review for the exam

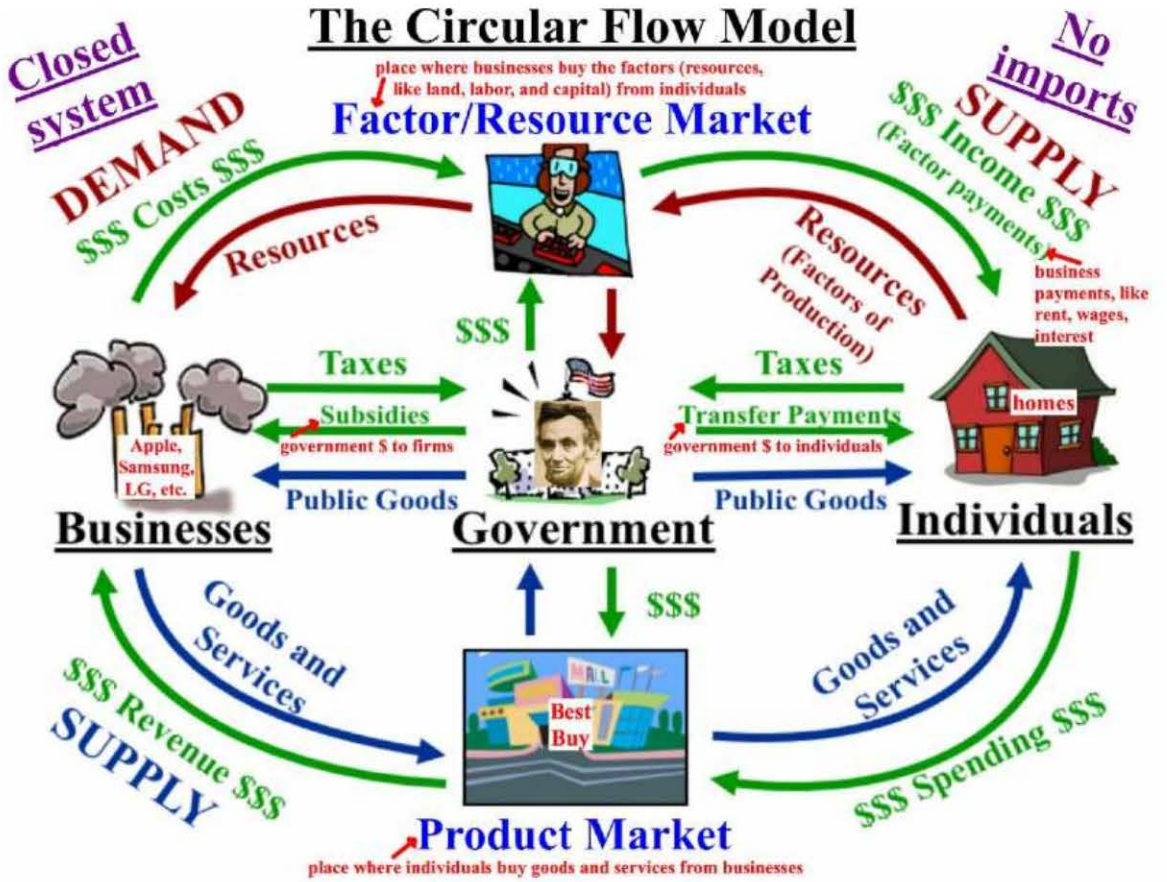
This is Macroeconomics

Macroeconomics: The Big Picture

1. this chapter is about **macroeconomics**, which focuses on the economy as a whole, every firm/business and every market in one country
2. macroeconomics focuses on a country's money supply, aggregate demand (AD), aggregate supply (AS), and gross domestic product (GDP)
3. aggregate demand is the total demand for good and services in a country
4. aggregate supply is the total supply of goods and services in a country

Introduction (cont.)

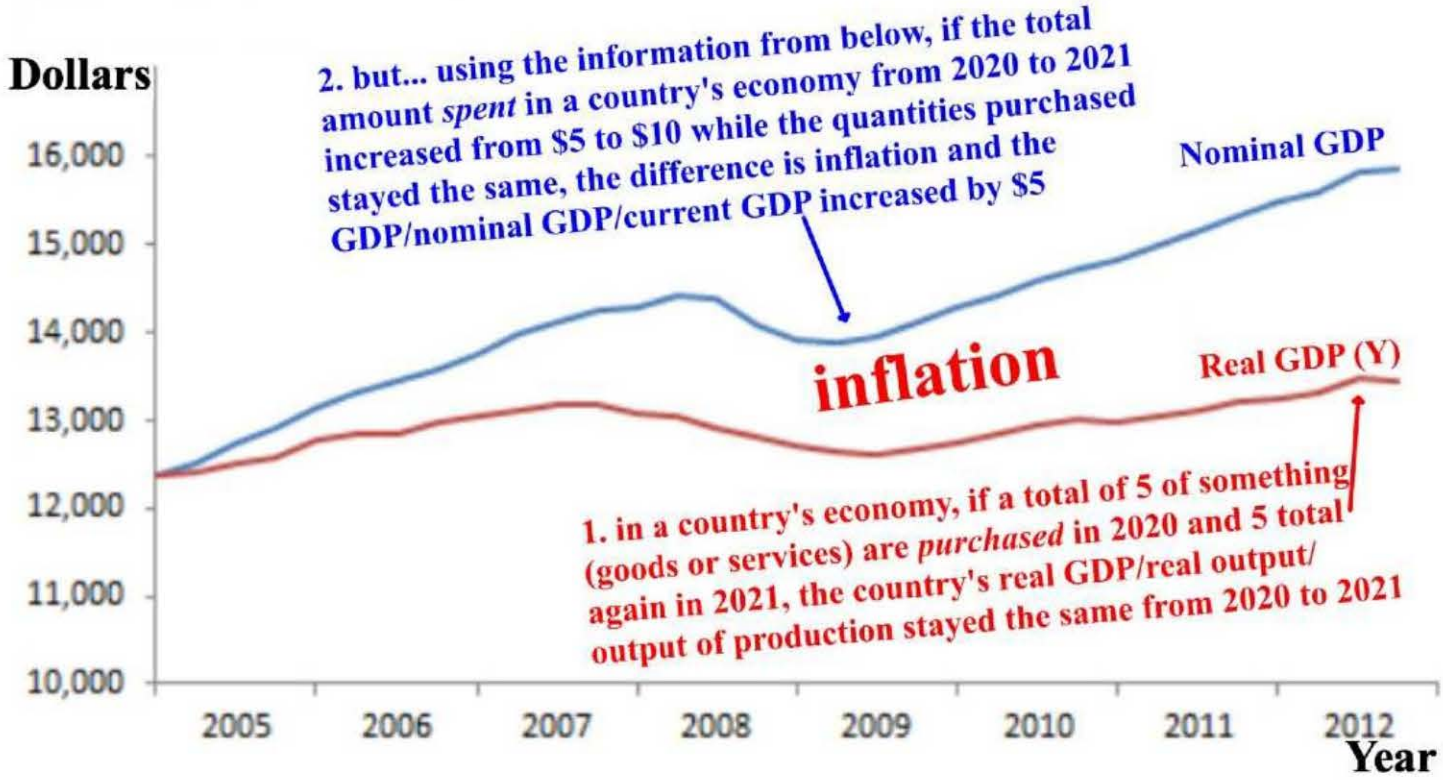
1. a country's money supply is the total amount of currency (coin and paper money) and deposits in banks in a country
2. currency and checking are designated as **M1** and are considered **demand deposits** (currency that you deposit into a bank account from which you can withdraw "on demand"- at any time without any advance notice to the bank; which is **liquidity**)


