REAL BUSINESS CYCLE -INTRODUCTORY IDEAS

CC IX: ECO-A-CC-4-9-TH-TU

Intermediate Macroeconomics II

The Theory of Real Business Cycles

- All prices are flexible, even in short run:
  - thus, money is neutral, even in short run.
  - classical dichotomy holds at all times.
- Fluctuations in output, employment, and other variables are the optimal responses to exogenous changes in the economic environment.
- Productivity shocks are the primary cause of economic fluctuations.

2. Technology shocks

- In RBC theory, economic fluctuations are caused by productivity shocks.
- **Solow residual**: a measure of productivity shocks, shows the change in output that cannot be explained by changes in capital and labour.
- RBC theory implies that the Solow residual should be highly correlated with output.

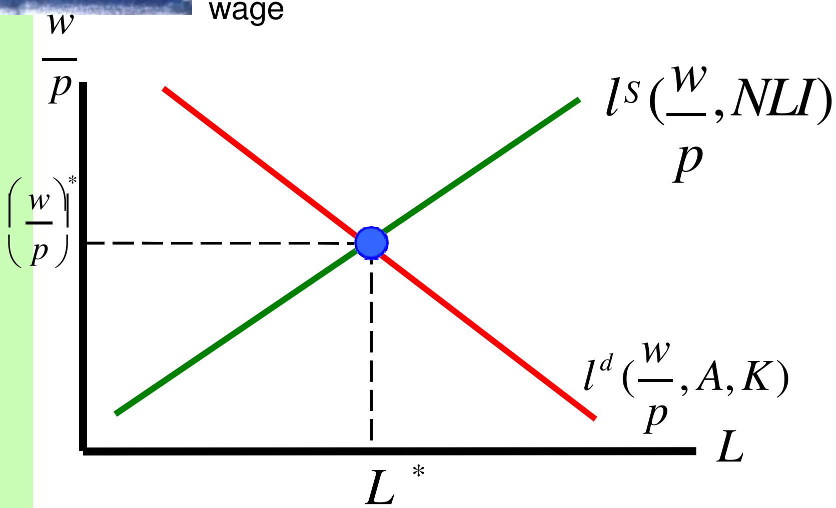
Is it?

2. Technology shocks

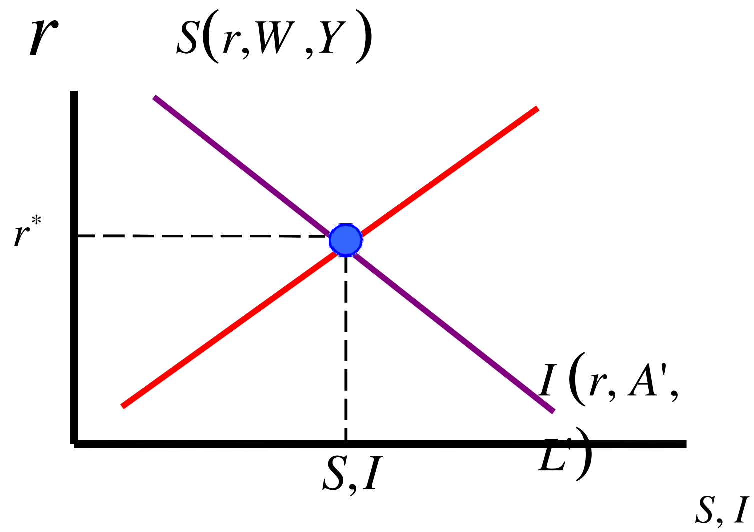
- Proponents of RBC theory argue that there is strong correlation between output growth and Solow residuals . It is also evident from the above figure. Thus productivity shocks are an important source of economic fluctuations.
- Critics note that the measured Solow residual is biased to appear more cyclical than the true, underlying technology.

We have a simple economic model consisting of two markets

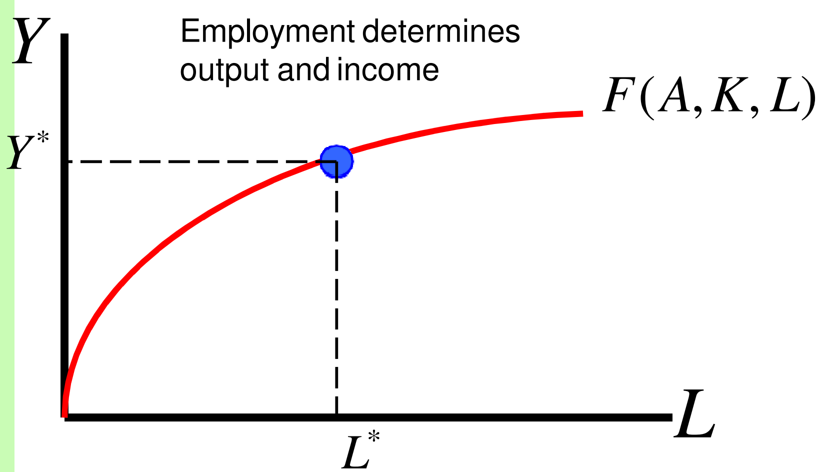
labour markets determine employment and the real wage



