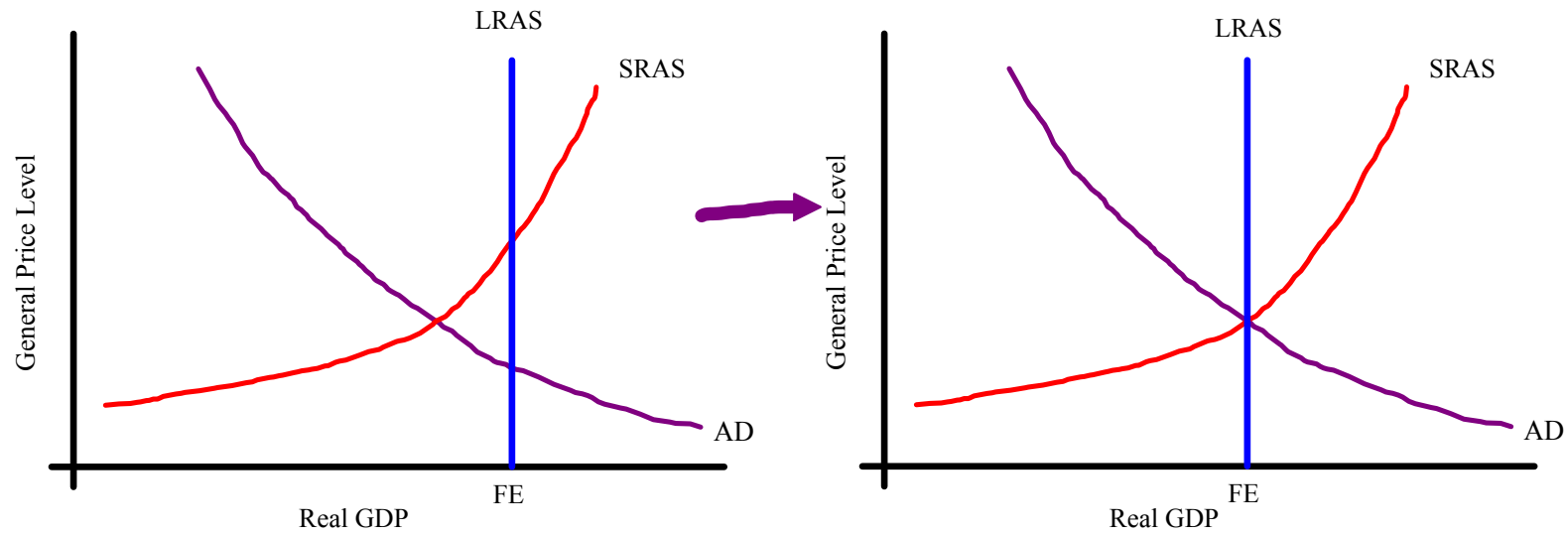


Two things to learn:

Use extended AS/AD model

Use short run and long run Phillips curve and PPF

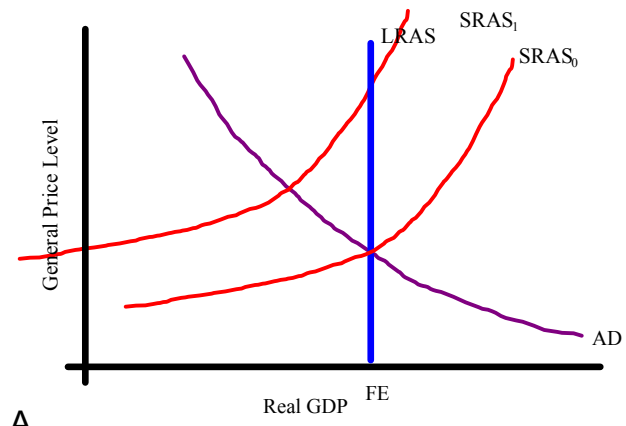
IN THE LONG RUN WE ALWAYS END UP AT THE SECOND GRAPH:



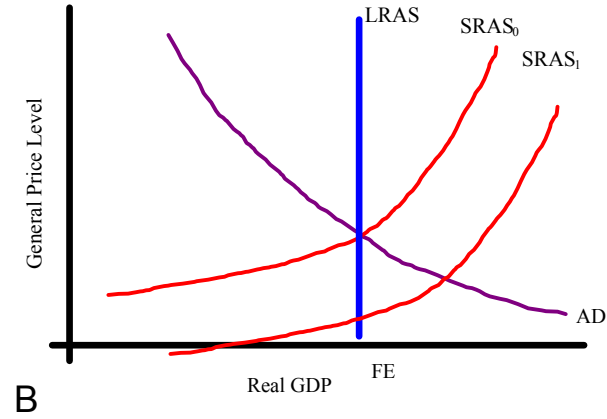
How?

WE MUST KNOW THE PATTERN OF EVENTS THAT MAKES THIS HAPPEN.

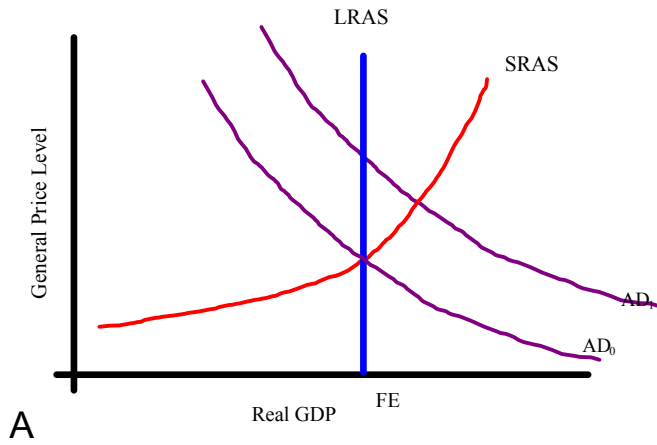
THERE ARE FOUR POSSIBLE STARTING EVENTS AND MORE POSSIBLE SUBSEQUENT RESULTS.



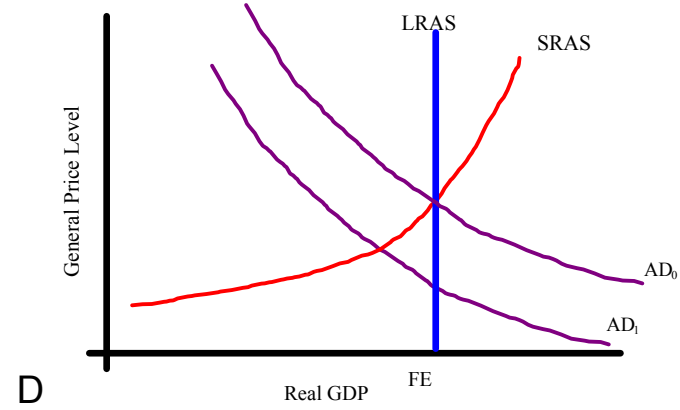
A



B



A

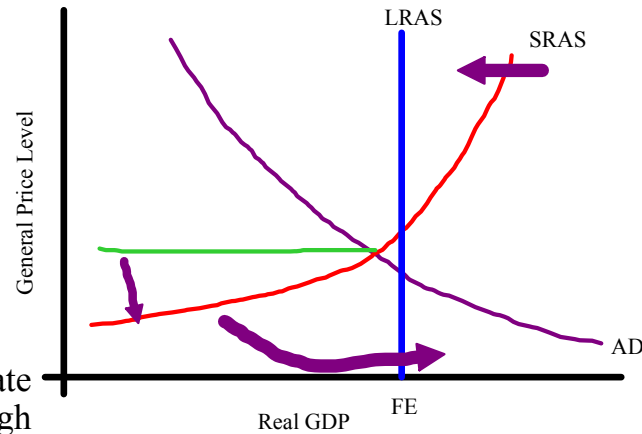


D

Definition of the long run:

- Wages are fully responsive (any flattening of supply curve disappears).  
o firms break worker inflexibility on downside wages.  
o increased wages can not persistently draw more workers.