The Circular Flow Model
Closed system
No imports
place where businesses buy the factors (resources, like land, labor, and capital) from individuals
Factor/Resource Market
DEMAND
$$$ Costs $$$
SUPPLY
$$$ Income $$$
(Factor payments)
business payments, like rent, wages, interest
Resources
Resources (Factors of Production)
$$$
Taxes
Taxes
Subsidies
government $ to firms
Transfer Payments
government $ to individuals
Apple, Samsung, LG, etc.
homes
Public Goods
Public Goods
Businesses
Government
Individuals
Goods and Services
$$$
Goods and Services
$$$ Revenue $$$
SUPPLY
Best Buy
$$$ Spending $$$
Product Market
place where individuals buy goods and services from businesses

Real GDP vs. Nominal GDP

1. **GDP** (gross domestic product), also called **nominal GDP** or **current GDP** is the total value of all new goods and services produced in an economy during a specified period of time with the change on the price level (PL) (inflation or deflation) included in the total
   A. GDP includes spending by consumers (C) + business investments (I) + the government (G) +/- net exports (X) (exports-imports)
2. **inflation** is the percentage increase in the average price (P) level of all goods and services from one year to the next
3. because the quantities of goods and services as well as their prices (P) change over time, economists use **real gross domestic product (real GDP or Y)**, also called **real output** or **output of production**, to calculate economic growth from year to year
4. real GDP only calculates changes in quantities purchased from year to year

Real GDP vs. Nominal GDP (cont.)



Real GDP vs. Nominal GDP (cont.)

1. real GDP (Y) is a country's GDP that is adjusted to take into account a change in the price level (PL) (inflation or deflation) from year to year

macro formula #2

nominal GDP= consumer consumption (C)
+ business investments (I)
+ government spending/expenditures (G)
+/- net exports (exports-imports) (X)

real GDP = nominal GDP +/- change in the price level (inflation or deflation)

what is the formula for the velocity of money?

The Velocity of Money

1. the **velocity of money** calculates how fast money is spent in an economy

macro formula #3

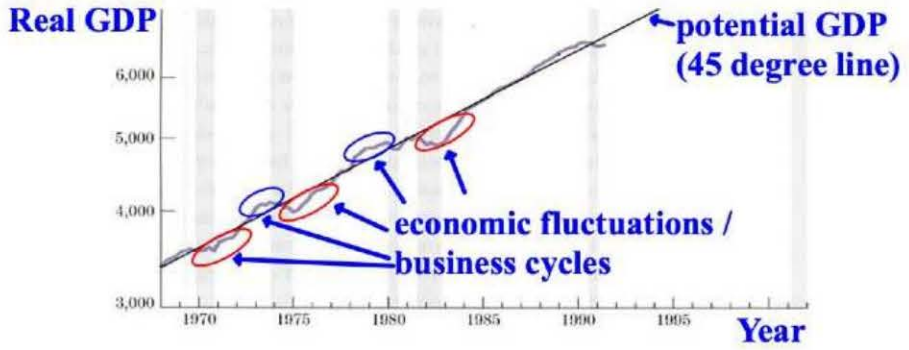
$$\frac{\text{GDP now}}{\text{starting money supply}} = \text{velocity of money}$$

$$\frac{\$200}{\$100} = 2$$

2. the velocity of money is an important part of an economy's GDP calculation
3. a country's GDP cannot be controlled through the money supply alone
4. if the money supply is increased in a country but its velocity decreases, GDP may stay the same or even decline
5. an increase in the money supply causes price levels to rise (inflation)
6. a decrease in the money supply first causes **disinflation** (when the rate of inflation slows down) which then leads to **deflation** (a declining inflation rate)
   A. think of how a cell phone charges... fast at first, then charges slower when nearing 100%, then loses charge when on

Real GDP Over Time

1. when real GDP (Y) increases in an economy, it is called **economic growth**
2. real GDP per capita (per person) is the best indicator of economic growth
3. in the **short-run** (up to one year out), **economic fluctuations**, also called **business cycles**, occur, which are small increases or decreases in real GDP
4. sometimes real GDP fluctuates above or below **potential GDP** (where an economy should be)
   A. if the economy is above potential GDP, the country's economy is in expansion/has inflation (blue ovals)
   B. if it is below, economy is in a recession/in contraction (red ovals)

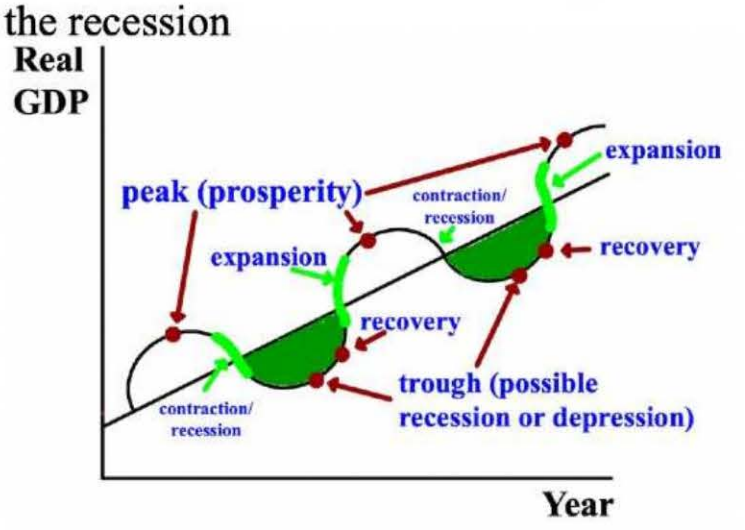


Real GDP Over Time (cont.)

1. over time, increases and decreases in real GDP (Y) and economic fluctuations, or business cycles, occur
2. when real GDP falls, economists say that there is a **recession**
   A. the decrease in real GDP must last at least six months (two quarters) before the decline is officially considered a recession
3. a **depression** is a huge recession

Real GDP Over Time (cont.)

