

Unit Three, Day One (pages 802-813)

Aggregate Demand

Earlier we learned about supply and demand curves. We learned how these relate to individual products.

Yet the single product supply and demand model does not explain

- 1) why prices rise or fall in general
- 2) What determines aggregate (combined) output
- 3) What determines changes in level of aggregate output.

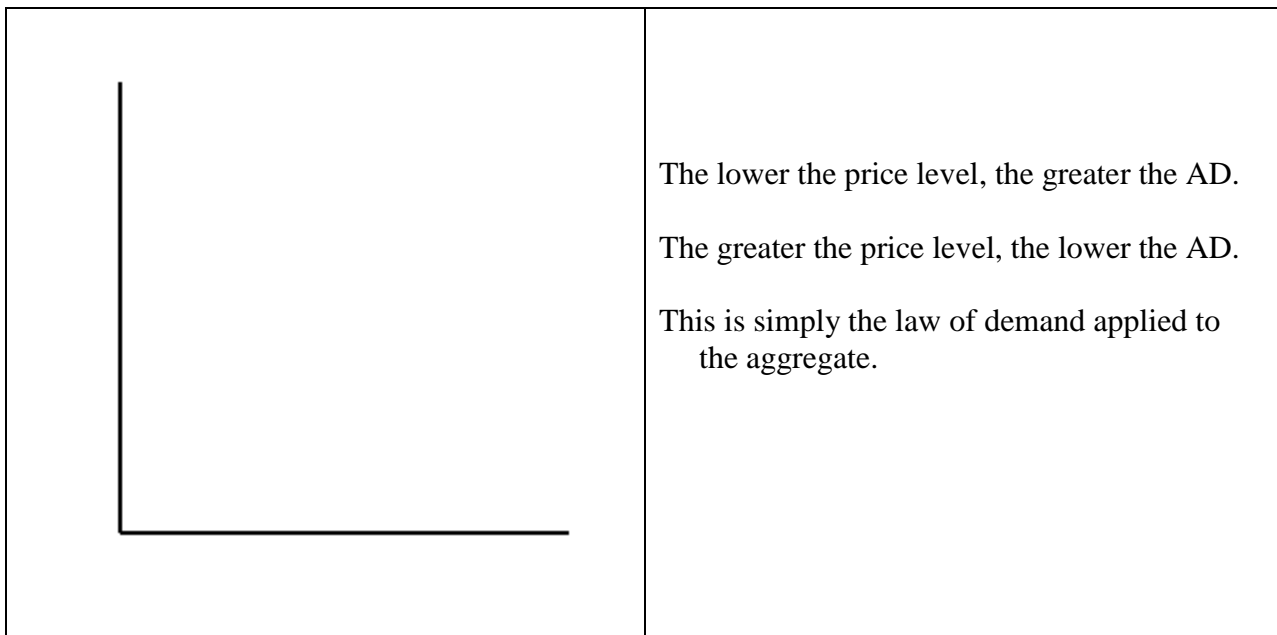
In order to look at it from a macro level we must combine the prices and equilibrium quantities of all goods. This is the aggregate (combined).

Aggregate Demand (AD):

AD is a schedule which shows the various amounts of goods and services (Real Domestic Output, Real GDP, Y) which consumers, businesses, governments and foreign buyers collectively will desire to purchase at each price level (CPI, PPI...).

This is the same thing as saying the amount of GDP that all buyers in an economy will buy at all possible levels of prices.

Price levels are measured as price indexes.



However, the inverse relationship does not apply in the same manner as the single demand curve. In the single product demand curve there is an inverse relationship because two factors.

Factor #1 – Substitution Effect –

Factor #2 – Income Effect –

In the Aggregate model we can not substitute for everything. (things do not become cheaper relative to other products.)

And all income varies with aggregate output. (Because of the circular flow model if the price level is higher wages will be higher.)

What then is the explanation for the inverse relationship of the AD curve. Why is it downward sloping?

1) Wealth, or real balances effect: When price level falls the money that people have will be worth more. (The real value will be worth more.) And vice versa.

2) Interest- Rate Effect: As the price level rises so will the interest rate.