Capital markets determine Savings, Investment, and the real interest rate



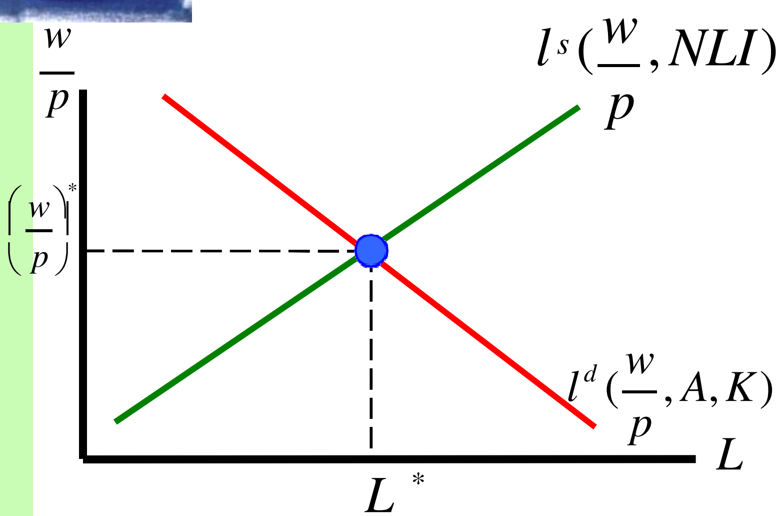
Employment determines output and income

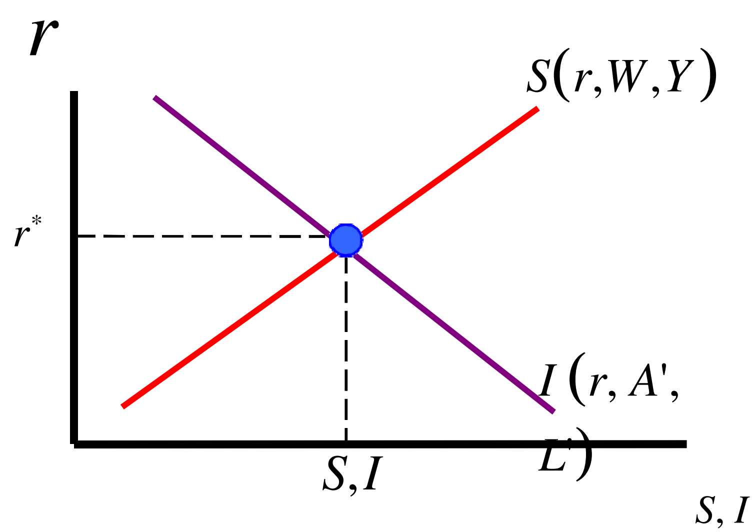


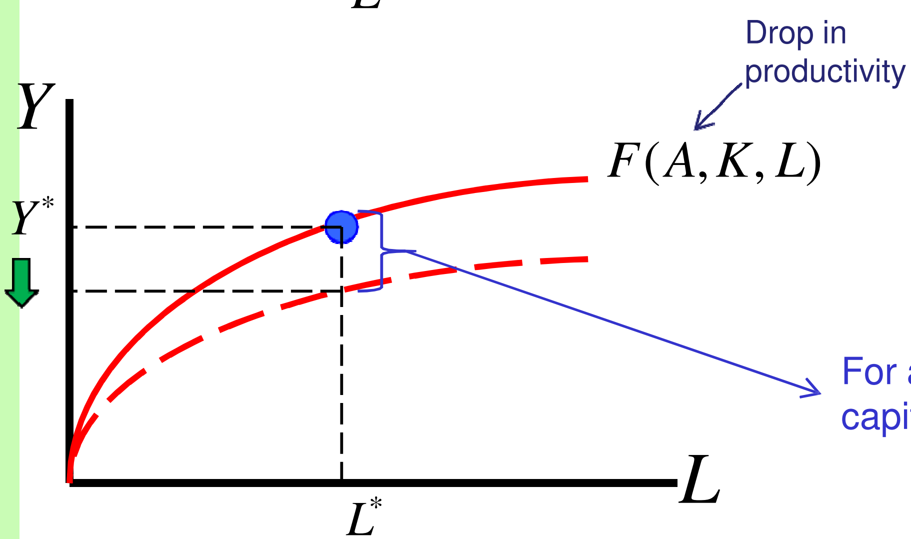
Real business cycle theory suggest that the business cycle is caused my random fluctuations in productivity.