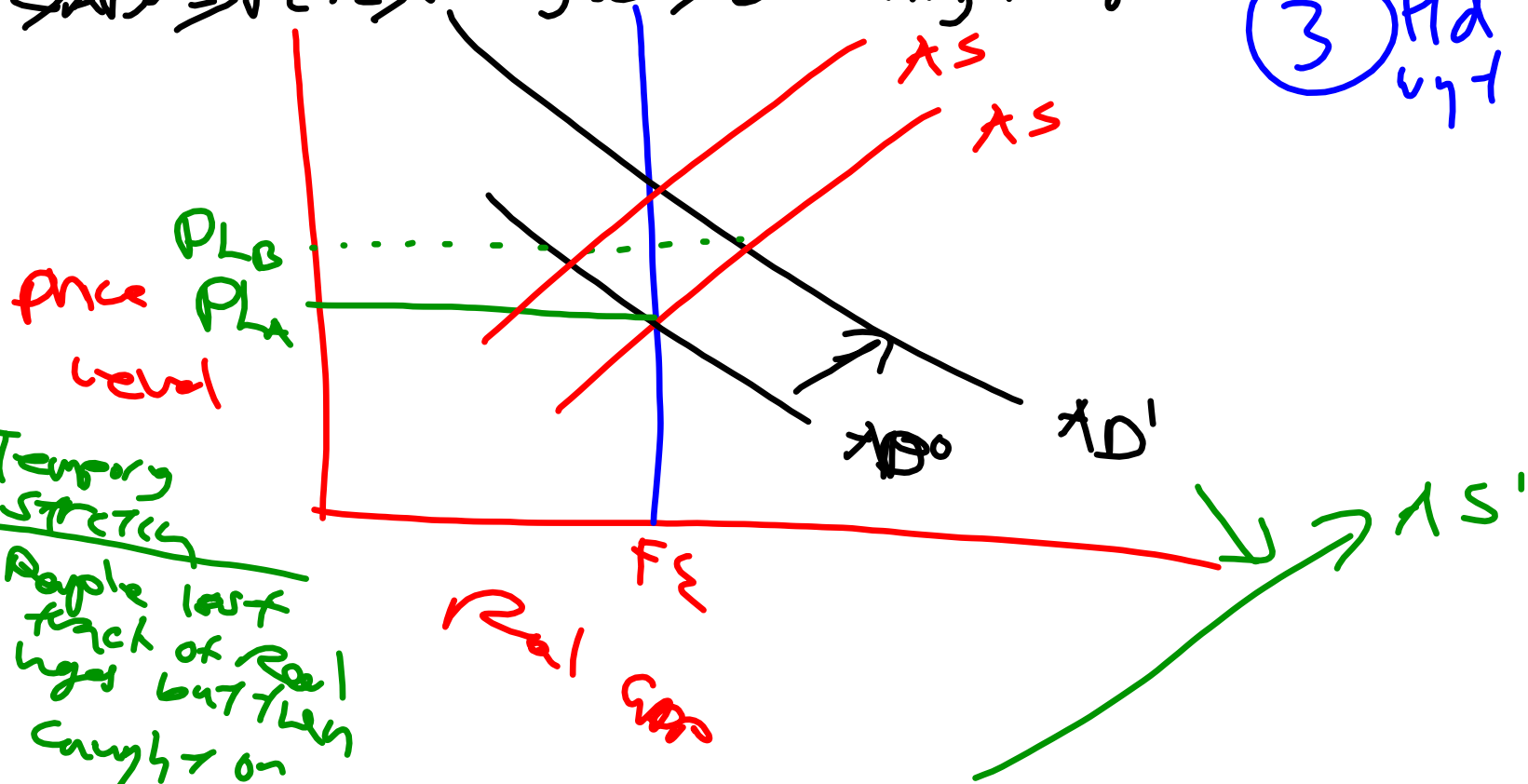
- Temporary imbalances in MRP/MRC dissipate  
=> producers move away from temporarily paying high marginal costs to respond to demand.



Conclusion: The price level will adjust to any level necessary support the FE level of production.

$\Rightarrow AD \Rightarrow PL \Rightarrow Real\ wages \downarrow \Rightarrow Demand\ higher\ wages$

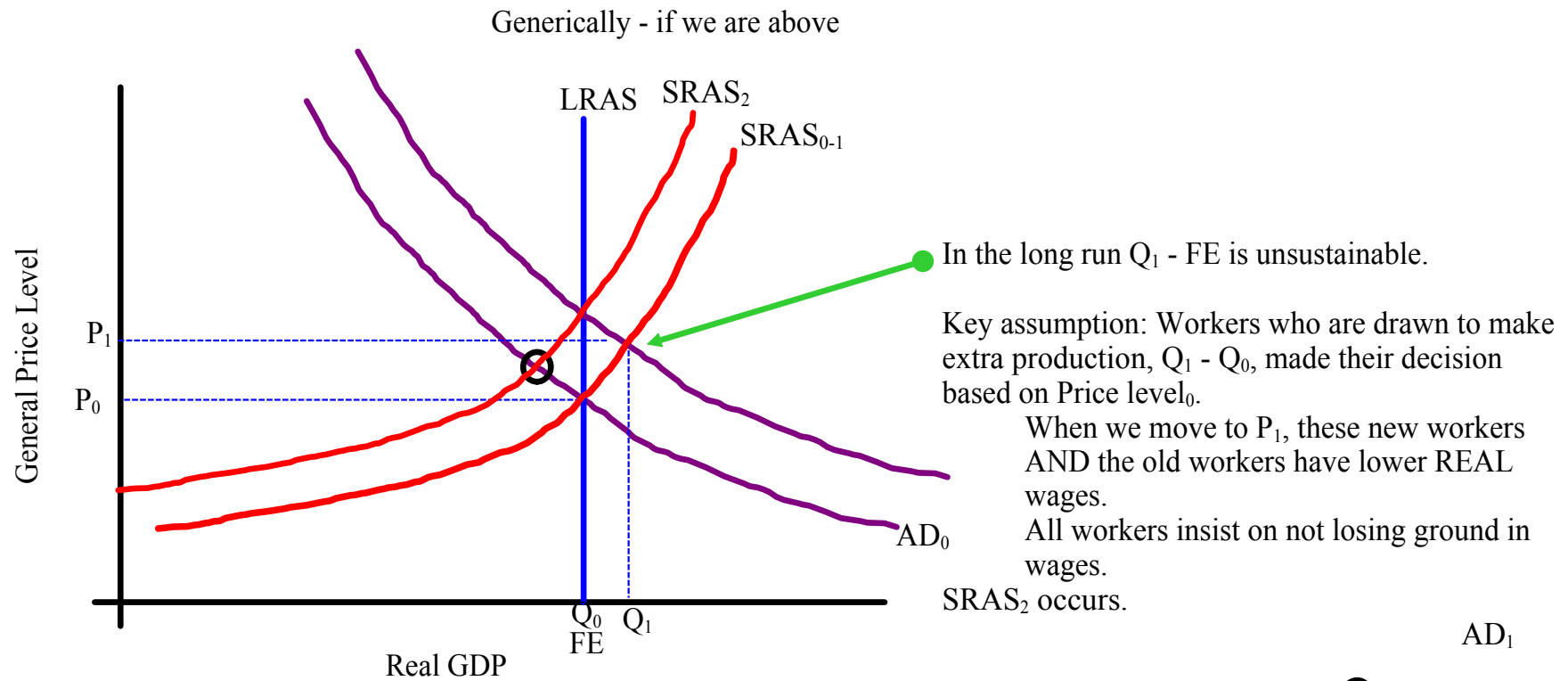
(3) Hd  
vgt



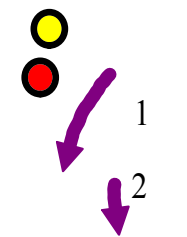
- 1) Temporary stretch
- 2) People lost track of real wages but then caught on

First set of graphs:

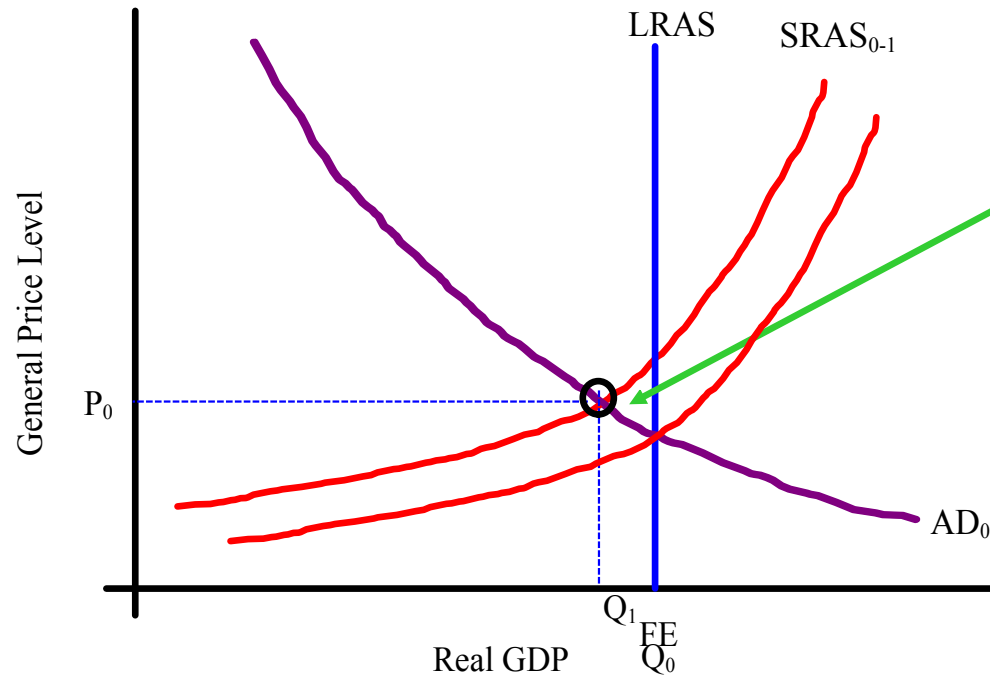
Tell story if we are off equilibrium, what happens