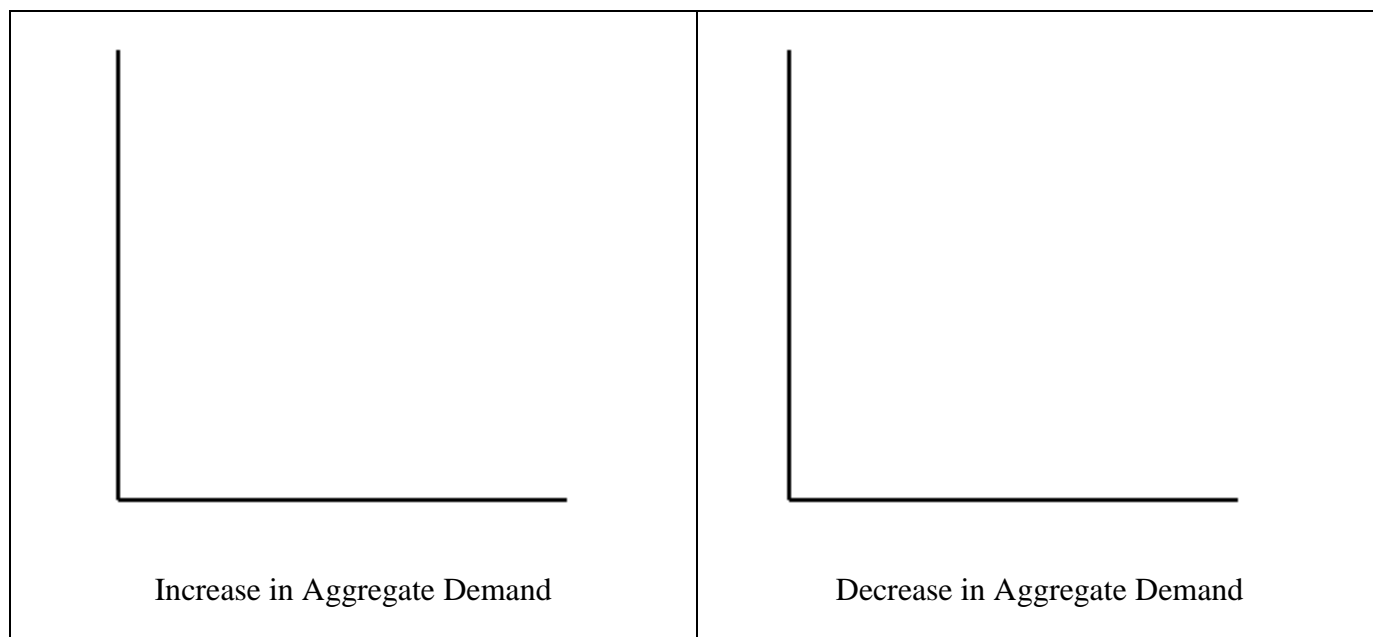
This rise in price level will reduce consumption. This is because the higher prices mean consumers will need more money. They will seek to *borrow it* and this will drive up interest rates. Eventually what will happen is that consumers will decide not to make purchases because interest rates are too high.

3) Foreign Purchases Effect: When price levels in the United States increase this means U.S. prices are higher relative to foreign prices. Purchase of exports will decrease causing amount of Goods and Services demanded to decrease.

Graph this in the FOREX.



A model should predict why price levels are stable in some periods but surge in others. AD when combined with AS should predict this.



Determinants of Aggregate Demand

What causes AD curve to shift? (change in AD v. change in quantity of real output demanded) Known as Determinants of Aggregate Demand because they determine the location of the demand curve.

Determinants of Aggregate Demand

1. Change in Consumer Spending (C)
2. Change in Investment Spending (I)
3. Change in Government Spending (G)
4. Change in Net Exports (X_N)

Change in consumer spending (C)

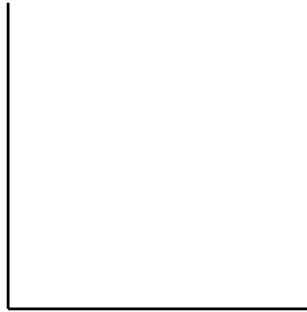
Consumer wealth: When people have less money to spend. This causes the curve to shift to the left (decrease in AD). This has nothing to do with price. This is a change in real income due to non-market factors (for ex. decrease in stock prices will lead to less wealth.) The opposite is also true.

Consumer expectations: If people think that their future income will decrease or that inflation will decrease (it will be cheaper to buy later) they will spend less now. This will cause the AD curve to shift left. The opposite is also true.

Consumer indebtedness: If people have spent a lot in the past and are in debt they are going to spend less now. This will shift the curve to the left.

Taxes (Fiscal Policy): If taxes increase the people have less money and will then spend less. AD shifts to the left. The opposite is also true.

Graph a tax increase.



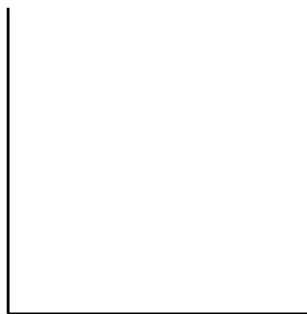
Interest rates (Monetary Policy): When interest rates increase AD decreases. The opposite is also true.

Consumer Indebtedness, Taxes and Interest Rates all affect disposable income

Change in investment spending (I)

Interest Rates: Increase in interest rates will decrease AD (Business will buy less capital goods). This is not the interest rate effect. It has nothing to do with the price level. Rather it has to do with changes in interest rates through something like a change in the money supply (which we will learn later).

Graph it.



Profit Expectations on Investment projects: If the business foresees profits for investment projects that will increase demand for consumer goods the businesses will invest in those projects. This will shift the AD curve.

Real world example:

*If we are in a huge depression and I is 0, business will still not increase I unless they have expectations for a good return on investment.

Business Taxes: Increase business taxes will lead to a decrease in investment spending and the AD curve will shift to left.

Technology: new technology make production easier and therefore allows businesses to increase investment spending.

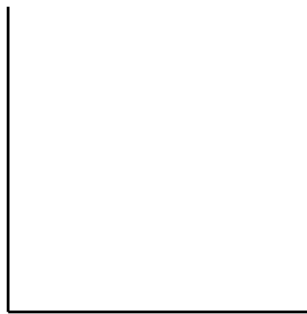
Amount of excess capacity: If they are not using the capacity (amount of capital) they have they will not purchase new capital. This will cause a decrease in AD. If they are at full capacity, then they will increase I .