NLI$\Rightarrow$ Non Labour Income
A'$\Rightarrow$ expected future productivity
L'$\Rightarrow$ expected future employment

We have developed a model with a labour market and a capital market. Suppose that a ***random, temporary, negative productivity shock*** hits the economy. (Assume no government deficit)

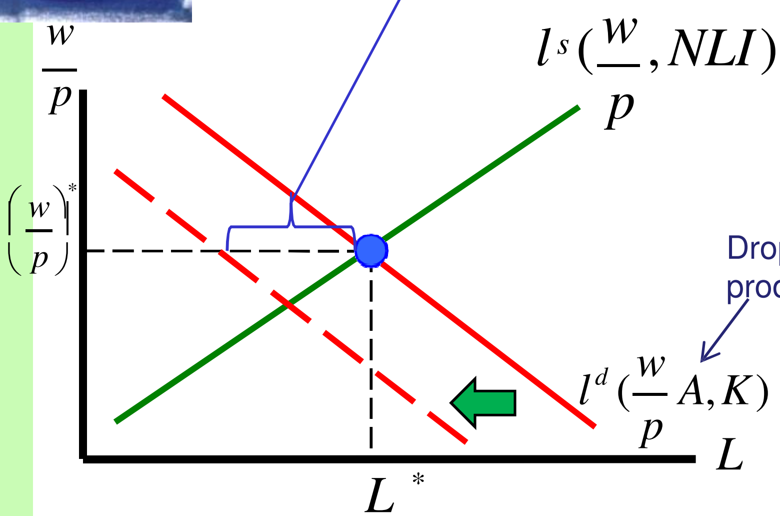


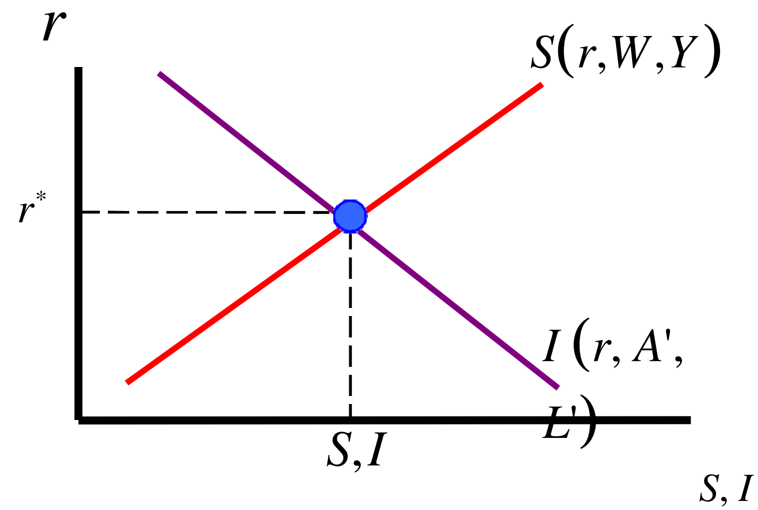


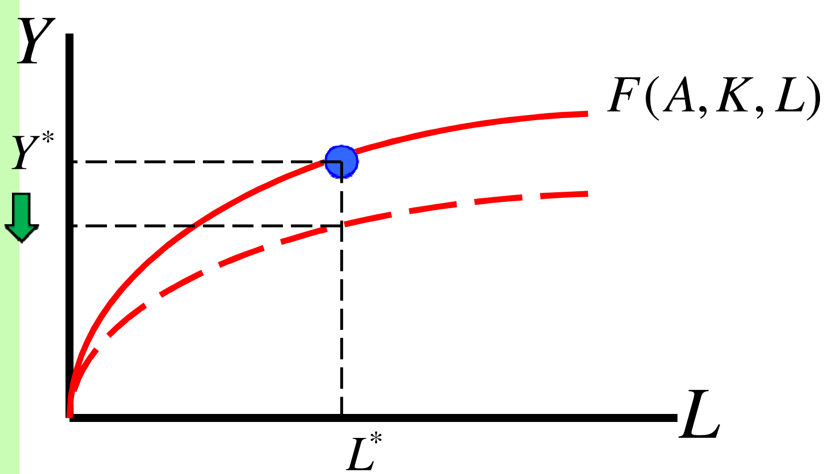


For a given level of employment and capital, production drops

At the pre-recession real wage, the demand for labour drops due to the productivity decline