Something moves  $AD \wedge \Rightarrow Q \wedge$   
 $\Rightarrow P \wedge \Rightarrow$  Real Wages  $v \Rightarrow$  Wage Demands  $\wedge \Rightarrow$  Input prices  $\wedge \Rightarrow AS \vee$   
 $\Rightarrow P \wedge Q \vee$ , until FE

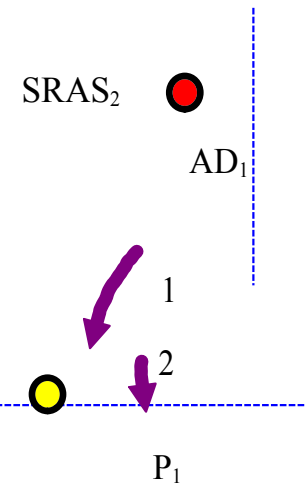


Generically - if we are below



In the long run FE -  $Q_1$  is unsustainable.  
 Key assumption: Unemployed workers,  $Q_1 - Q_0$ , eventually reduce their wage demands.  
 Unemployed workers have no wages AND Workers begin to give ground on wages in favor of employment.  
 $SRAS_2$  occurs.

$Q$  below FE  $\Rightarrow$  Unempl.  $>$  NRU  $\Rightarrow$  Wages  $\downarrow$   $\Rightarrow$  Input prices  $\downarrow$   $\Rightarrow$  AS  $\uparrow$   
 $\Rightarrow$   $P \downarrow$   $Q \uparrow$ , until FE



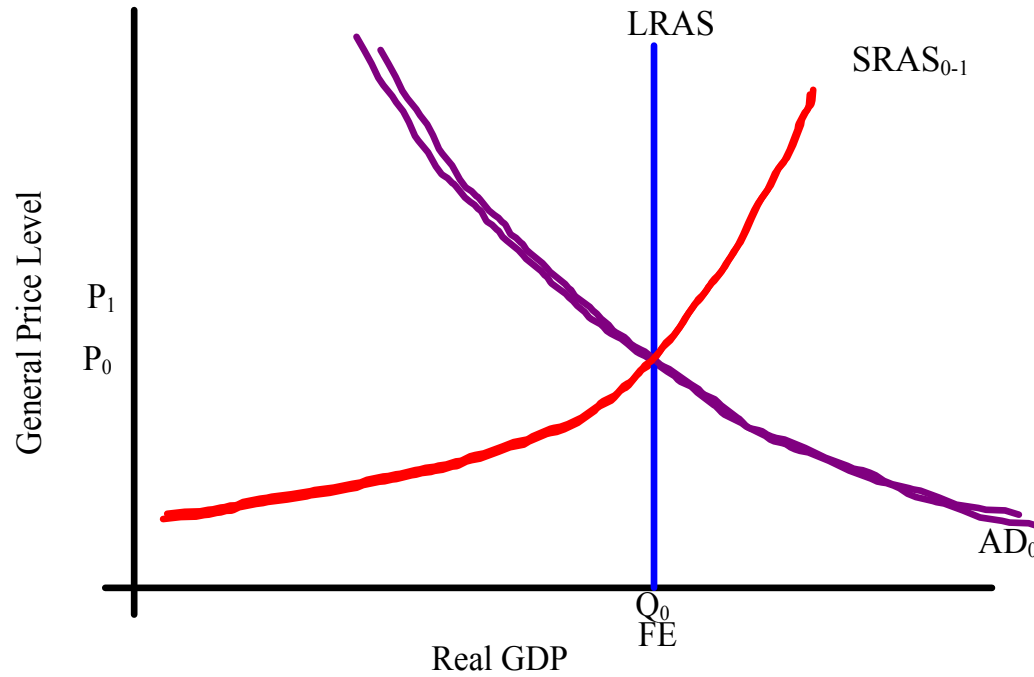


$$\frac{\downarrow \text{MRP}_{\text{oil}}}{\uparrow \text{MRC}_{\text{oil}}} = \frac{\uparrow \text{MRP}_{\text{gas}}}{\text{MRC}_{\text{gas}}} = \frac{\uparrow \text{MRP}_{\text{cop}}}{\text{MRC}_{\text{cop}}}$$

more oil | less | less  
 | | |  
 we buy more of their oil  $\Rightarrow$  \$  $\downarrow$

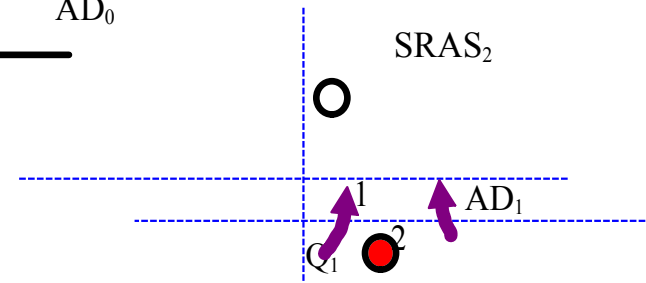
We find oil in our country  $\Rightarrow$   
 $\Rightarrow$  resource increased  $\Rightarrow$  PPF out  $\Rightarrow$   
LRAS  $\uparrow$   
Also  
 $\Rightarrow$  input prices fall  $\Rightarrow$  SRAS  $\uparrow$   $\Rightarrow$  ~~AD~~ AD  $\uparrow$   
 $\Rightarrow$  until we reach LRAS/FE.

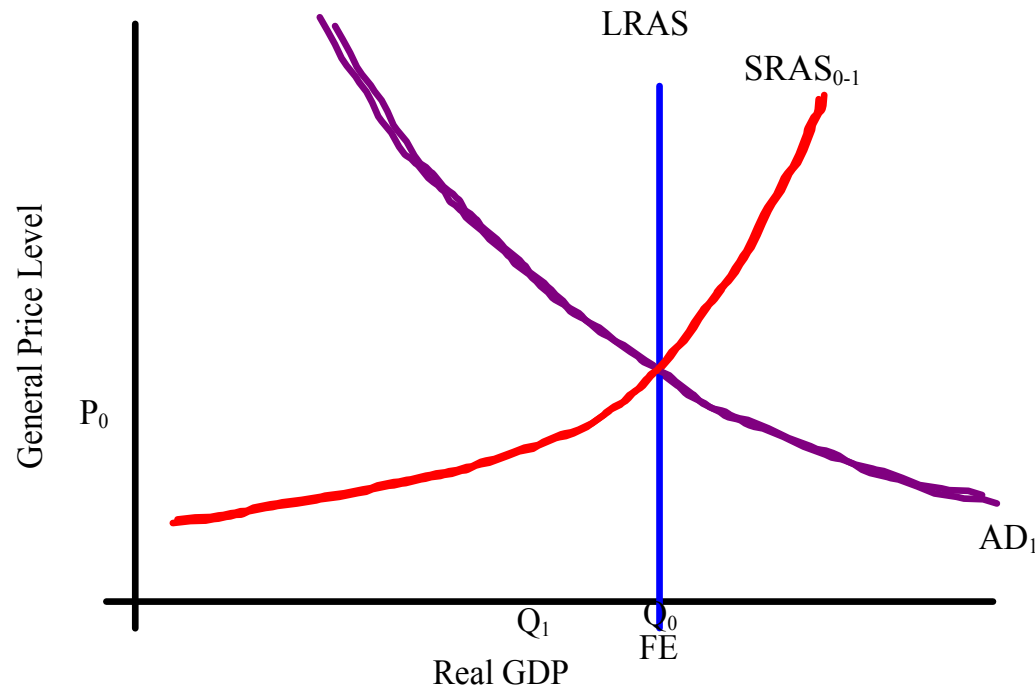
### Demand pull inflation



Put more briefly and starting on the LRAS demand pull inflation example:

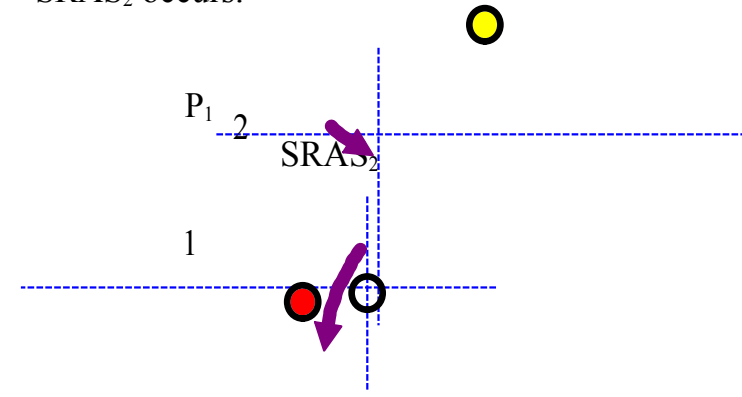
- 1) C,G,I,X changes pushed demand past FE.
- 2) There are temporary (short runs)
- 3) Real wage effects move SRAS in the long run.