Real world example:

Change in government spending (G)

Increased government spending (without change in taxes or interest rates) will increase AD. This could be a planned Fiscal policy move or they may just want to increase G (ex. increase education spending).

Graph an increase in government spending.



Change in net exports (X_N) (unrelated to price level)

Income Abroad: Increase in foreign demand will cause an increase in AD for U.S.

Exchange Rates: If the USD becomes worth less (depreciates) in terms of another currency other nations can purchase USD to purchase our goods. This increase exports (X). At the same time, we can't purchase as much of their currency so we purchase less of their goods. This decreases imports (M). Therefore, $X-M$ (X_N) increases. AD increases (shifts to the right).

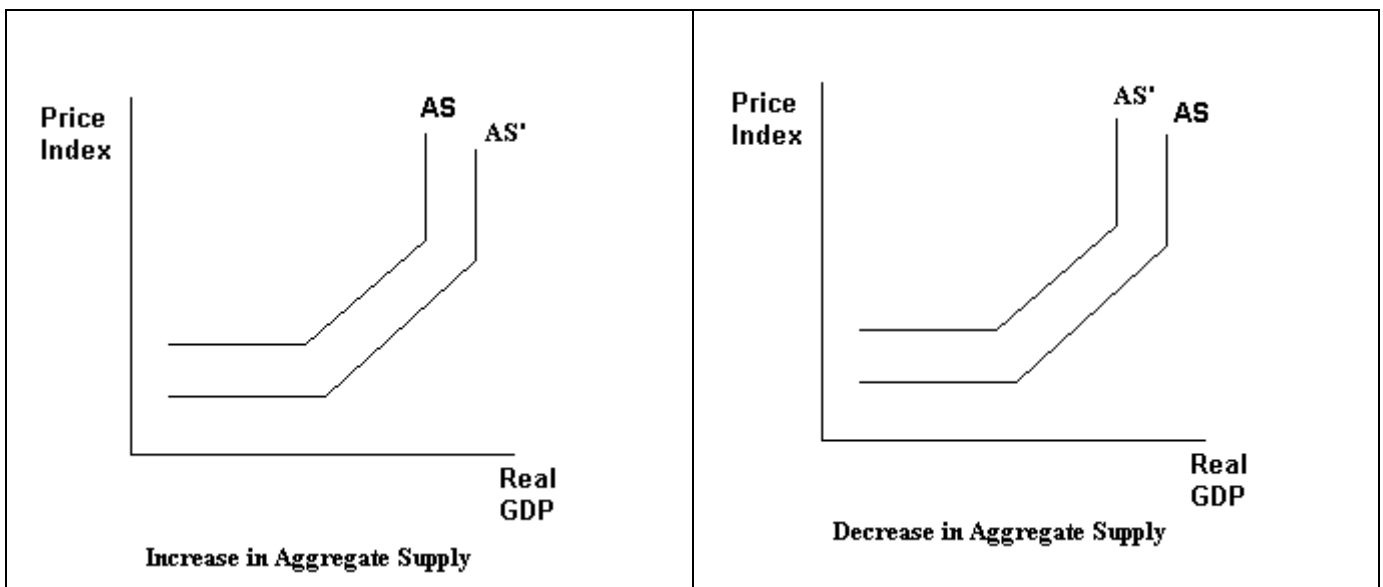
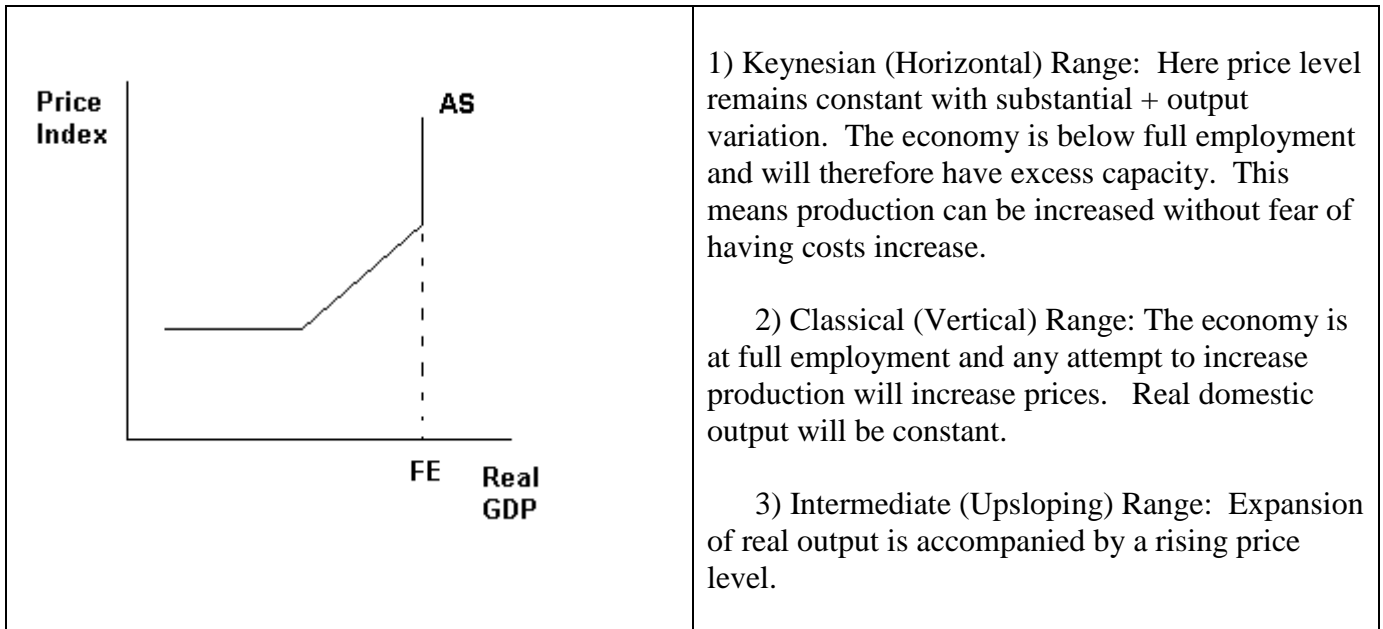
Unit Three, Day Two (pages 814-822)