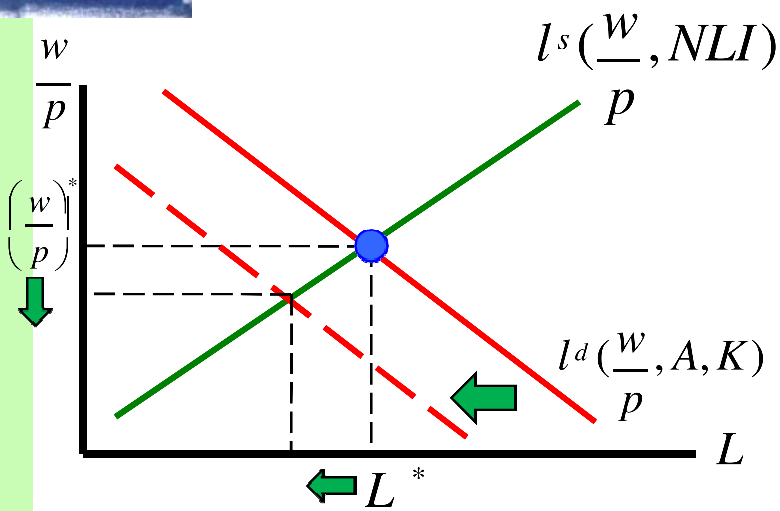


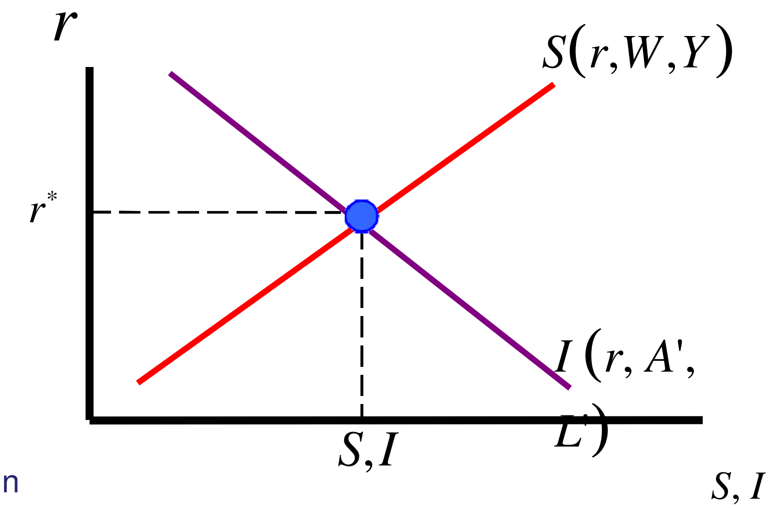




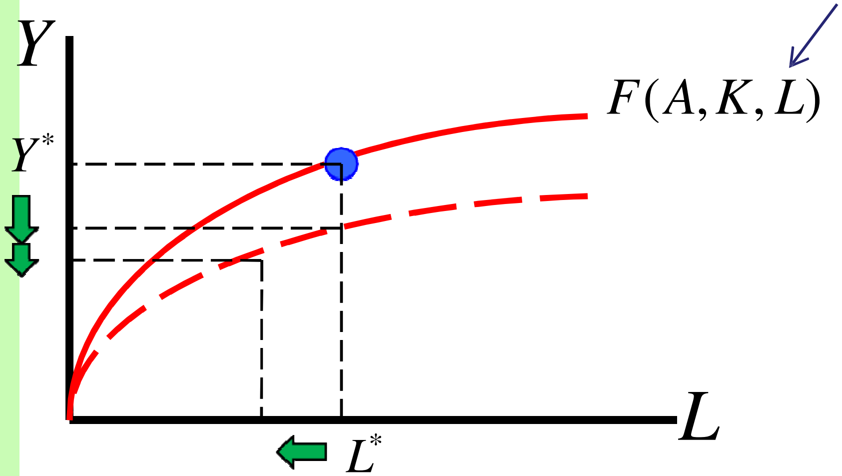
The first market to respond is the labour market

The drop in labour demand creates excess supply of labour – real wages fall and employment decreases