Recession, AD drops.

Key assumption: Workers lost jobs moving from  $Q_0 - Q_1$ , are looking to work.  
 When we move to  $P_0$ , these fired workers have no wages AND the old workers have REAL higher, expensive wages.  
 $AD_0$  Workers begin to give ground on wages in favor of employment.  
 $SRAS_2$  occurs.

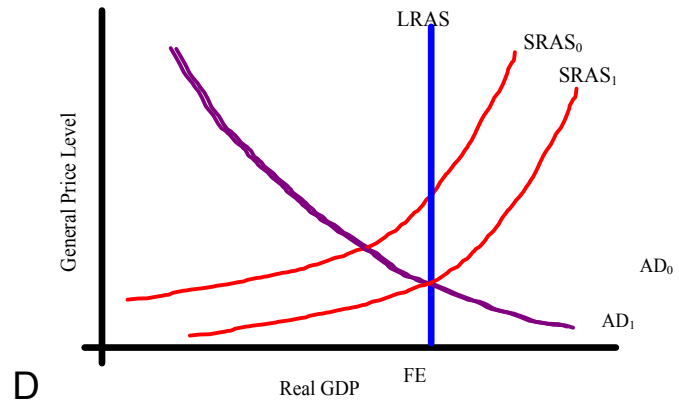
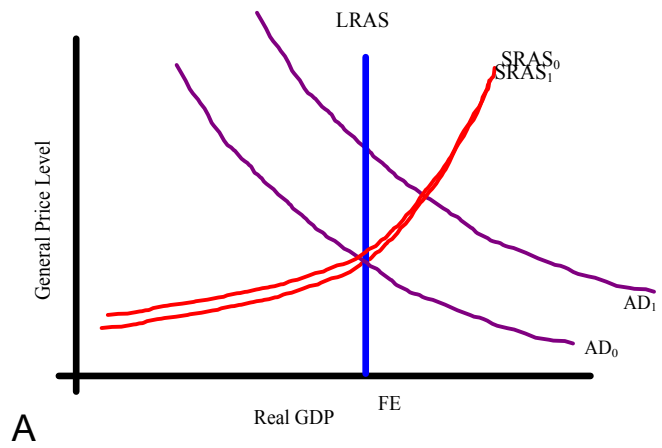
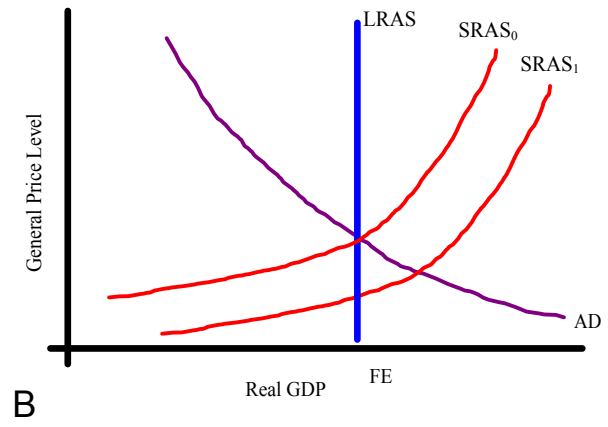
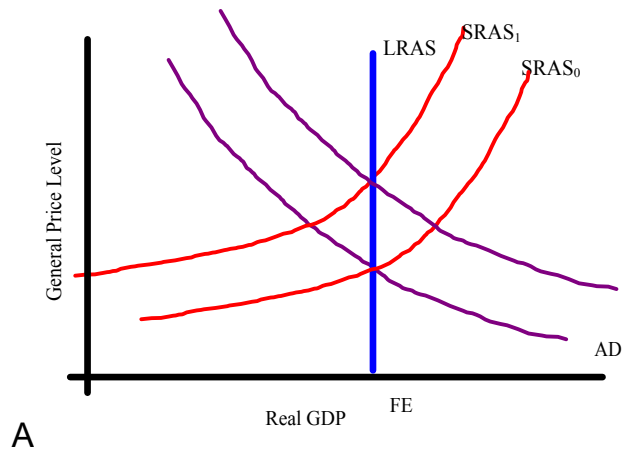


We start off of equilibrium:  
AS responds

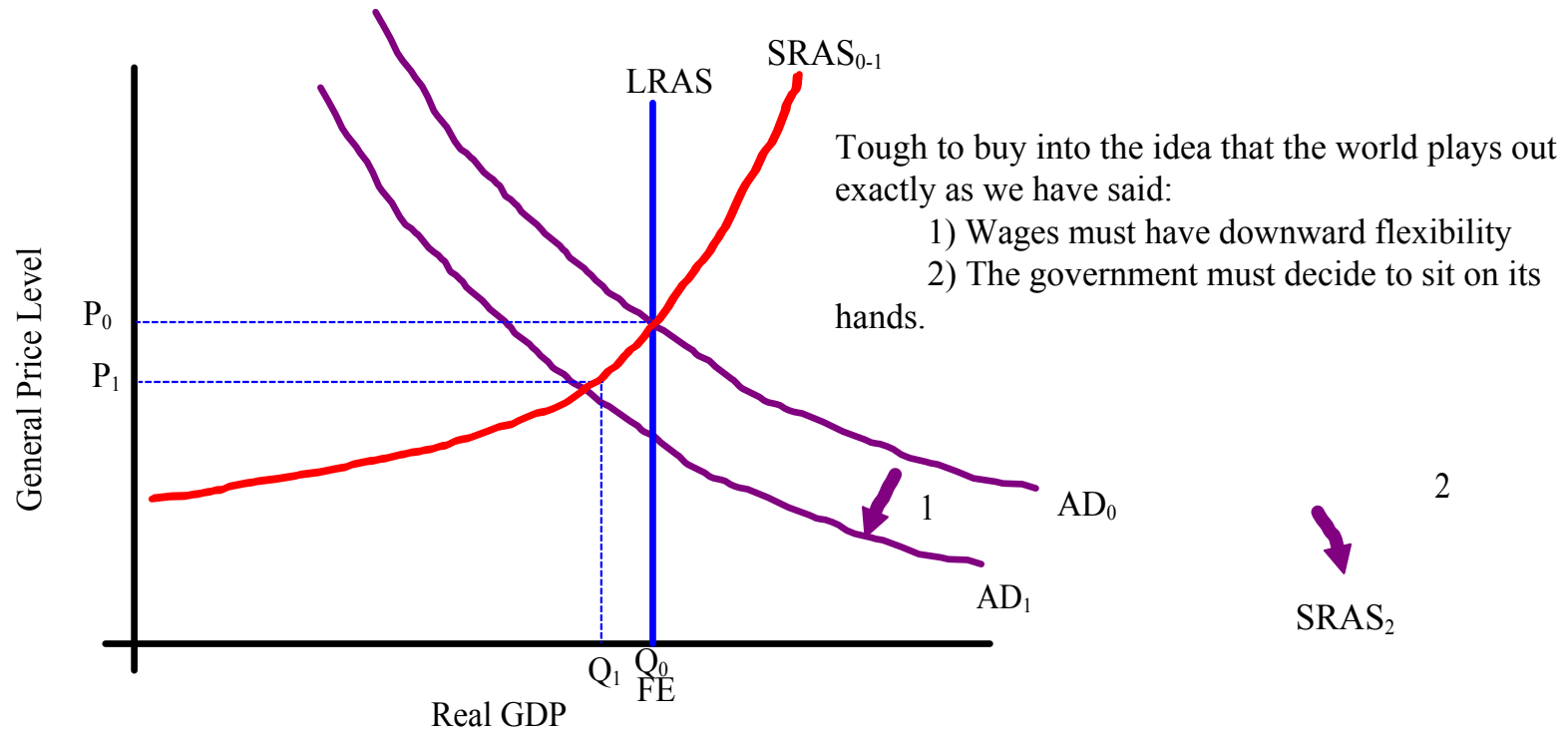
We start at equilibrium & something happens moving us off.  
No matter what moved us off, AS gets us back

Why?

FE is about resources  
Being off FE is about under or over utilized resources, specifically labor.  
So the mechanism that gets us back is the imbalance in the market for labor.