1. the highest point before the start of a recession is called the **peak**
2. the recession (contraction of the economy) comes next
3. the lowest point during the recession or depression is called the **trough**
4. the period between recessions, from the trough to the next peak, is called an **expansion**
5. the early part of the expansion is called a **recovery** because the economy is just recovering from the recession



Economic Growth: The Uphill Climb

1. **real income** is income adjusted for changes in prices (inflation or deflation)
   A. if you earn $100,000 a year, but inflation is at 10%, your real income is only $90,000
2. a good measure of how individuals benefit from increases in real GDP (Y) is **real GDP per capita** (the average production per person in an economy
3. the formula for real GDP per capita is:

   real income per capita = country's real GDP / country's population

   A. if a country's real GDP is $100 and their population is 2, the country's real GDP per capita is $50 ($100 / 2)
4. employee skills are critical for a high real GDP per capita
   A. unskilled workers don't really help increase real GDP

macro formula #4

Economic Growth: The Uphill Climb (cont.)

1. the **annual growth rate of real GDP per capita** is the percentage increase in the real GDP per capita each year.
2. to calculate a country's percent change from one year to another, figure out the per capita for each year and then figure out the percentage change between the years
   A. if the first year's per capita is $1,000 and the second year's is $1,099, the percent change is 9.9% (100% x $1,099 / $1,000= 109.9%, then 109.9%-100%).

macro formula #5

$$\frac{100\%}{\$1{,}000} = \frac{109.9\%}{\$1{,}099} = 9.9\% \text{ increase}$$

or... "Nooo..."

$$\frac{\text{new} - \text{old}}{\text{old}} \times 100 = \frac{1{,}099 - 1{,}000}{1{,}000} \times 100 = 9.9\%$$

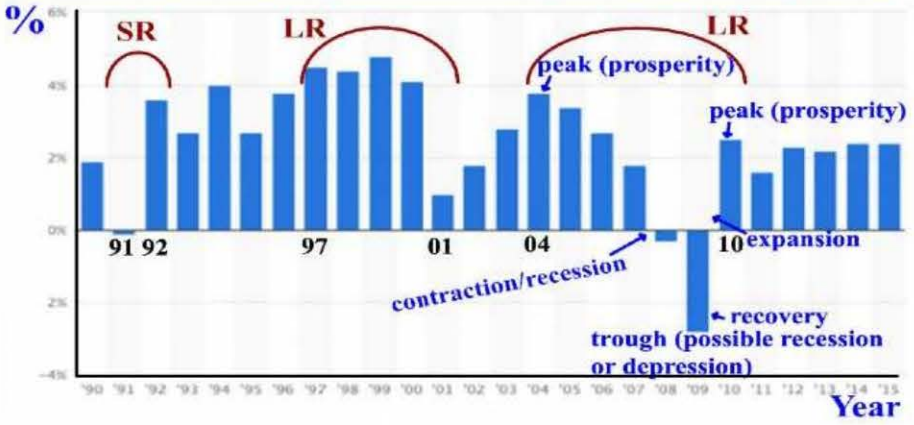
1. 1st yr. per capita= $100 and 2nd yr. per capita= $112 — 12% ann. growth rate
2. 1st yr. per capita= $200 and 2nd yr. per capita= $220 — 10% ann. growth rate

Economic Growth: The Uphill Climb (cont.)

1. the annual **short-run (SR) economic growth rate** is the percentage increase in real GDP (Y) from one year to the next
2. over time though, we look at the **long-run (LR) economic growth rate**, which looks at the growth of the economy from 4-5 years and beyond
3. the best way to promote long-run economic growth in a country is to take care of the unemployed and enhance technology, but education is key

A. raise workers' stock (value) and a country's economy will expand

Short-run economic growth vs. long-run economic growth



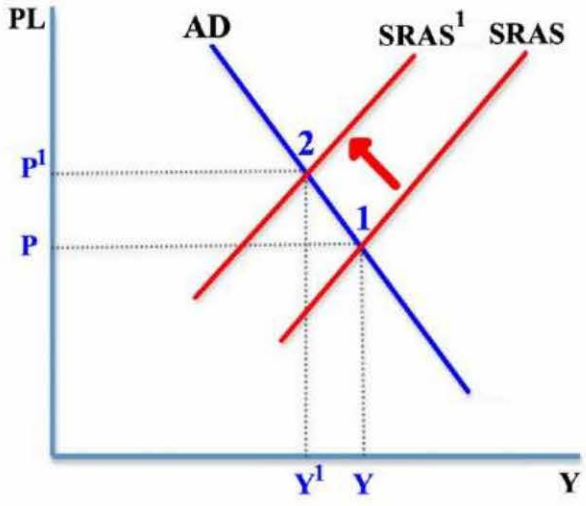
Inflation and Real GDP (Y)

1. the **inflation rate** is the percentage increase in the average price level (PL) of all goods and services from one year to the next
   A. the inflation rate is included in nominal GDP
2. the inflation rate directly impacts how much consumers (C), businesses, (I), and net exports (X) borrow and spend
   A. if inflation (price levels) decreases, C, I, and X will borrow and spend more
   B. if inflation (price levels) increases, C, I, and X will borrow and spend less
3. inflation occurs when nominal GDP grows quicker than real GDP; when price levels increase
4. an inflation rate of around 2% is the goal in America's economy
5. often the **expected rate of inflation** impacts consumer decisions
   A. if prices are expected to go up, some will buy earlier rather than later, and vice versa

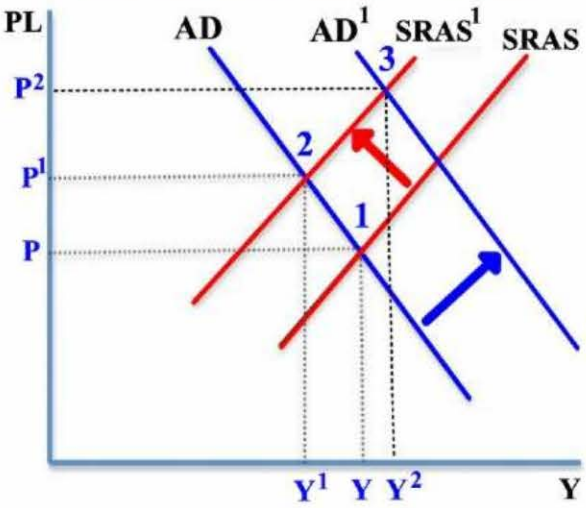
Inflation and Real GDP (Y) (cont.)