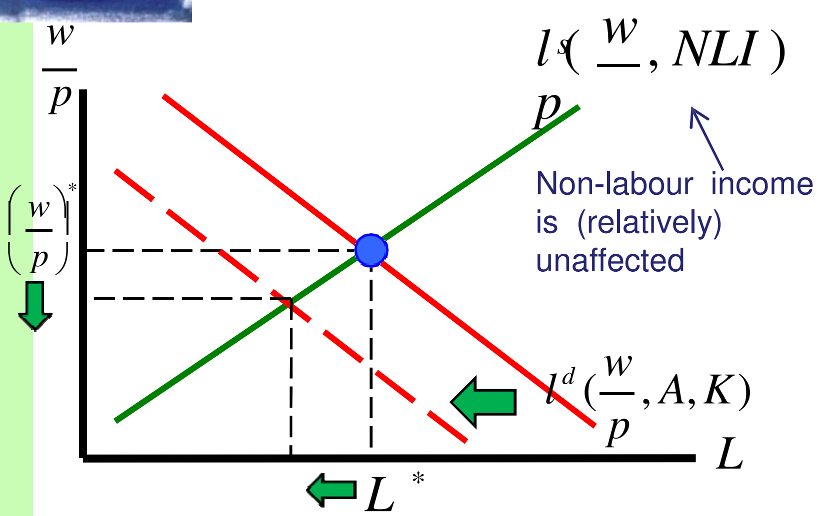
Drop in employment

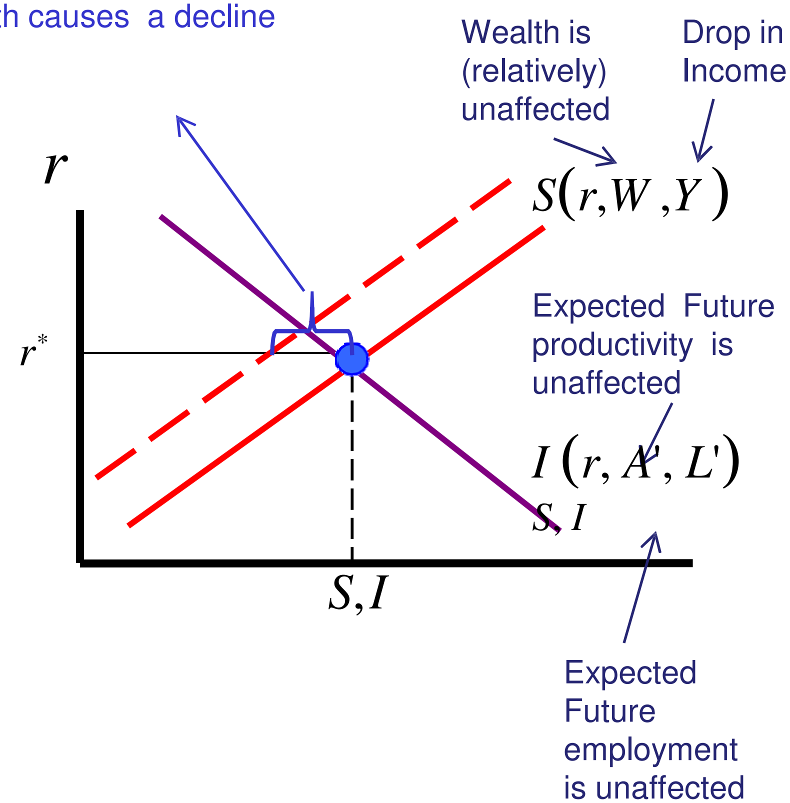


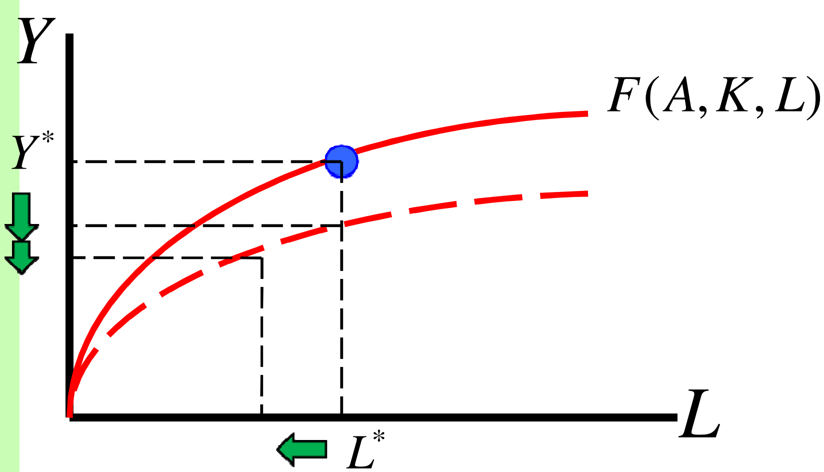
The drop in employment creates an additional drop in production