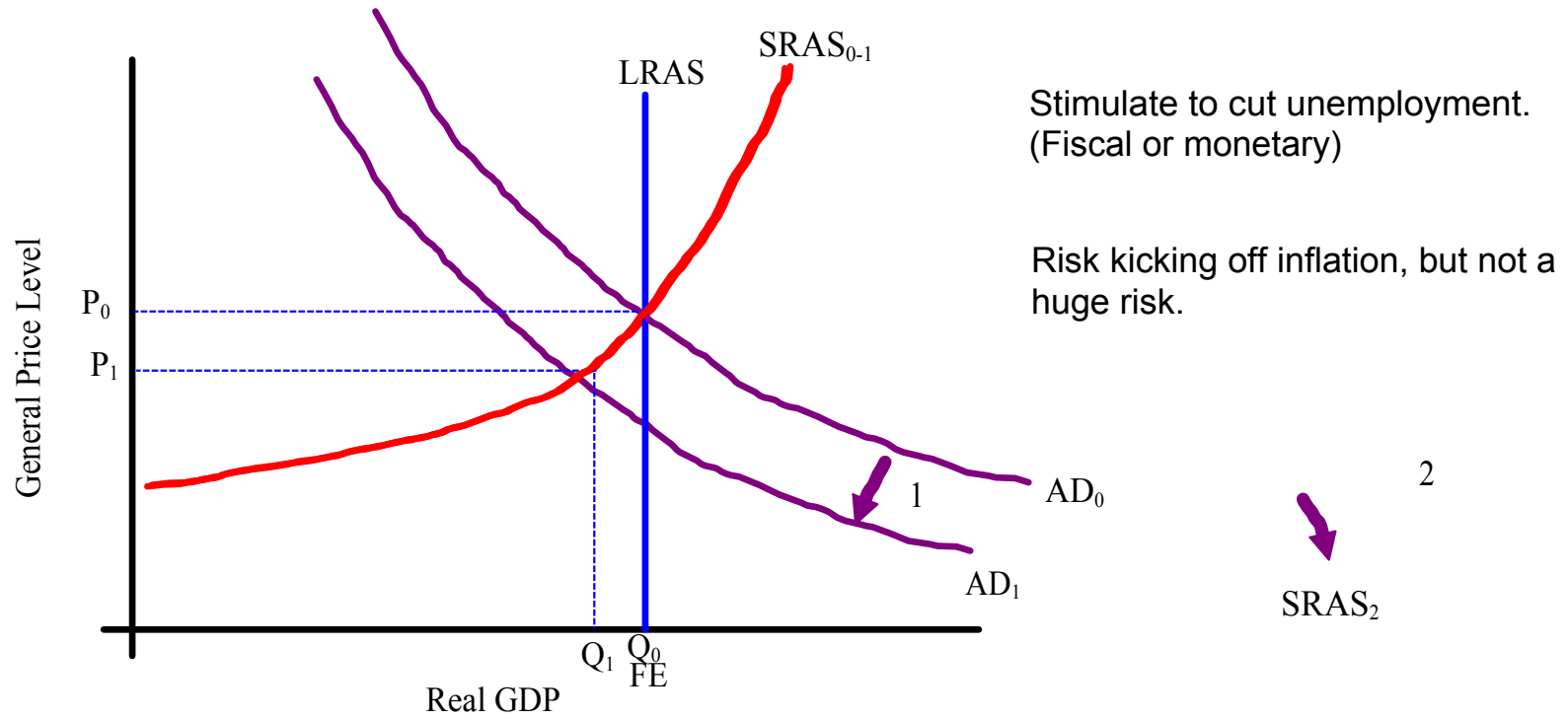
What is a government to do? Part 1  
Some points about recession.



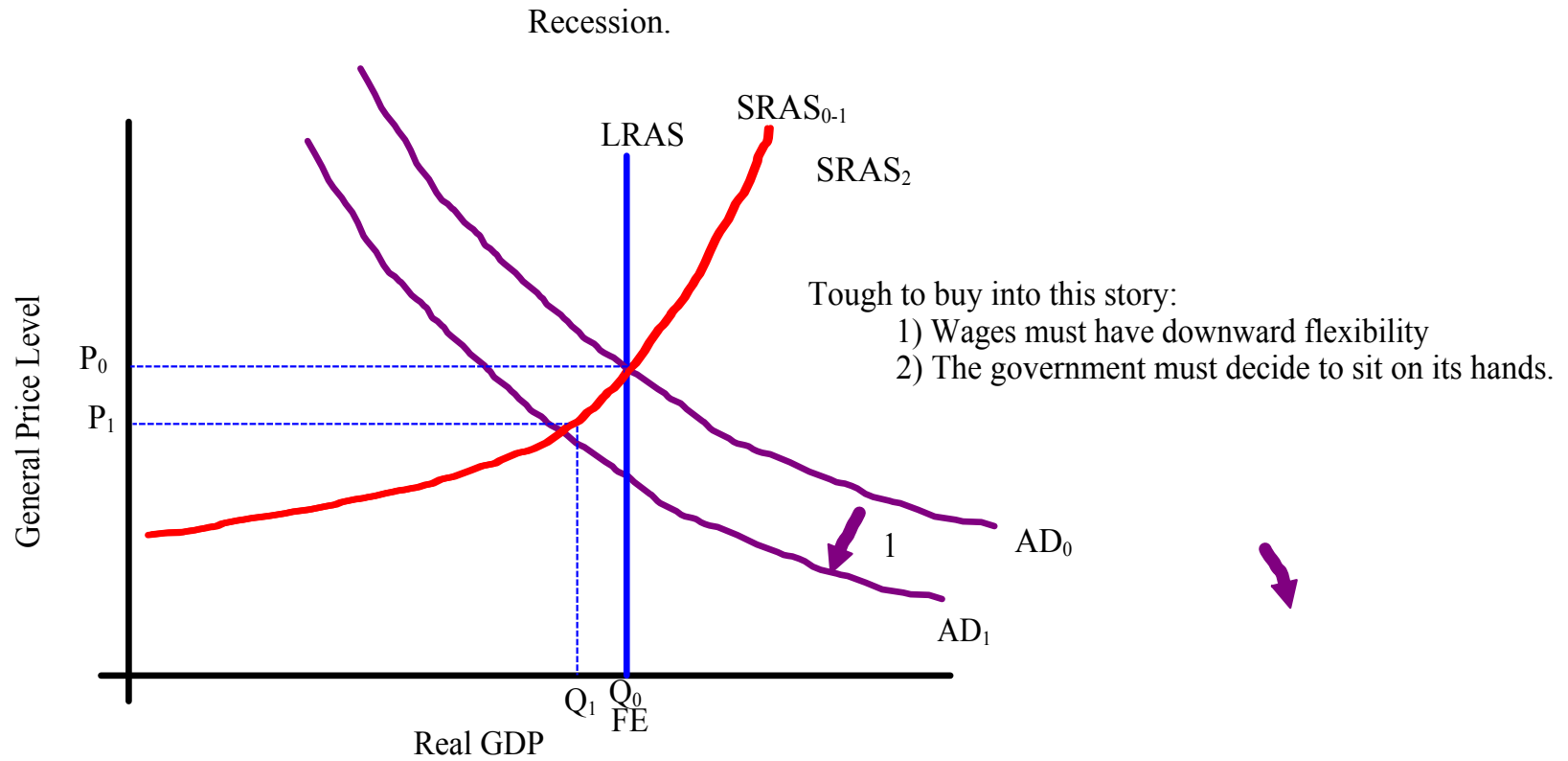
Tough to buy into the idea that the world plays out exactly as we have said:  
1) Wages must have downward flexibility  
2) The government must decide to sit on its hands.

- So, 1) Tests will often simplify by saying assume wages are flexible.  
And  
2) Government is in a tougher spot figuring out what to do (see next)

What is a government to do? Part 2  
Some points about recession.







