

## What Causes Business Cycles

$$\frac{\Delta Y}{Y} \cong \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha) \frac{\Delta L}{L}$$

## Our Basic Equation

$$Y = AK^\alpha L^{1-\alpha}$$

$$\frac{\Delta Y}{Y} \cong \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha) \frac{\Delta L}{L}$$

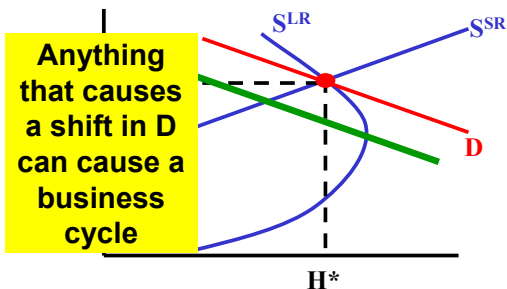
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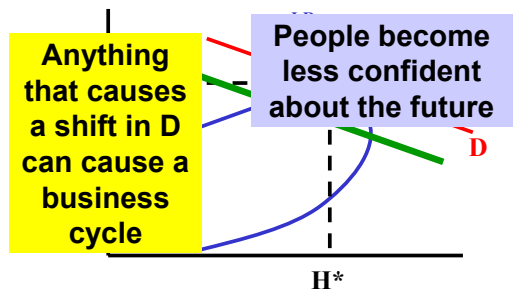
## Our Basic Equation

$$\frac{\Delta Y}{Y} \cong \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha) \frac{\Delta L}{L}$$

## Changes in Employment



## For Example



## Another Example

Anything that causes a shift in D can cause a business cycle

People become less confident  
The government temporarily changes spending

H\*

## Yet Another Example

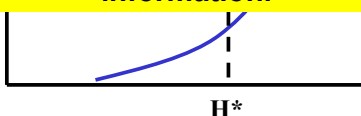
Anything that causes a shift in D can cause a business cycle

People become less confident  
The government temporarily changes spending  
The Federal Reserve System temporarily changes interest rates

H\*

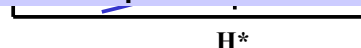
## Imperfect Information

Changes in the level of employment can come about because of something called imperfect information.



## Imperfect Information

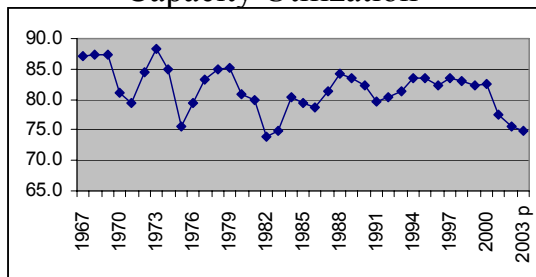
Changes in the level of employment can come about because of something called imperfect information. This is not a minor issue – and it is complicated - so we defer it to separate lectures



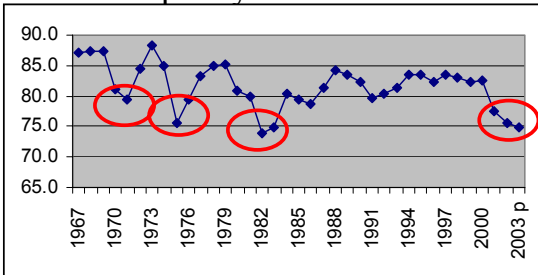
## Changes in K

$$\frac{\Delta Y}{Y} \cong \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1 - \alpha) \frac{\Delta L}{L}$$

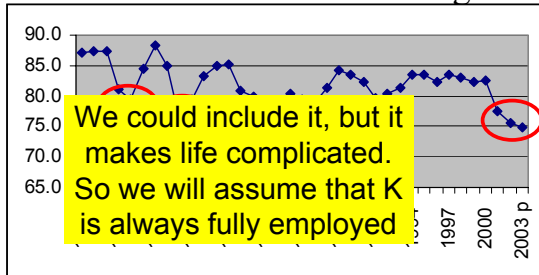
## Capacity Utilization



### Capacity Utilization



### Too Much of a Good Thing



### Our Basic Equation

$$\frac{\Delta Y}{Y} \approx \left(\frac{\Delta A}{A}\right) + \alpha \left(\frac{\Delta K}{K}\right) + (1-\alpha) \left(\frac{\Delta L}{L}\right)$$

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$$\frac{\Delta Y}{Y} \approx \left(\frac{\Delta A}{A}\right) + \left(\frac{\Delta A}{A} = \beta + \varepsilon_t\right) \frac{\Delta L}{L}$$

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## Real Business Cycles

$$\frac{\Delta Y}{Y} \cong \frac{\Delta A}{A} + c \frac{\Delta A}{A} + \rho + \sigma \frac{\Delta L}{L}$$

**This is not a minor issue – and it is complicated - so we defer it to separate lectures**

End

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