The capital market reacts next

The drop in income relative to wealth causes a decline in savings

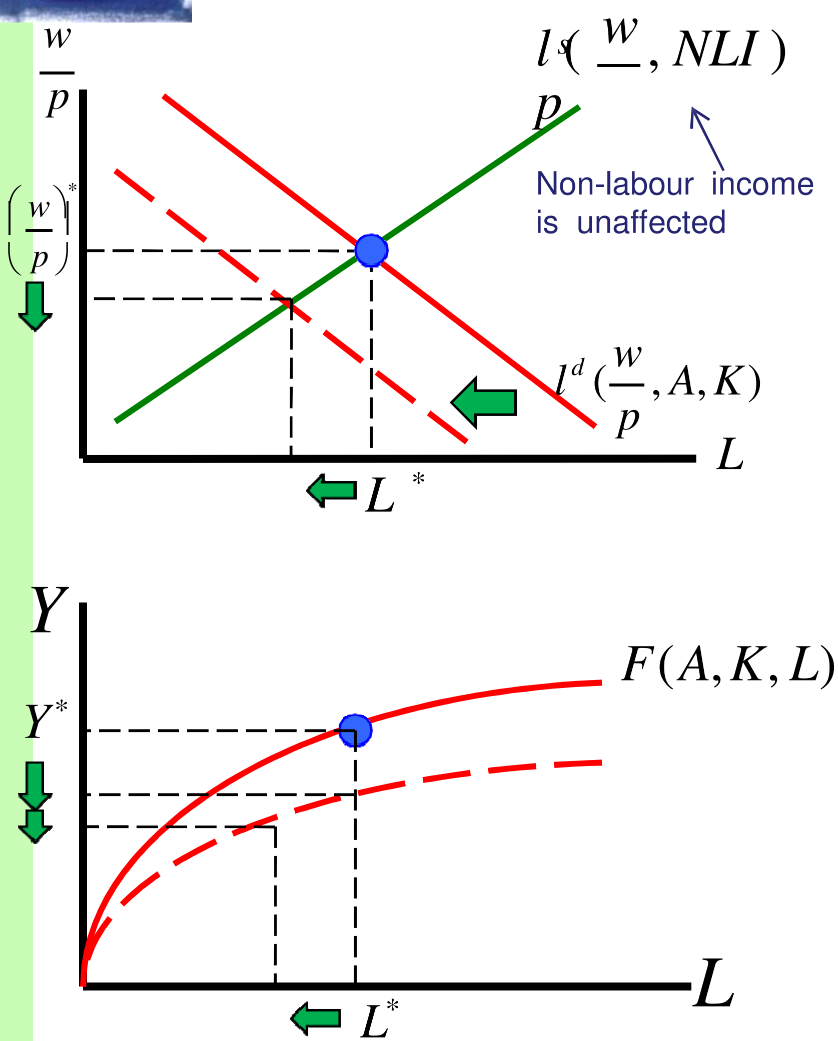


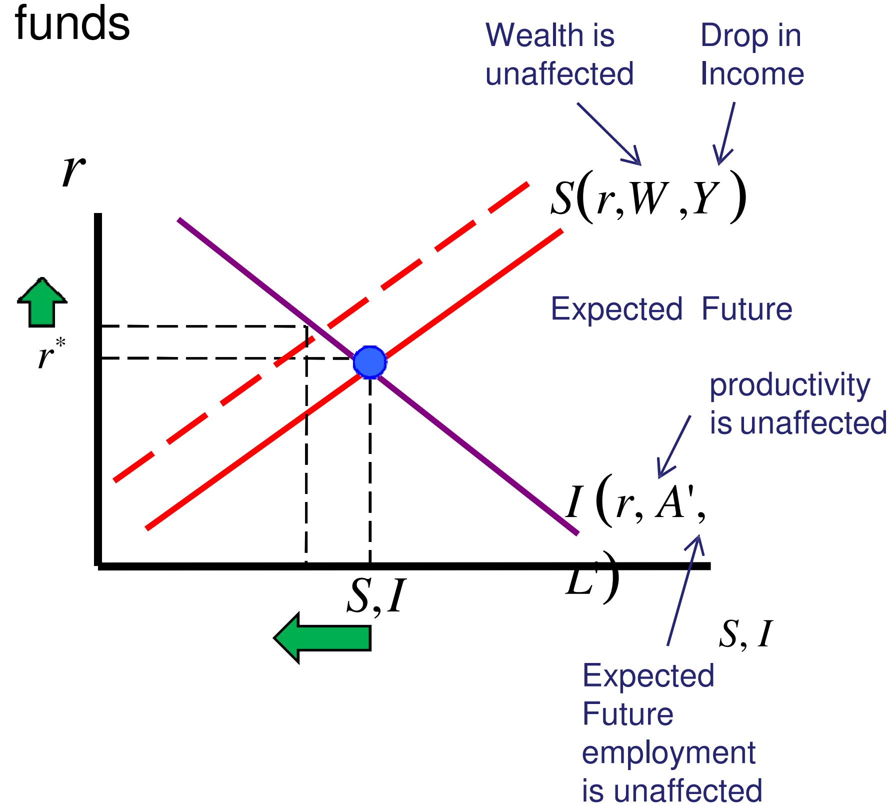




The interest rate will need to adjust to equate the new level of savings

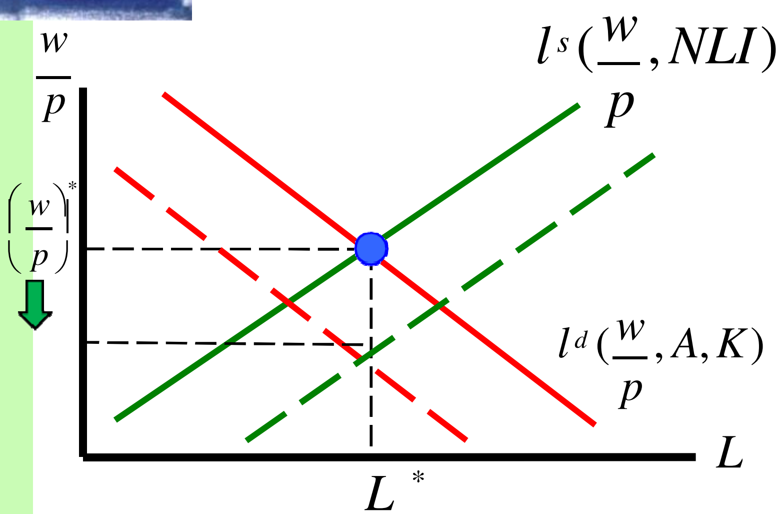
The drop in savings creates excess demand for loanable funds