2

With the "if" qualifier, the following is a generally uncontroversial statement:

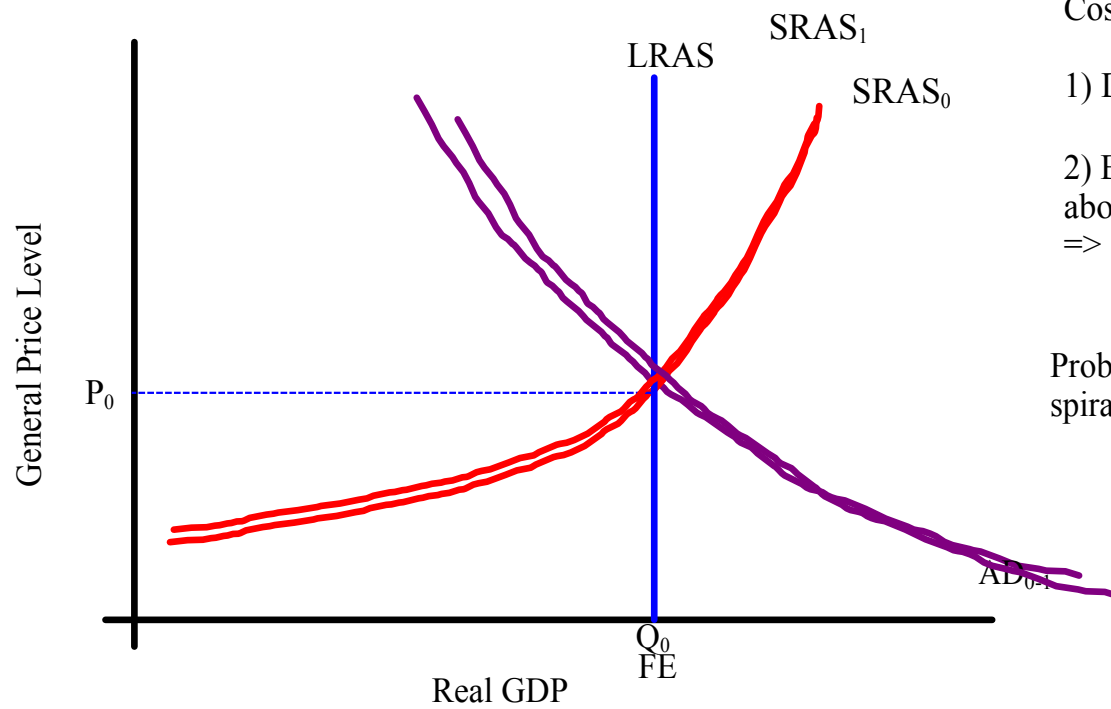
If anything other than balanced at all times  
run surpluses when economy is good and deficits when it is bad, which should happen naturally.

When you have not done this and you have a huge accumulated debt you have a tough problem:

Pure Keynesian:  
Do expansionary policy anyway.

Alternative:

Debt level makes investment environment uncertain.  
Do not make that problem worse.



Cost push inflation.

1) Due to events unit costs go up.

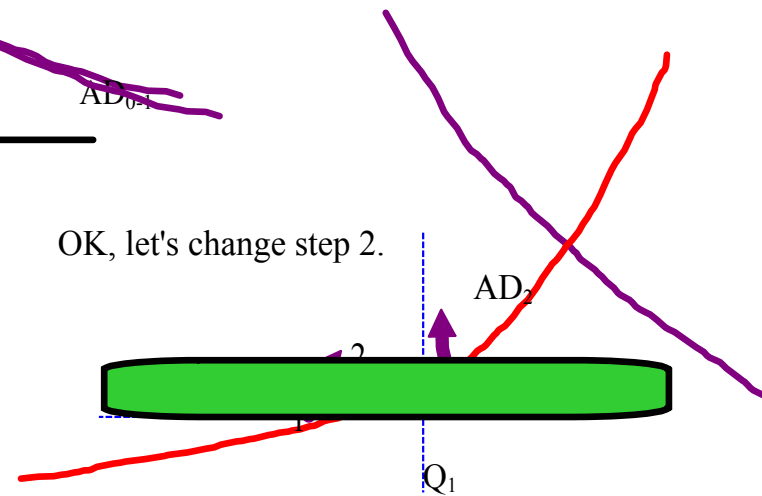
$$GDP \downarrow, P \uparrow$$

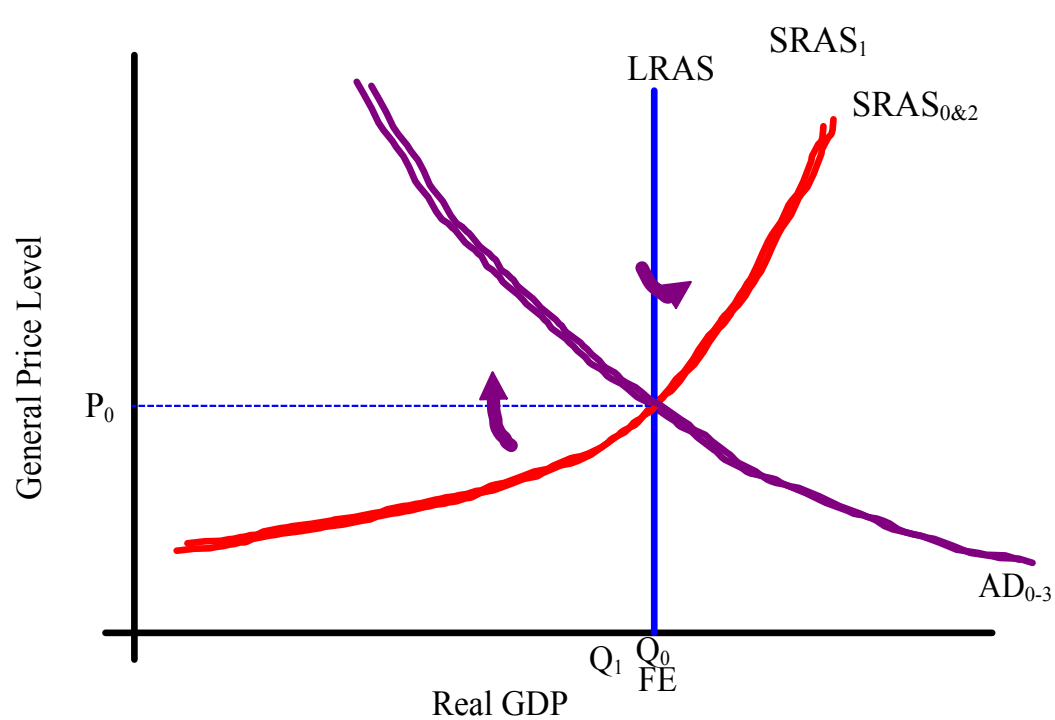
2) Below FE, we assume unemployment above NRU, so government is concerned.

=> Stimulates (fiscal or monetary) creating  $AD_2$

Problem: Formula for inflationary spiral.

OK, let's change step 2.





Cost push inflation.

1) Due to events unit costs go up.

$GDP \downarrow, P \uparrow$

2) Fearing inflationary spiral government does nothing. Eventually, unemployed workers offer themselves at lower wages.

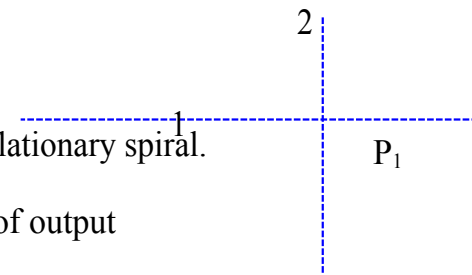
3) Wage cuts reduce unit costs, until effect of original unit cost jump are neutralized.

Note: If the event is an increase in cost of an input other than wages, then this process moves compensation to that resources at the expense of workers.

NO EASY WAY OUT:

Choice 1: Cause greater inflation and risk inflationary spiral.

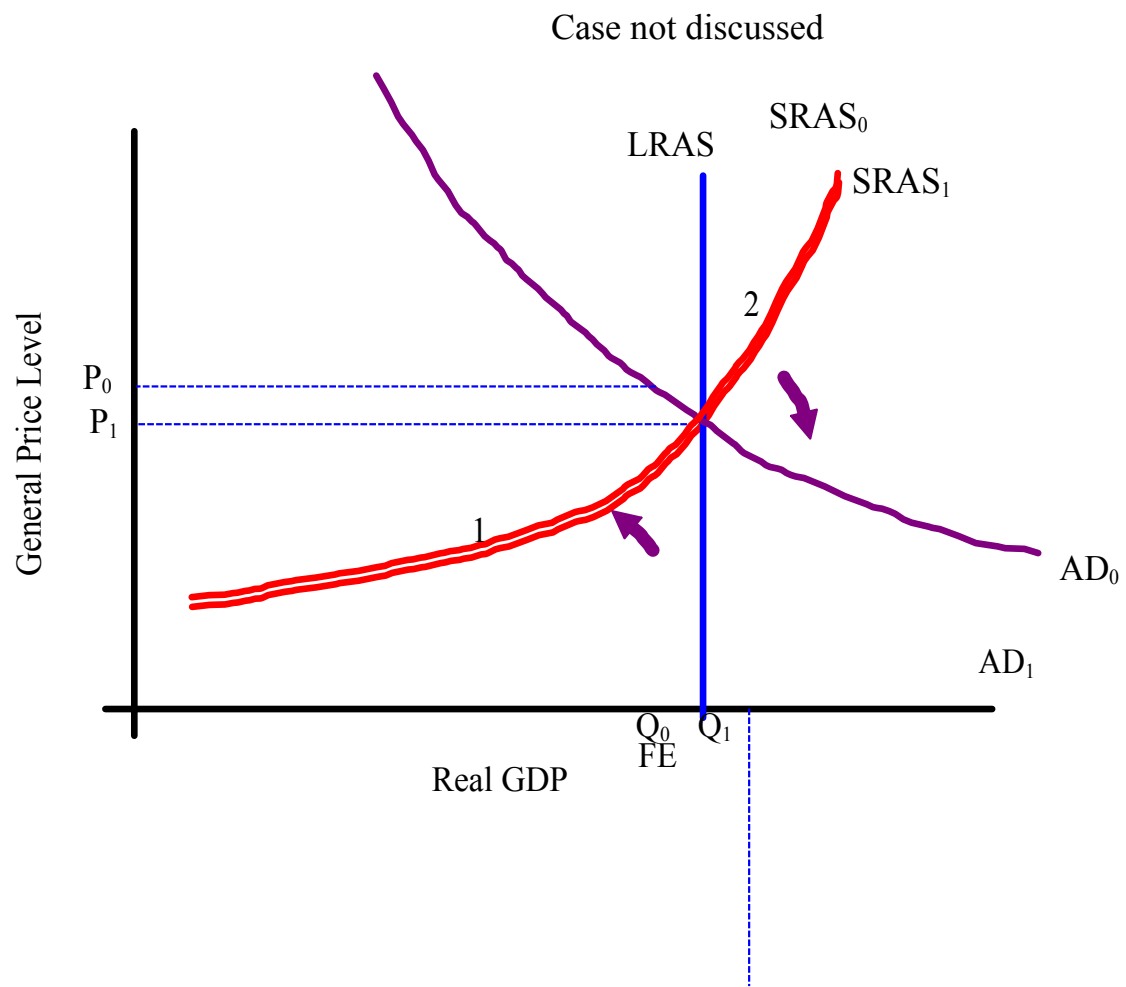
Choice 2: Wait out unemployment and loss of output