Aggregate Supply

AS – a schedule, showing the level of real domestic output available at each possible price level.
Sometimes referred to as short run aggregate supply (SRAS).

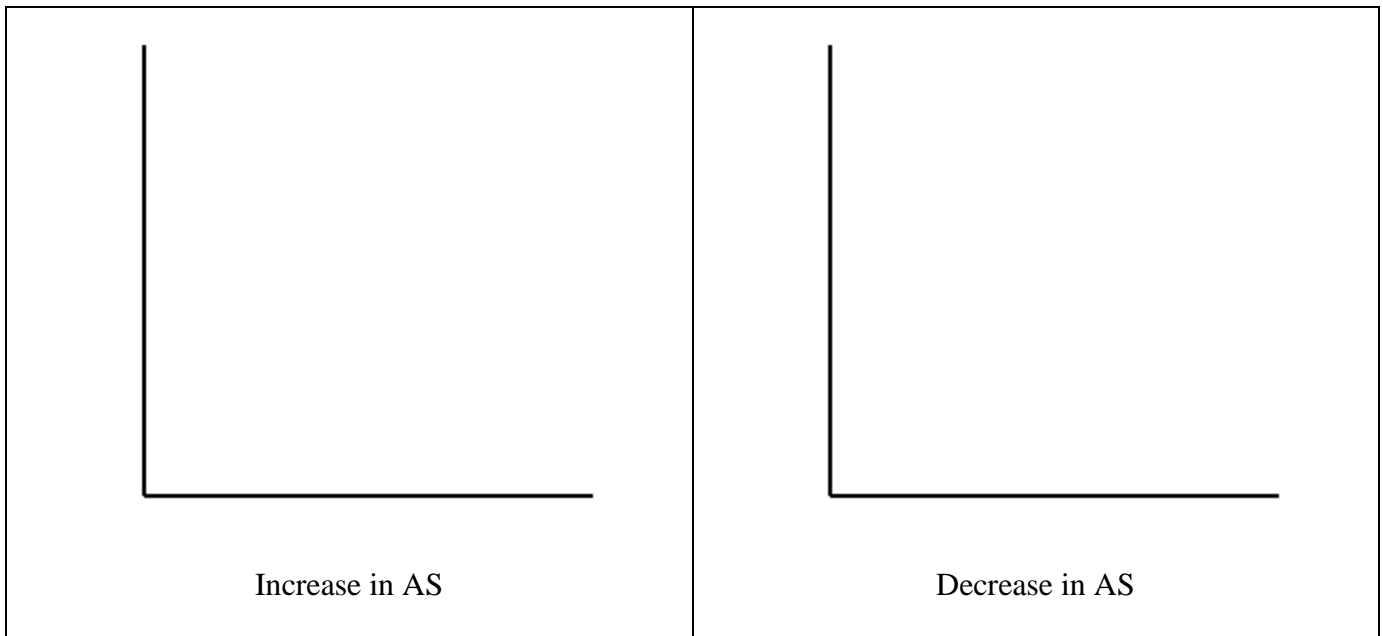
One model (not really used anymore) shows us that there are three parts the AS curve.

ALL OF THE MODELS BELOW ARE OBSOLETE.



From this point further we will use a regular Aggregate Supply Curve

Determinants of Aggregate Supply



Determinants of Aggregate Supply

1. Change in input prices
2. Change in productivity
3. Change in legal-institutional environment

Change in input prices

- a) availability of resources: (land, labor, capital and entrepreneurship) if these resources are more expensive the production costs increase and AS will decrease (shift left)
- b) price of imported resources: If the prices increase the AS curve will decrease
- c) Market power: The ability to set a price above the point that would be reached in a competitive environment. (If Oil Cartel increases prices the production costs increase. If unions increase prices the production costs increase.) This is very uncommon.

Changes in productivity (ex. technology)

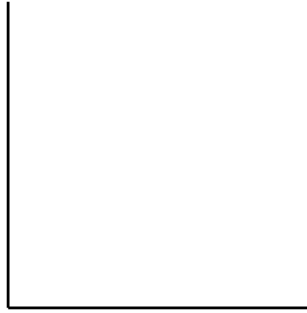
Productivity = real output/input. If per unit cost decrease the companies become more productive and therefore will be willing to supply more. A shift in AS to the right.