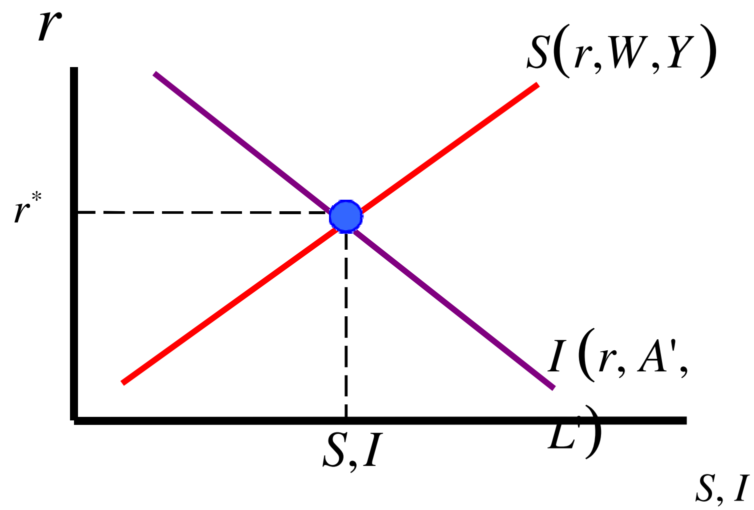


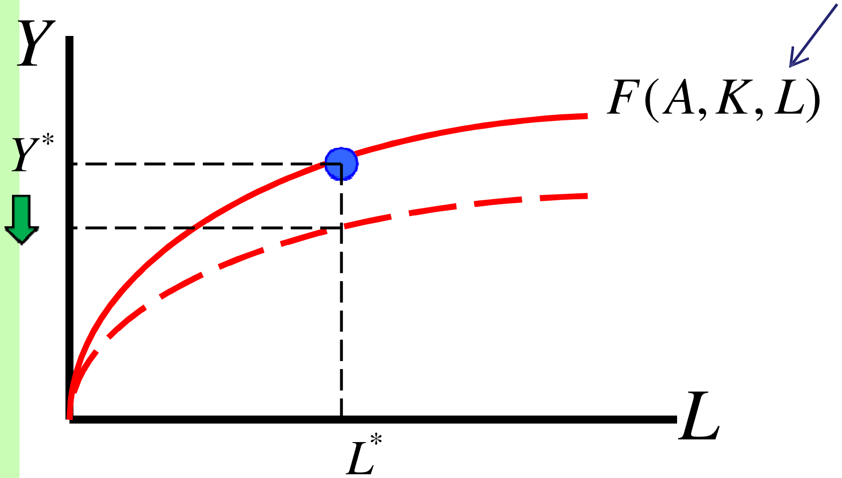


The real interest rate rises and levels of savings and investment fall

A permanent shock creates a larger drop in NLI which causes an increase in labour supply