1) When we go off LRAS,  
AS will move us back in the long run.

2) When we are off LRAS,  
the government must assess the situation and decide:  
- Act/change policy  
- Wait

3) Four cases:  
- Acting is an easier\* call below FE, but  
    o Increases debt  
    o Risks inflation\*  
- Not acting is easier above FE, but  
    o Foregoes the opportunity for surplus



1. Assume that a country's economy is operating at less than full employment.
  - (a) Draw a correctly labeled graph of aggregate demand and aggregate supply, and show each of the following.
    - (i) Long-run aggregate supply curve
    - (ii) Current output and price level
  - (b) Assume that policy makers take no policy action and that prices and wages are flexible. Explain what will happen to each of the following.
    - (i) Short-run aggregate supply
    - (ii) Employment
  - (c) Now assume that instead of taking no policy action, the government implements a special tax incentive to encourage individuals to increase saving for retirement. Draw a correctly labeled graph of the loanable funds market. Show how the real interest rate is affected.
  - (d) Given your answer in part (c), explain how aggregate supply is affected in the long run.

1. Assume that the United States economy is currently in long-run equilibrium.
  - (a) Draw a correctly labeled graph of aggregate demand and aggregate supply and show each of the following.
    - (i) The long-run aggregate supply curve
    - (ii) The current equilibrium output and price levels, labeled as  $Y_E$  and  $PL_E$ , respectively
  - (b) Assume that the government increases spending on national defense without raising taxes.
    - (i) On your graph in part (a), show how the government action affects aggregate demand.
    - (ii) How will this government action affect the unemployment rate in the short run? Explain.
  - (c) Assume that the economy adjusts to a new long-run equilibrium after the increase in government spending.
    - (i) How will the short-run aggregate supply curve in the new long-run equilibrium compare with that in the initial long-run equilibrium in part (a) ? Explain.
    - (ii) On your graph in part (a), label the new long-run equilibrium price level as  $PL_2$ .
  - (d) In order to finance the increase in government spending on national defense from part (b), the government borrows funds from the public. Using a correctly labeled graph of the loanable funds market, show the effect of the government's borrowing on the real interest rate.
  - (e) Given the change in the real interest rate in part (d), what is the impact on each of the following?
    - (i) Investment
    - (ii) Economic growth rate. Explain.



1. Assume that the economy is operating below the full-employment level of output and that the government's budget is balanced.

(a) Using a correctly labeled aggregate demand and aggregate supply graph, show how an increase in government spending will affect each of the following in the short run.

(i) Real output

(ii) Price level

(b) Explain how this increase in government spending will affect each of the following in the short run.

(i) Real interest rates

(ii) Investment

Now assume that instead of increasing government spending, the government decreases corporate-profits taxes.

(c) Using a correctly labeled aggregate demand and aggregate supply graph, show and explain how this decrease in corporate-profits taxes will affect each of the following.

(i) Aggregate demand

(ii) Long-run aggregate supply

(iii) Real output

(iv) Price level

(d) Assume that this country produces two goods, X and Y. Draw a correctly labeled production possibilities curve for this economy. Now show on the graph how this decrease in corporate-profits taxes will affect this economy's production possibilities curve.

If AD is shocked, then AS adjusts through wages and employment trade-offs.

One curve reacts to the other

If AS is shocked, then AS adjusts through wages and employment trade-offs.

AS returns itself to FE

BUT.....

1) The government may not have patience for unemployment scenarios.

2) Wages may be sticky downward.

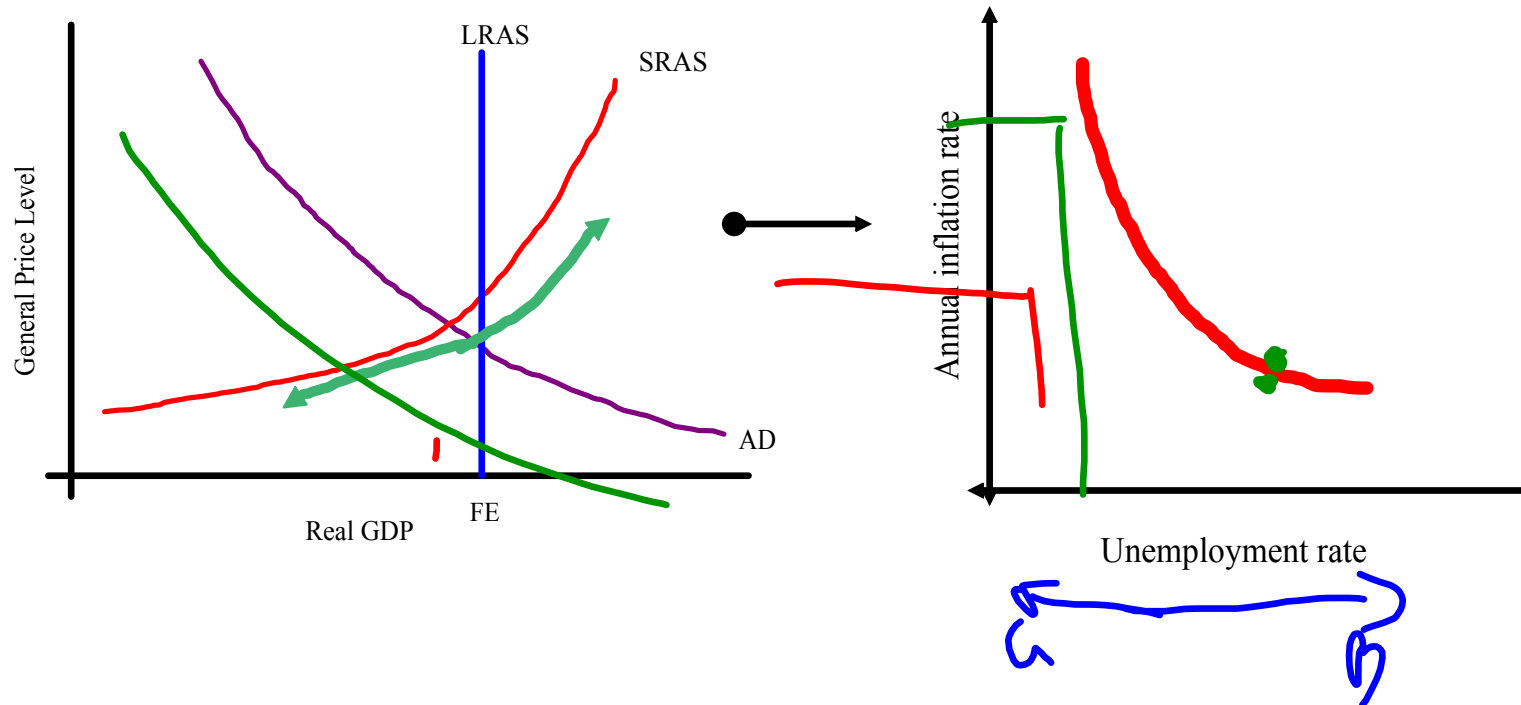
1) First Phillips curve idea: There is a direct trade off between inflation and unemployment.

Our current assumptions/graph imply the following idea:

Rising price levels are associated with lower levels of unemployment.