Graph an increase in productive capacity of the economy.

Change in legal-institutional environment

- a) Business taxes and subsidies: Higher taxes lead to increase unit costs. This means the AS will decrease (shift left).
- b) Government Regulation: Increase government regulations will lead to increased production costs. This will mean a decrease in AS.

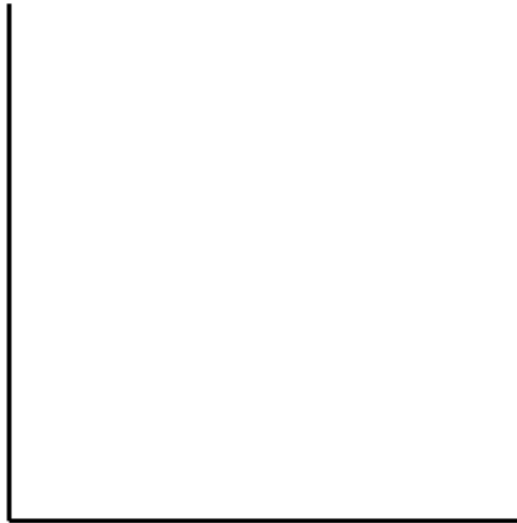
Graph this – New government regulations require car manufacturers to cut emissions by 35%.



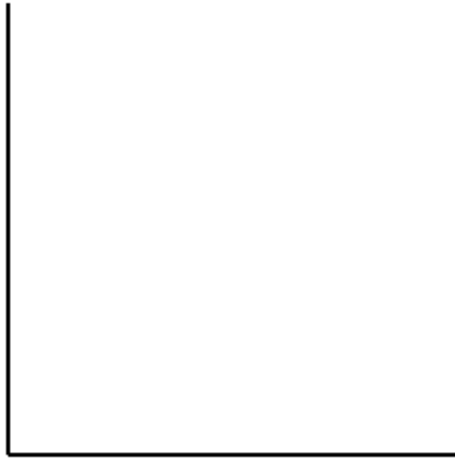
Equilibrium price level and Equilibrium real domestic output

The intersection of AD and AS these two is the equilibrium point.

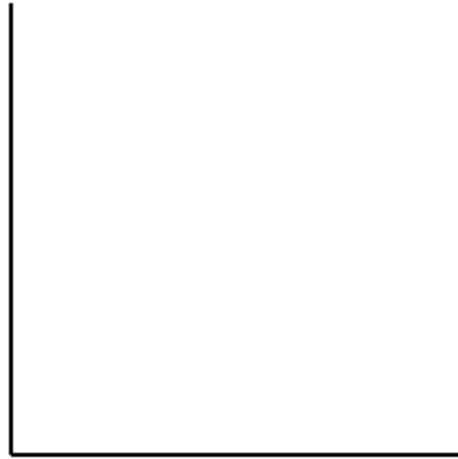
Equilibrium: situation in which there are no forces that will produce change among the variables considered.



Demand Pull Inflation



Cost Push Inflation



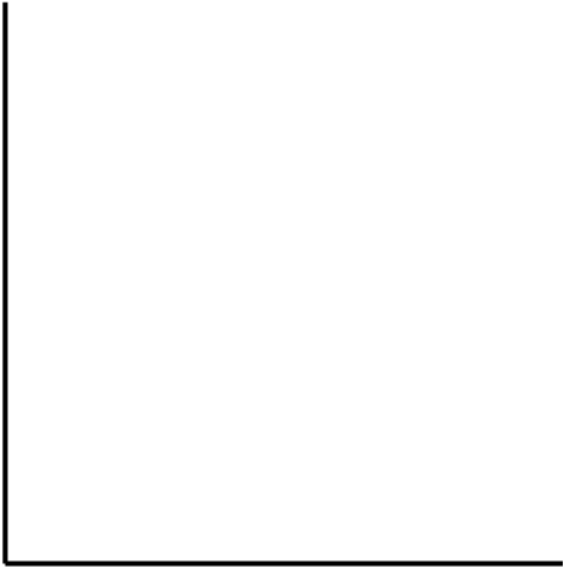
When GDP changes you can relate this to changes in unemployment. A decrease in output (Real GDP) means that unemployment went up. Sometimes we'll say that employment went down. These are the same thing.

In Macroeconomics a change in a variable that causes AS to shift can sometimes cause a shift in AD. Ex. If wages increase it becomes costlier for companies to produce so AS shifts. Yet employees now have more money so AD increases.

Graph it.



Unit Three, Day Three (pages 815-818)

	<p><u>Long Run Aggregate Supply:</u></p> <p>Wages are responsive to changes in the price level. If the prices of things go up the workers realize that their wages can no longer buy what they used to. They demand a raise. When they do this increases the cost of doing business. This will shift the AS curve back to the left. In the long run the AS curve will be a vertical line because of this responsiveness to price changes.</p> <ol style="list-style-type: none">1. Something happens to increase AD.2. Workers see that prices have risen and demand rises. This shifts AS to the left.3. AS shifts so that the net effect is that prices rise but output does not increase.
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The long run AS curve is a vertical line indicating the amount of goods and services a nation can produce using all of its productive resources as efficiently as possible.