1. **stagflation** is persistent high inflation combined with high unemployment and stagnant demand for goods in a country's economy
2. **demand-pull inflation** occurs when inflation is caused by an excess of aggregate demand (AD) vs. short-run aggregate supply, (SRAS), like after natural disasters occur

Stagflation



Demand-pull inflation



Inflation and Real GDP (Y) (cont.)

1. a **sticky price** is a price for goods or services that does not respond immediately to changing economic conditions
2. sticky price situations can occur when business leaders make production and personnel decisions that do not create equilibrium in the market
   A. if an economy is in expansion/has inflation, businesses should increase the prices for their goods and pay their employees more
   B. if an economy is in contraction/recession, businesses should decrease the prices for their goods and pay their employees less

Inflation and Real GDP (Y) (cont.)

1. increases in real GDP (Y)/aggregate demand (AD) causes the inflation rate to increase
   A. because of the increased aggregate demand, price levels (PL) increase over time
2. a rapid increase in a country's money supply creates **hyperinflation**, which explains why governments just can't print more money
   A. higher inflation rates make your money decrease in value
3. **cost-push inflation** is inflation caused by an increase in prices of inputs like labor, resources, etc.
4. the increased price of the factors of production leads to a decreased short-run aggregate supply (SRAS) of the goods being made
   A. when quantity supplied (QS) decreases, prices (P) increase, which is inflation

Interest Rates and Real GDP

1. the **interest rate** is the amount lenders charge borrowers when they lend money
2. the interest rate is another key economic variable that is related to the growth and change in real GDP (Y) of a country's economy over time
3. interest rates directly impact how much consumers (C), businesses, (I), and net exports (X) borrow and spend
   A. C, I, and X are very interest sensitive (sensitive to interest rates)
   B. if interest rates decrease, C, I, and X will borrow and spend more
      i. this usually leads to lower unemployment and possibly expansion because more is purchased and workers are hired, increasing an economy's money supply
   C. if interest rates increase, C, I, and X will borrow and spend less
      i. this usually leads to higher unemployment and possibly a recession because less is purchased and workers are laid off, decreasing an economy's money supply

D. **fixed interest rates** don't change over time while flexible interest rates do

Interest Rates and Real GDP (cont.)

1. the **nominal interest rate** is the interest rate on a loan, making no adjustments for inflation (a loan of 9%, including 5% inflation)
2. the **real interest rate** is the nominal interest rate minus the inflation rate (9% - 5% = 4%)

macro formula #6

real interest rate =

9% (nominal interest rate)
− 5% (inflation rate)
4% (real interest rate)

nominal interest rate - the inflation rate or anticipated inflation rate

3. deficit spending by a country leads to an increase in interest rates because the money supply decreases making the remaining money more valuable/more expensive

Interest Rates and Real GDP (cont.)

1. fluctuations in interest rates are directly connected to inflation and real GDP (Y)
   A. when inflation/price levels (PL) increase or are expected to increase, lenders charge C, I, and X a higher interest rate to cover the decrease or expected decrease in the value of money being paid back to them (higher prices = less purchasing power), and as C, I, and X borrow or spend less, the money supply decreases and real GDP/aggregate demand (AD) decreases which leads to a possibly of a recession/contraction in the economy
   B. when inflation/price levels (PL) decrease or are expected to decrease, lenders charge C, I, and X a lower interest rate because of the increase or expected increase in the value of money being paid back to them (lower prices = more purchasing power), and as C, I, and X borrow or spend more, the money supply increases and real GDP/aggregate demand (AD) increases which leads to expansion and inflation in the economy

Different Types of Interest Rates and Their Behavior

1. the **federal funds rate** is the short-term interest rate banks charge other banks on overnight loans
   A. this rate can be adjusted up or down by actions taken by the Federal Reserve (the "Fed") to expand or contract the economy
      i. to increase the money supply and expand the economy, the government buys bonds from banks which increases the amount of money banks can loan and lowers the interest rate on the loans for C, I, and X
      i. to decrease the money supply and contract the economy, the government sells bonds to banks which decreases the amount of money banks can loan raises the interest rate on the loans for C, I, and X
2. **bonds** (securities) are loans that people give to a company or government and the company or government promises to pay back in full with regular interest payments

Unemployment, Inflation, Interest Rates, and real GDP/AD

How unemployment, inflation, and interest rates impact an economy's real GDP (*Y*)/aggregate demand (*AD*)

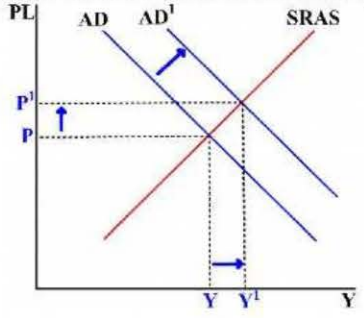
***an ↑ in aggregate demand (*AD*)/real GDP (*Y*) ➡ the price level (*PL*)/inflation ↑ ➡ aggregate supply (*AS*) ↑ ➡ unemployment ↓ ➡ the federal funds rate ↑ ➡ the nominal then real interest rate to ↑ ➡ interest-sensitive spending/investment by *C*, *I*, and *X* to ↓ ➡ a ↓ in aggregate demand (*AD*)/real GDP (*Y*)**

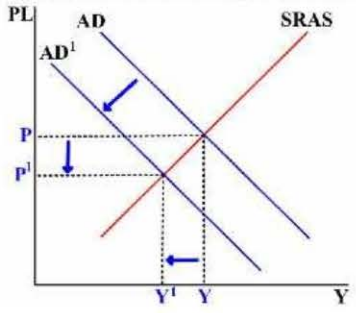
***a ↓ in aggregate demand (*AD*)/real GDP (*Y*) ➡ the price level (*PL*)/inflation ↓ ➡ aggregate supply (*AS*) ↓ ➡ unemployment ↑ ➡ the federal funds rate ↓ ➡ the nominal then real interest rate to ↓ ➡ interest-sensitive spending/investment by *C*, *I*, and *X* to ↑ ➡ an ↑ in aggregate demand (*AD*)/real GDP (*Y*)**

graph an economy in short-run equilibrium

Aggregate Demand and Economic Fluctuations

1. because the focus in macroeconomics is on the total quantity demanded (Qd) for all goods and services in the economy and not just one industry, like when we learned about quantity demanded (Qd) in microeconomics, we use the term **aggregate demand (AD)**
   A. aggregate demand is the total amount that consumers (C), businesses (I), the government (G), net exports (X) spend on all goods and services in an economy
2. aggregate demand *is* GDP (AD = GDP)
3. aggregate demand AD is referred to as a demand-side policy because it deals with the total demand of goods and services in an economy





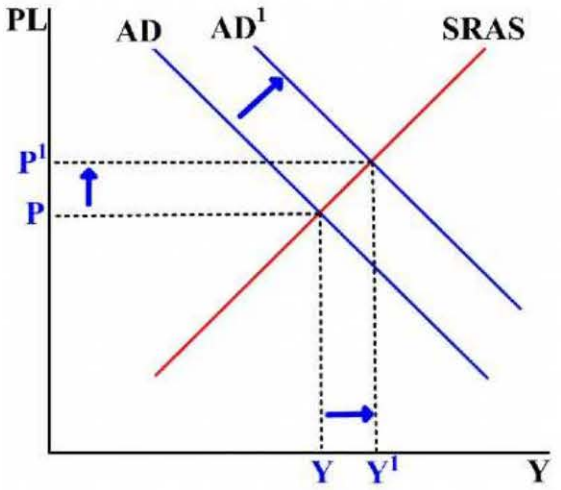
Aggregate Demand and Economic Fluctuations (cont.)

