wheat	Computers
A	~~20~~ 1 (1C)	~~20~~ 1 (1W)
B	~~16~~ 2 (1/2 C)	~~8~~ 1 (2W)

Nation A has the CA in Computers (gives up 1W to produce 1 computer as compared to 2W in Nation B). **Nation B has the CA in Wheat** (gives up ½ C to produce 1 wheat as compared to 1 C given up by nation A). Therefore, **Nation A should export computers and import wheat; Nation B should export wheat and import computers.**

Even though <u>Nation A has the absolute advantage in both</u>, it should specialize according to CA and trade with B.

Gains from trade: Total the output of each product before specialization and trade. Compare to output of each product AFTER specialization (maximum output of product).

Terms of trade: look at original reduced ratios. The range of the terms of trade is set by those ratios. (See output problem above)

                  Wheat   Computers

      Nation A   1W   1C

                               Possible term of trade = 1C = 1.5 W (must fall between)

      Nation B   2W   1C

Range of Trading Terms :   **1W < 1 computer < 2 W**   **beneficial to both nations**

Explanation: If trade occurs between the two nations at 1 Computer = 1.5 Wheat, both nations will benefit from the terms of trade. Prior to specialization, Nation A domestically gave up 1 computer to produce 1 unit of wheat. By specializing in computers, it can now get 1.5W from Nation B for 1 computer, thus increasing the amount of wheat received per computer given up. Prior to specialization and trade, Nation B had to give up 2 units of wheat to domestically produce one computer. By specializing in wheat production, it can now trade 1.5 units of wheat for 1 computer from Nation A, thus giving up less wheat to get 1 computer.

SPECIALIZATION AND TRADE ACCORDING TO COMPARATIVE ADVANTAGE INCREASES OUTPUT AND USES GLOBAL RESOURCES MORE EFFICIENTLY, THUS INCREASING THE TRADING POSSIBILITIES of EACH NATION.

Input problem (data in terms of resources needed to produce a unit of product – labor hours, acres, etc)

- Determine absolute advantage **first** (Do not swap data for AA) – **LEAST AMOUNT OF RESOURCES USED**.
- To determine **comparative advantage**, do either of the following to **convert to an output problem**:
  - **Swap data** (i.e. U.S. can produce cars in 6 hours and computers in 2 hours – swap: cars : 2, computers: 6 . Swap puts problem into output. Follow output procedures. EASY METHOD
  - **Alternative method**: seek a **common multiple of all the numbers** and divide the inputs into that common multiple. Result: output of each product. Follow output procedures.