The Long Run AS curve is the output at full employment.

The LRAS curve also assumes that the nation is using all of the productive technologies available to it. *In this manner it is similar to the productive possibilities curve.* The LRAS curve moves outward when there is **economic growth**, but it is still a vertical line.

Unit Three, Day Four

Keynesian Economics v. Classical Economics

Classical Economics:

Classical theory of employment: believes that laissez faire capitalism is able to provide virtually continuous full employment. They felt that

- 1) under spending (not spending enough to keep full employment) would not occur.
- 2) If under spending did occur, price wage would adjust and there would not be declines in real output, employment or real incomes.

This was based on Say's Law:

Supply creates its own demand. They felt that when things are produced the wages created would pull that supply off the shelves.

It is because of this theory that the vertical portion of the AS curve is called the classical range.

AS is vertical because the economy will not allow employment to fall below full employment.

AD is stable if the money supply is stable because the government controls the money supply.

Keynesian Economics:

Keynes believed that product prices and wages are downwardly inflexible. (Companies will not lower their prices in time of hardship and workers will not accept wage cuts in times of hardship.) This is why the AS curve has the horizontal slope. It represents a point where the economy is not fully employed.

True Keynesian AS Curve



AS is horizontal because the economy will be at under employed levels. They believe that once full employment is reached the AS will then become vertical.

AD is unstable because of the variability in investment.

Sticky Wages (nominal rigidity of wages): **Theoretical.** As unemployment rises (causing a decrease in output) wages are slow to decrease (i.e. sticky). Workers are unwilling to take pay cuts for a number of reasons. This causes rising input costs which decreases AS. Wages are sticky downward according to Keynes.

Unit Three, Day Five (pages 994-1017)

FOREX: Hello FOREX my old friend. I've come to talk with you again.

In regards to the foreign exchange market the country who *initiates* the action (buying foreign goods, investing based on higher interest rates in foreign country, etc.) is the country whose *supply* of currency moves. They are bringing their currency to the FOREX and leaving it there (the stack gets taller).

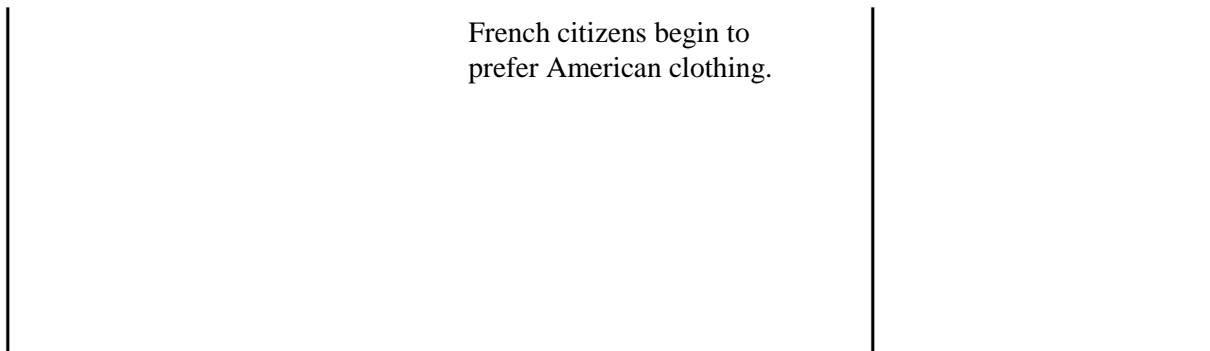
The country being *acted upon*, is the country whose *demand* of their currency moves.

Then it just comes down to making sure they are representing the currency being asked for on a correctly drawn graph.

Four factors can cause changes in the FOREX:

- 1) Changes in Tastes
- 2) Relative Income Changes
- 3) Relative Price Changes
- 4) Relative Interest Rates

- 1) **Changes in Tastes**: If we have goods that foreign citizens want they are willing to pay more. The dollar will then appreciate. (They will give us more euros for the dollar.)



- 2) **Relative Income Changes**: As an economies income increases it will buy more goods (both domestic and foreign). This means that if the US economy increases faster than the foreign economy we will be importing more than we are exporting. The value of the dollar will therefore depreciate.

US incomes increase overall relative to the world.

3) **Relative Price Changes:** If the price levels increase more rapidly domestically than it does in other countries the US consumers will buy the foreign goods and this will depreciate the dollar.

Since consumers are only willing to pay certain prices for goods and services the relative price of a good in foreign currency is not important. If a good is priced very high in their currency it means the dollar can buy more of that good.

This leads to the Purchasing power parity theory: differences in exchange rates equate the purchasing power of various currencies. Ex. If a bundle of goods costs \$500 to buy and 100 pounds to buy this means the exchange rate should be \$5 to 1 pound.

4) **Relative Interest Rates:** (MORE ON THIS LATER)

If for some reason there is a large demand for British goods we will find an unfavorable balance of trade. This will drive up the demand for pounds. Eventually the market will take over and our dollar will depreciate. If before the depreciation a 2 pound widget costs \$4 at a \$2 for 1 pound exchange rate. If after the depreciation the exchange rate changes to \$3 for 1 pound exchange that same widget costs \$6. This means demand for that widget will be decreased and the US will import less of that product. In the end the balance of payments will take care of itself.