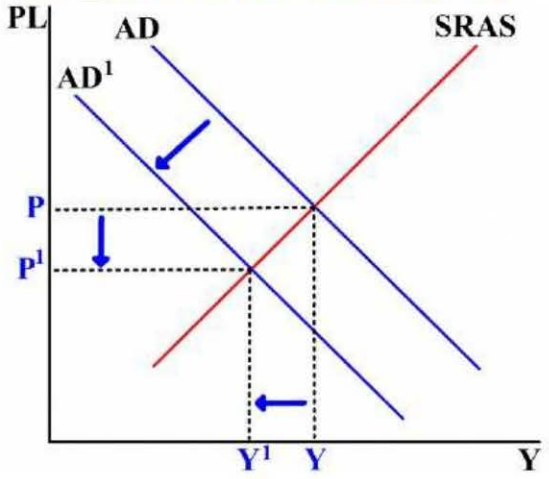
1. changes in government purchases, monetary policy by the FED, fiscal policy by the government, foreign demand for U.S. exports, taxes, and consumer confidence can cause aggregate demand (AD) to increase (left graph) or decrease (right graph)

C
I
T

Variables that impact AD

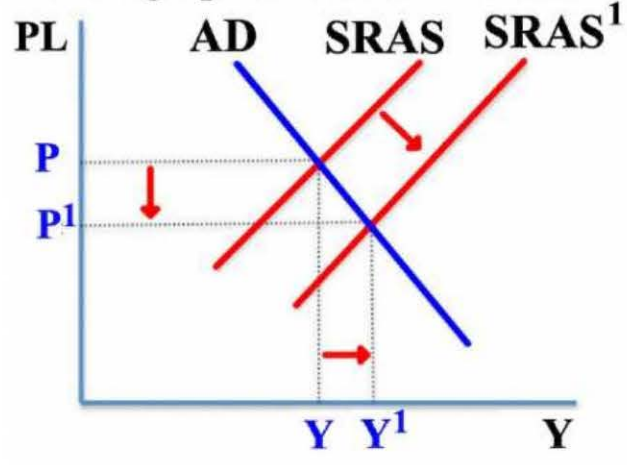
1. C, G, or X spending ↑ or ↓
2. inflation ↑ or ↓
3. taxes on consumers ↑ or ↓

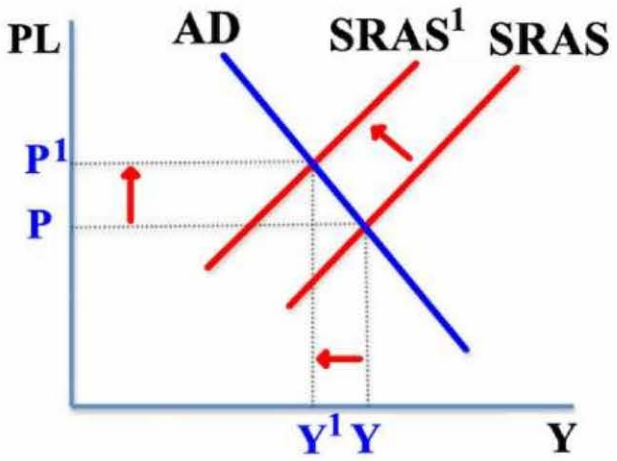




Short-Term Economic Growth

1. the potential GDP of an economy is best calculated by the total of what it makes or can service, its aggregate supply (AS)
2. there are two types of aggregate supply
   A. **short-run aggregate supply (SRAS)** is all of the goods and services produced in the short-run (SR) (up to one year out) by all of the firms in an economy using the available labor, capital, and technology
3. the left graph shows an increase in SRAS, the left a decrease



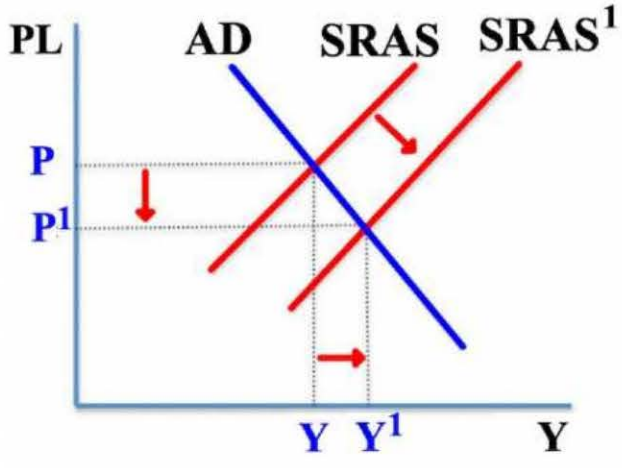


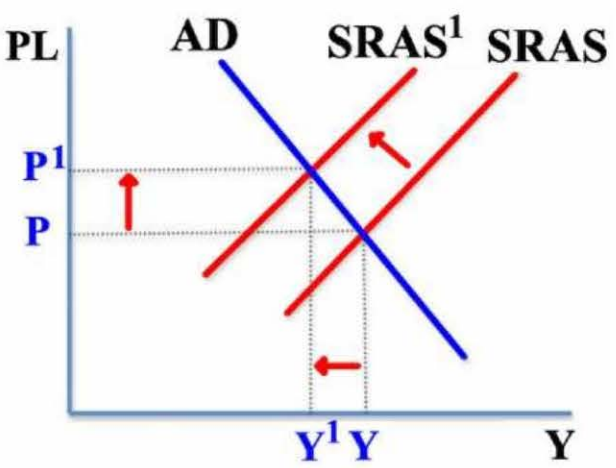
Short-Term Economic Growth (cont.)