Falling prices are associated with higher unemployment.

Phillips Curve

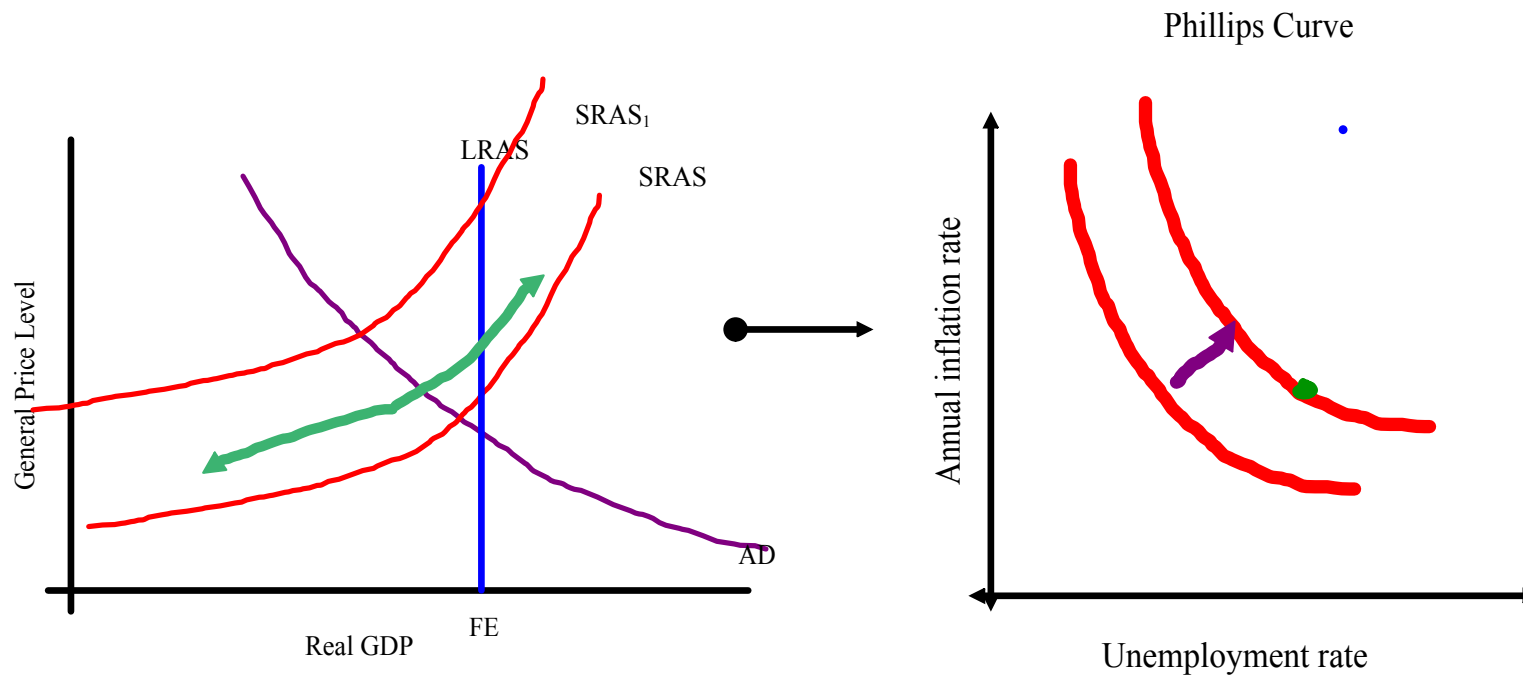


2) Second Phillips curve idea: The trade off can change.

Historic data initially supported Phillips, but then did not. BUT an explanation was found.

The basic Phillips curve assumes a given supply curve.

If the supply curve jumps the Phillips curve does also.



1) AD moves shift us along Phillips curve,  
as long as SRAS stays still.

2) AS moves shift the Phillips curve itself



1. Assume that a country's economy is operating at less than full employment.
  - (a) Draw a correctly labeled graph of aggregate demand and aggregate supply, and show each of the following.
    - (i) Long-run aggregate supply curve
    - (ii) Current output and price level
  - (b) Assume that policy makers take no policy action and that prices and wages are flexible. Explain what will happen to each of the following.
    - (i) Short-run aggregate supply
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  - (c) Now assume that instead of taking no policy action, the government implements a special tax incentive to encourage individuals to increase saving for retirement. Draw a correctly labeled graph of the loanable funds market. Show how the real interest rate is affected.
  - (d) Given your answer in part (c), explain how aggregate supply is affected in the long run.





### 3) Third Phillips curve idea.

There is no unemployment/inflation trade off in the long run.

#### Long run Phillips

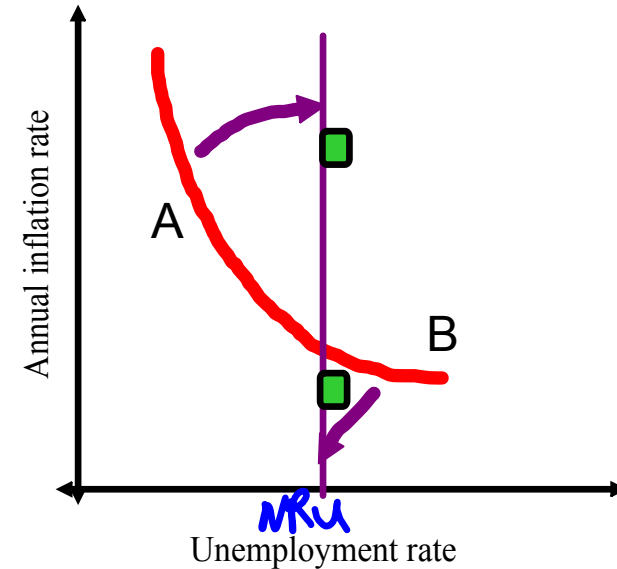
##### Growth pressure

- At A inflation is and has been eroding real wages.
  - Workers ask for higher real wages.
  - This cuts the profitability of production.
  - Employers produce less, and employ less
  - Until we get to NRU
- (This is consistent with wage demands move AS until FE).

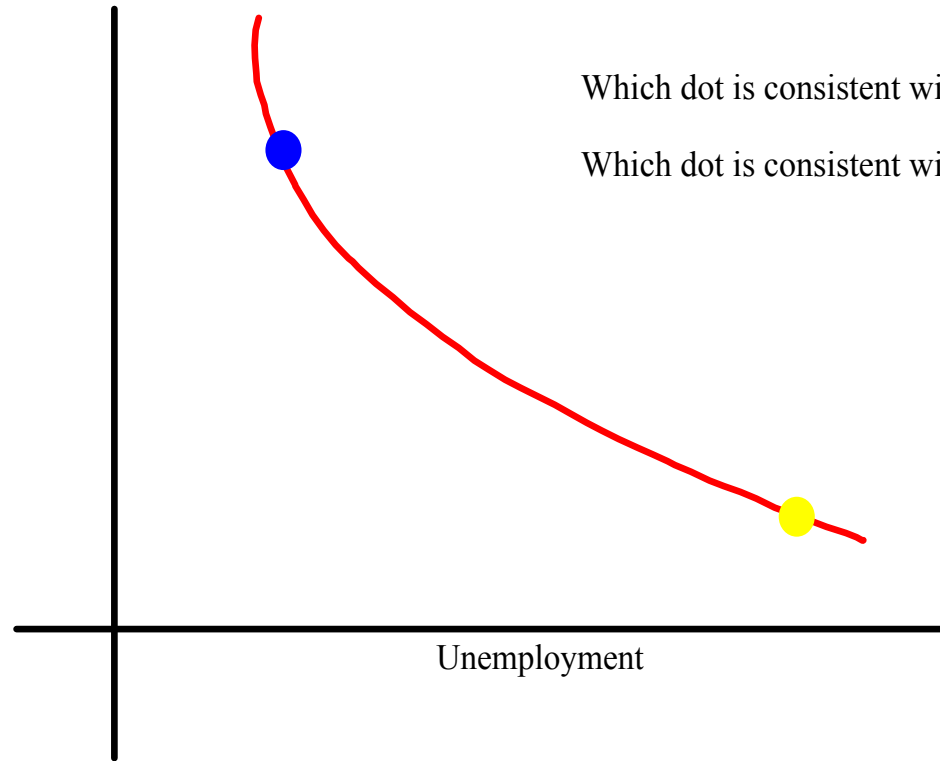
##### Recession pressure

- Recession cuts sales=>revenue=>profits.
- Employers look to cut prices, but need to cut expense
- Lower production and looking to lower expense, workers are fired.
- On next wage negotiation workers take lower wages and more are employed. Reducing inflation and decreasing unemployment.

Phillips Curve



Inflation



Which dot is consistent with growth?

Which dot is consistent with recession?

goto16y8