Problems with this:

1) Uncertainty: If I do not know what I will have to pay in the upcoming months I may not be willing to place the order now.

2) The instability of the fluctuating exchange rate may cause the economy to go crazy. If you are operating at full employment and the dollar depreciates you will have an increase demand for your goods. This will lead to demand pull inflation.

Disposable Income

Once you have disposable income what can those people do with their money?

The most important determinant of consumer spending is income (Y), in particular, disposable income.

Saving is that part of disposable income not spent so it too depends on DI.

As DI increases consumption increases

Reality is that

C increases as Y increases

C increases less than Y increases

S increases as Y increases

Consumption (C) + Savings (S) = Disposable Income (DI)

DI - C = Savings.

Average Propensity to Consume = Consumption (C) /Income (Y)

APC= C/Y

This is the fraction of total income that is consumed

Average Propensity to Save = Savings (S)/Income (Y)

APS= S/Y

This is the fraction of total income that is saved.

APC + APS = 1

Once we know the average propensities we must then calculate the marginal propensities. These tell us how much they will consume/save when income changes.

MPC = change in consumption/change in income

MPS = change in savings/change in income.

MPC + MPS = 1

Level of Output	Consumption	Savings	APC	APS	MPC	MPS
\$370	\$375	-5	1.01	-.01	.75	.25
\$390	\$390			0		.25
\$410	\$405			.012	.75	

Business consume through investment (I).

When we talk about I. It is autonomous (it doesn't vary as disposable income varies. We also assume that there is no savings for business.) Although in the real world if income increases investment may increase.

There are **two determinants** for investment:

1. Expected Rate of Net Profit:

2. The **Real** Interest Rate:

Real Interest Rate (Real i) = Nominal Interest Rate (Nominal i) – Anticipated Inflation

This is the financial cost that the business must pay to borrow money to purchase real capital (machinery...)

Unit Three, Day Seven (pages 862-921)

KEYNESIAN MULTIPLIER

The Keynesians believe that consumption changes less than disposable income changes, affecting overall spending, output, and employment. This lesson explains the multiplier, which can be used to predict how much expenditures, output, and employment can be expected to change if spending by consumers, businesses, and government changes as a result of forces other than changes in income.

Assume an initial injection into the economy of \$1000. This could come from anywhere but to make it clear, let's say it is \$1000 in Investment spending.

<u>CONSUMPTION</u>	<u>ADDITIONAL INCOME</u> (MPC = .8)
1000	800
800	640
640	512
512	408
.	.
.	.
.	.
4000	5000

Therefore, with an initial injection into the economy of \$1000 creates \$5000 in additional income within the economy.

An algebraic formula has been developed that permits much quicker calculation for the amount by which total income changes when someone injects new spending into the economy. The formula, called the **multiplier**, is defined as follows:

$$\text{Multiplier} = 1/(1-\text{MPC})$$

Some Practice with the Multiplier

Given the following MPC's What is the Multiplier?

1. .20
2. .50
3. .75
4. .80
5. .90

Given a 20 addition to economy and the following increases in GDP. What is the Multiplier and MPC?

1. 200
2. 80
3. 40
4. 25
5. 20

Remember that $MPC + MPS = 1$ this means $1 - MPC = MPS$

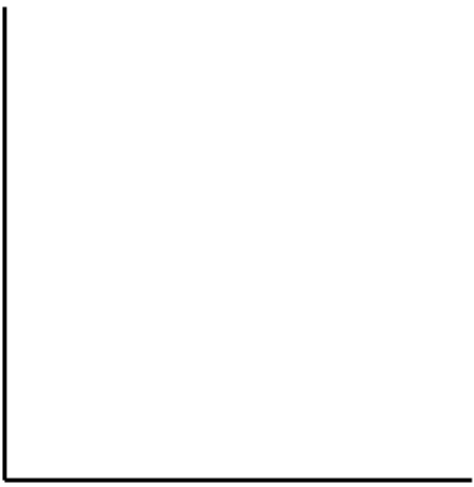
The Keynesian multiplier is usually shown with changes in I, however, it also works for changes in C, G, AND X_n .


Unit Three, Day Eight/Nine (pages 862-921)

FISCAL POLICY

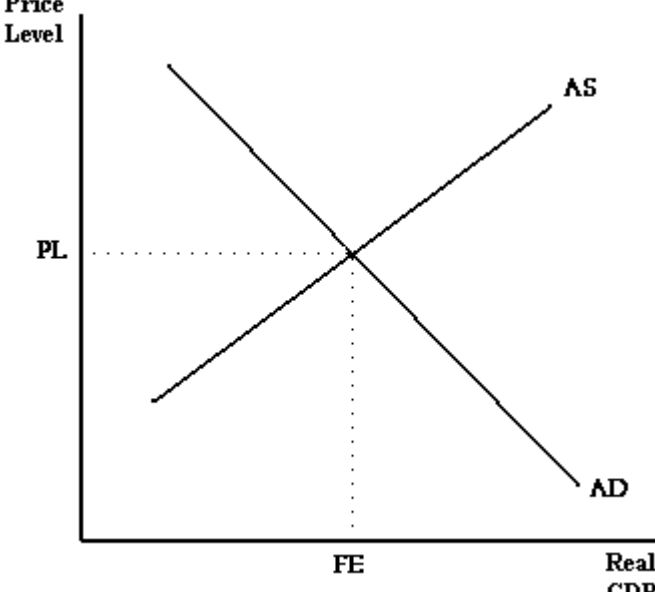
Keynesians argue that the federal government can use fiscal policy to alter Real GDP, employment and the price level.