Variables that impact SRAS

P I S T

1. production resources/factors/input costs- the costs of wages, salaries, healthcare, materials, technology, facilities, etc. (*anything* that is needed for production) ↓ or ↑
2. inflation expectations ↓ or ↑
3. subsidies (payments by governments) to producers ↓ or ↑
4. taxes on producers by the government ↓ or ↑

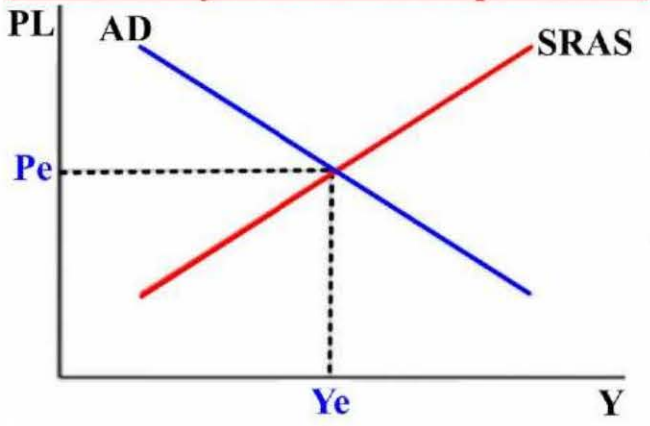




Short-Term Economic Growth (cont.)

1. when the level of short-run aggregate supply (SRAS) is the same as aggregated demand (AD), short-run equilibrium occurs
   A. **short-run equilibrium** is a state where short-run aggregate supply (SRAS) equals aggregate demand in the short-run (less than one year)
2. the **equilibrium price level (Pe)** and **equilibrium output level (Ye)** are the price level and output where the quantity of goods supplied (Qs) is equal to the quantity of goods demanded (Qd)

An economy in short-run equilibrium

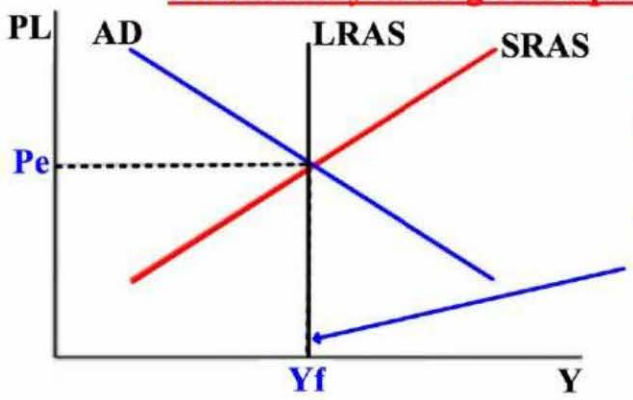


graph an economy in long-run equilibrium

Long-Term Economic Growth

1. the second type of aggregate supply (AS) is **long-run aggregate supply** (LRAS)
2. LRAS is all of the goods and services produced in the long-run (LR- four to five years out) by all of the firms in an economy using the available labor, capital, and technology
3. the long-run aggregate supply curve is determined by all of the factors of production since none are fixed in the long-run
4. long-run equilibrium is where real GDP (Y) equals potential GDP

An economy in long-run equilibrium



Anywhere on LRAS

1. **full employment level (Yf)**
2. **full output level**
3. **natural rate of unemployment (3-5%)**

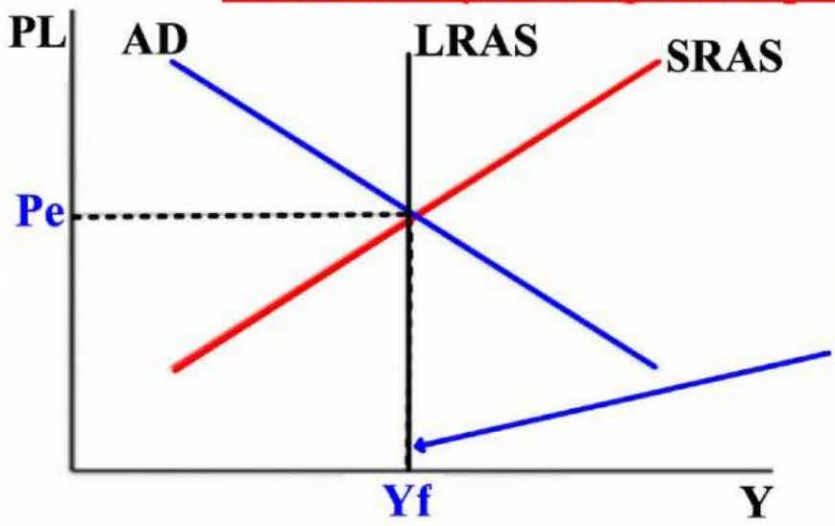
Long-Term Economic Growth (cont.)

1. long-run aggregate supply (LRAS) can be impacted by changes in input or output costs, taxes, subsidies, government regulations, and the production of **capital goods** (goods created in order to produce other goods, like a robot for a car factory) and **consumer goods** (goods created for consumer purchase, like twinkies).
2. **labor** is the total number of hours that workers are available to work in producing real GDP
3. **capital** is the total number of factories, machines, computers, human workers, etc., available
4. **technology** is the total amount of know-how available

Long-Term Economic Growth (cont.)

1. anywhere on the LRAS curve represents an economy where all inputs: land, labor and capital, are used to full efficiency
2. if there was an increase in investment, growth in size of a skilled labor force, an increase in consumer confidence in the economy, LRAS might shift to the right, an indicator of positive economic growth

An economy in long-run equilibrium



Anywhere on LRAS

1. **full employment level (Yf)**
2. **full output level**
3. **natural rate of unemployment (3-5%)**

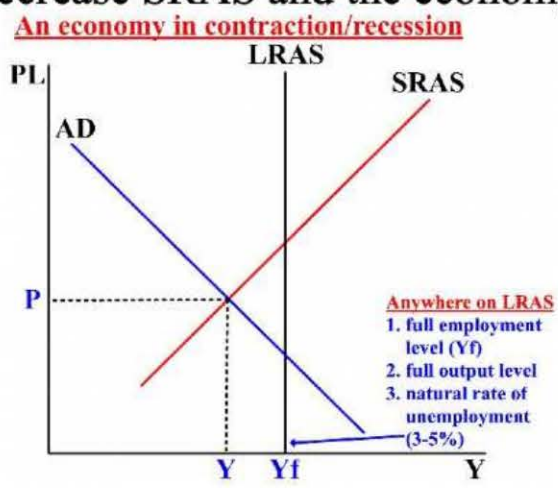
graph an economy in recession and another in expansion

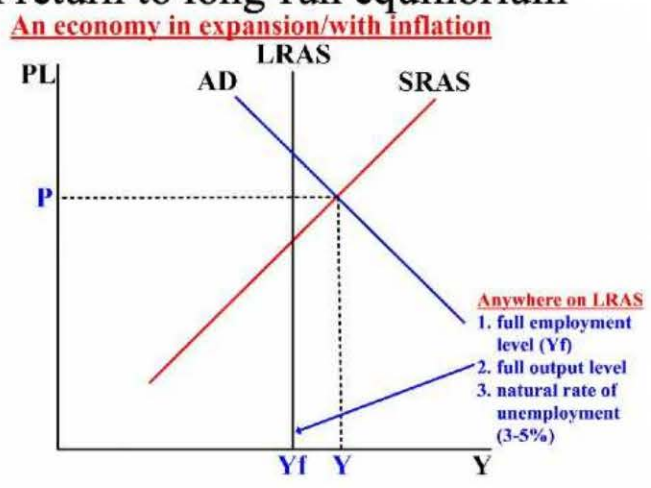
Long-Term Economic Growth (cont.)

1 classical economists believe that the close alignment of wages and price levels in an economy allow a country to naturally return to long-run equilibrium, even when expansion or contraction occurs

A. during a recession (left graph), wages will decrease which will increase SRAS and the economy will return to long-run equilibrium

B. during an expansion (right graph), wages will increase which will decrease SRAS and the economy will return to long-run equilibrium





Macroeconomics Do-Now

Please do this:

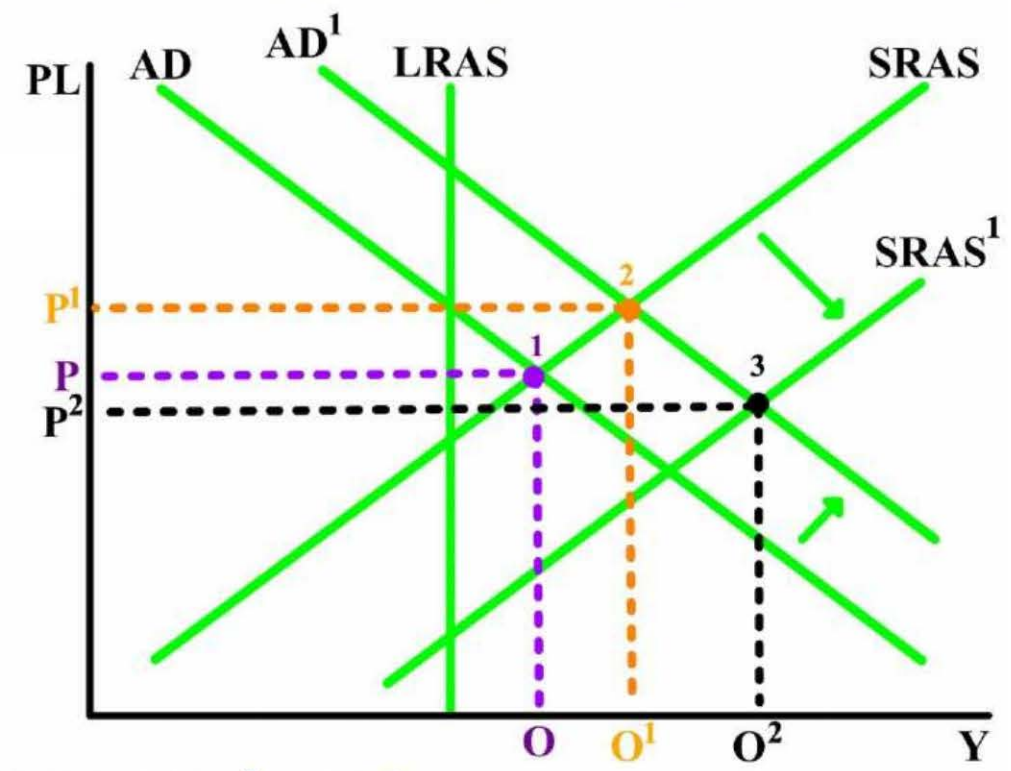
1. Assume that the U.S. is currently in expansion/above (more than) full employment/full ouput and heading towards a peak.

i. Draw a correctly labeled graph showing the current equilibrium of short-run aggregate supply and aggregate demand. Label the output O and the price level P.

ii. Assume personal income is increasing. Label the new equilibrium output O1 and the new equilibrium price level P1. What will happen in the long-run (LR) to the unemployment rate?

iii. Assume now that the number of students graduating with advanced degrees doubles. Label the new output O2 and the new price level P2.

Macroeconomics Do-Now



1ii. will decrease unemployment

Macroeconomics Do-Now

Please do this:

1. Assume the U.S. economy is operating below (less than) full-employment. What is the full employment %?

i. Draw a correctly labeled graph, including LRAS, and show each of the following: the current equilibrium output and price level, labeled Y1 and PL1.

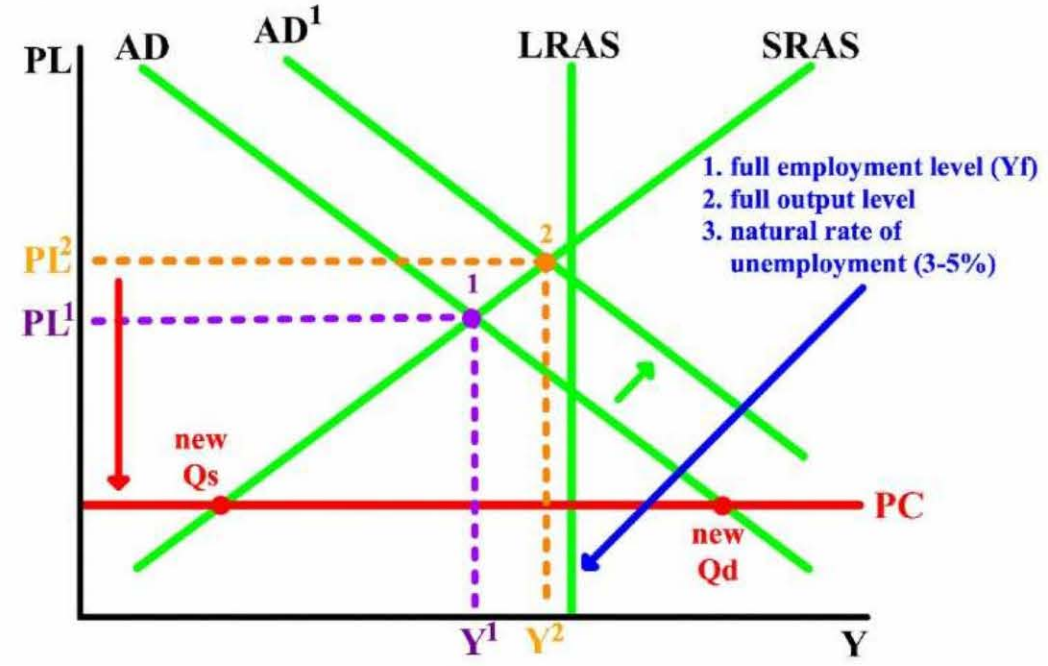
ii. Now assume that interest rates are targeted to reach full-employment. Should higher or lower rates be targeted?

iii. Given your decision in ii. above, show the impact on your graph, labeling the new real GDP/ aggregate demand as Y2 and price level as PL2.

iv. At the same time, the U.S. government creates a binding/effective price ceiling, labeled PC. Show it on the graph and explain its impact on the price-level and output/ production. Include an arrow to show if the PL increase or decreases.