Fiscal Policy: all the spending, taxing, and borrowing activities of the national government aimed at moving AD in a direction that permits output, employment, and price level goals to be met.

	<p><u>EXPANSIONARY FISCAL POLICY</u>: Used when a recession exists. (These will move the government toward a deficit.)</p> <ol style="list-style-type: none">1) increased government spending (Subject to the multiplier effect)2) lower taxes3) a combination of these.
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	<p>CONTRACTIONARY FISCAL POLICY: Used when demand-pull inflation is present. (These will move the government toward a surplus)</p> <ol style="list-style-type: none"> 1) Decreased government spending (Subject to the multiplier effect) 2) higher taxes 3) a combination of these.
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Suppose you are at full employment. If the Government wants to expand the economy what would they do?

	<p>If you are at full employment and you shift AD you only get inflation. You get no increase in output. This means you must work with AS.</p> <p>This would mean that you have to decrease corporate taxes, increase tax credits, increase R and D credits.... Something to get the business to increase AS.</p>
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Unit Three, Day Ten (pages 862-921)

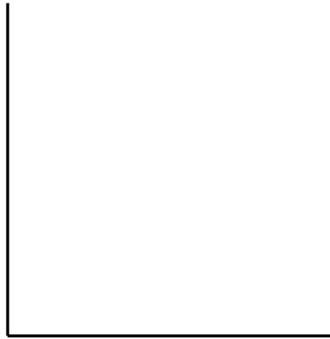
A Deficit is when taxes are less than government spending in a given year. Debt is when the government has deficit from year to year. You can have a surplus in a given year and still have a debt.

Discretionary fiscal policy: the deliberate manipulation of taxes and government spending by Congress to alter real output and employment, control inflation, and stimulate economic growth.

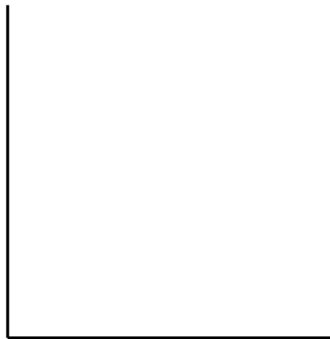
Built in stabilizer: anything which increases the government's deficit (or reduces its surplus) during a recession and increases its surplus (or reduces its deficit) during inflation without requiring explicit action by policy makers.

Automatic Stabilizers: our tax system is such that net tax revenues (net taxes minus transfers and subsidies) vary directly with GDP. Almost all taxes yield more revenue when GDP increase. (Income, payroll, sales...)

Ways to help a RECESSION: cut taxes and increase government spending.



Ways to help INFLATION: raise taxes and decrease government spending.



The Keynesian approach assumed that a tradeoff between unemployment and inflation is possible. When unemployment is too high, the goal is to increase AD (without causing or aggravating inflation.) When there is little unemployment and inflation prevails, the goal is to decrease AD and increase unemployment levels to eliminate inflation. The problem is this did not work in the 1970's.

STAGFLATION: Inflation during periods of unemployment.

Other approaches and theories:

RATIONAL EXPECTATIONS: argues that people expect changes in economic policy and act to offset the intended results of such changes. They claim that recession and booms are exaggerated as a result of government policy rather than smoothed out.

For Example: If the economy goes into recession, people expect fiscal policies that are designed to stimulate business investment. Businesses will therefore refrain from investing until the tax cut takes place. Consequently, their actions while awaiting the tax cut may aggravate the recession and then create too strong a recovery in investment after the tax cut becomes effective.

MONETARISM: argue that steady economic growth and price stability can be achieved with a steady increase in the money supply (at about the same rate as Real GNP growth).

SUPPLY-SIDE ECONOMICS: believe fiscal policy should be designed to provide incentives to increase aggregate supply (lowering taxes). This stimulates the business side of the circular flow.

Balanced-budget multiplier:

If the government want to maintain a balance budget it will only spend what it takes in from taxes.

Ex. $MPC = .75$ Therefore multiplier = $4 (1/1-.75)$

Government announces a tax increase (on C) of \$20 billion in order to increase Government spending by \$20 billion. This means \$20 billion is leaving the pockets of consumers.

Reaction: C decreases by \$60 billion (\$15 billion x 4) and savings decreases by \$5 billion. However, savings does not play into GDP so GDP has lost \$60 billion).

Government now spend the \$20 billion it got. This will affect GDP by \$80 billion (\$20 x 4). The net effect is an increase of \$20 billion for GDP.

Because of the multiplier the consumers do not decrease their consumption by the total amount of the tax. This means that the change in GDP will be equal to the tax.

Practice Problem:

Given a balanced budget and a multiplier of 5. When G decreases by \$10 billion.

1. What happens to taxes (T)?
2. What is the effect on GDP?
3. Show your work.