Macroeconomics Do-Now

1i., 1iii, and 1iv.



1. 3-5% unemployment 1ii. lower rates to increase the money supply and AD
1iv. decreases both- PL and Y

Macroeconomics Do-Now

Please do this:

1. Assume the U.S. economy is in a recession/below (less than) full employment/full output. What is the full employment %?

i. Draw a correctly labeled graph and show each of the following: current equilibrium output and price-level, labeled OE and PE.

2. Assume that interest rates were raised. Would this be the correct move? Why or why not?

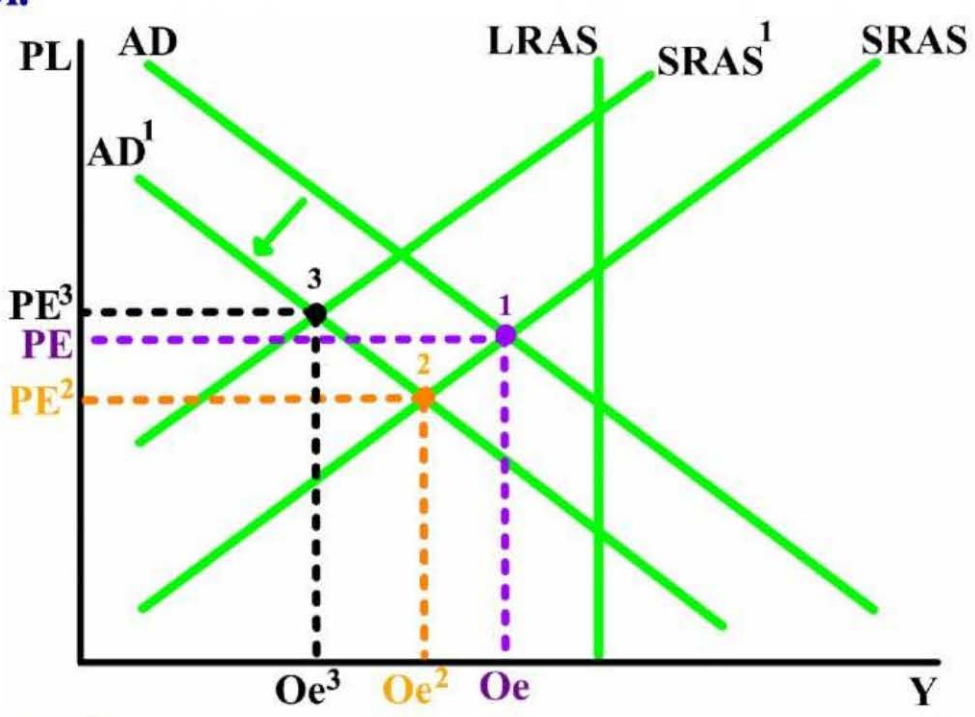
i. Show the impact on your graph, labeling the new real GDP as O2 and price level as PE2.

3. Now assume that the minimum wage has been raised.

i. Show the impact on your graph, labeling the new output of production O3 and price-level as PE3.

Macroeconomics Do-Now

1i., 2i., and 3i.



1. 3-5% unemployment
2. no; higher rates will decrease the money supply and AD

Macroeconomics Do-Now

Please do this:

1. Assume the U.S. economy is in long-run equilibrium. Is there any monetary policy the Fed should take? Why?

i. Draw a correctly labeled graph, including LRAS, and show each of the following:

i. current equilibrium output O and price level P

2. Assume that the government starts to spend more money on defense.

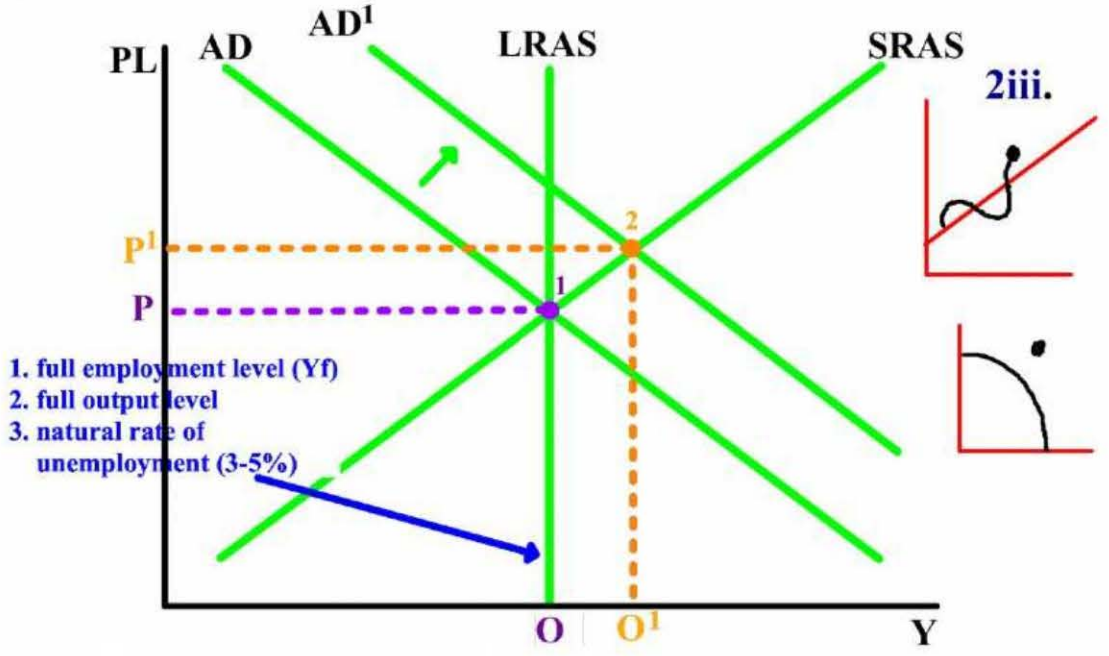
i. Show the impact on your graph, labeling the new real GDP as O1 and price level as P1.

ii. Based on what you graphed above, is the U.S. economy in contraction or expansion? Explain?

iii. Based on what you decided in 3, draw an economic fluctuations model on a potential GDP line and also a production possibilities curve, both showing where the economy currently is.

Macroeconomics Do-Now

1i. and 2i.



1. none; already in equilibrium

2. expansion; short run equilibrium is greater than long run equilibrium