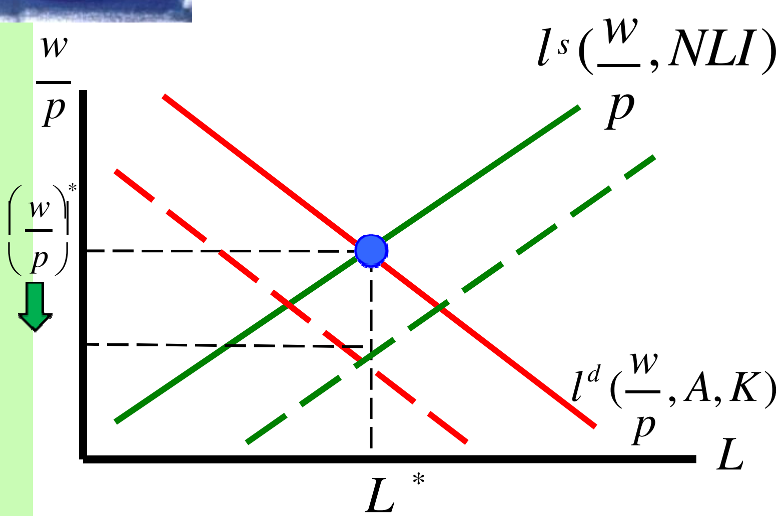


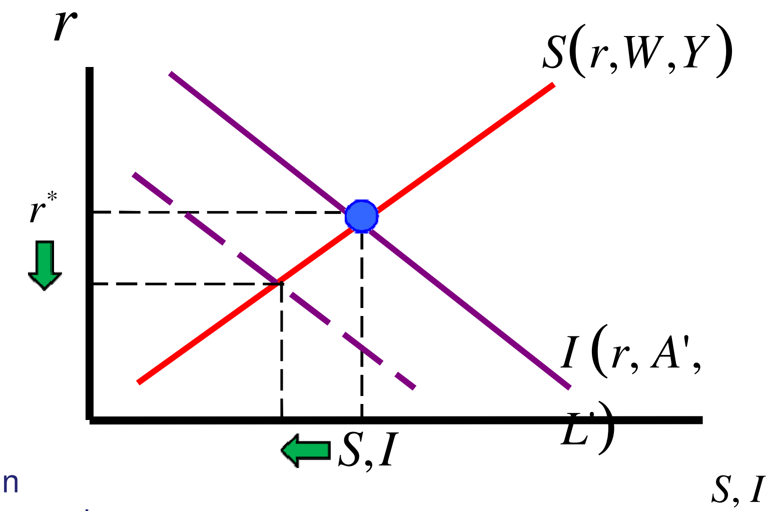


Drop in employment

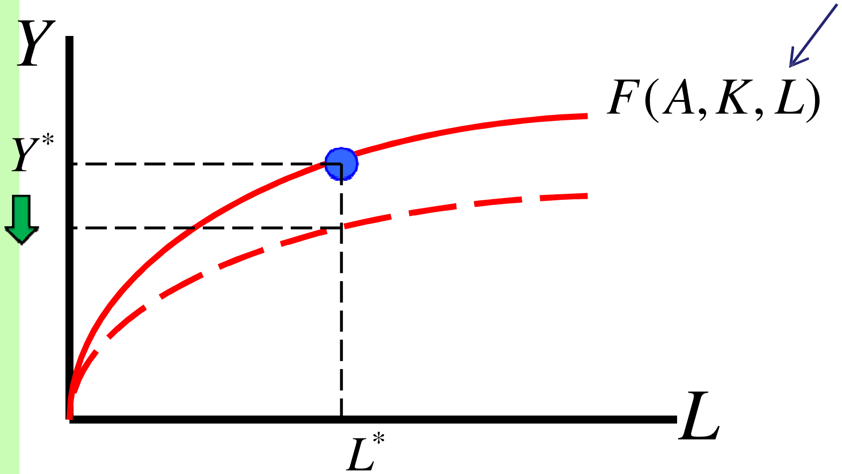
We get a bigger drop in the real wage and the effect on employment becomes ambiguous. ***Here we assume the shifts in the labour market are such that there is no change in the level of employment.*** **Though actually the impact on employment is ambiguous.**

Next, the permanent drop in income has no effect on savings, but the permanent decline in productivity lowers investment





Drop in employment



There is a permanent drop in income and also there is a drop in wealth so that the level of income with respect to the level of wealth remains same and there is no change in savings

.Now we have interest rates moving in the right direction

Behaviour of the economy along the cycle due to a temporary reduction in capital stock

Recall that today's investment determines tomorrow's capital stock.

Depreciation Rate

$$K' = \underbrace{(1-\delta)K}_{\text{Remaining portion of current capital stock}} + I$$

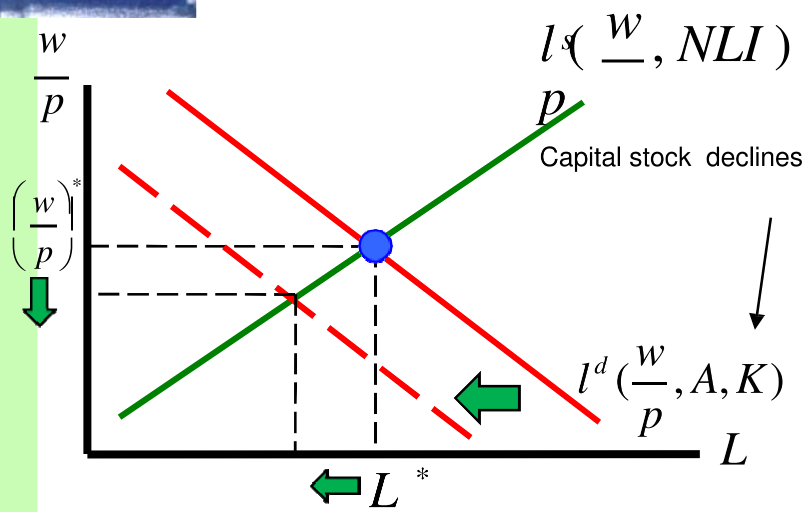
Tomorrow's capital stock

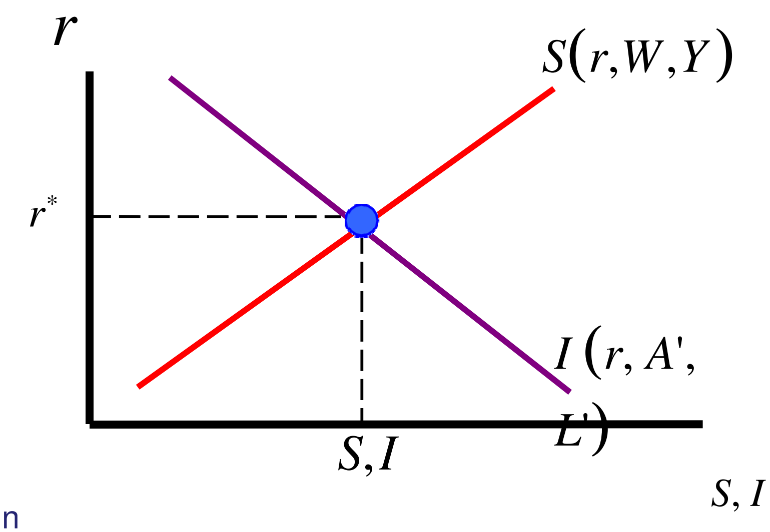
Purchases of New Capital

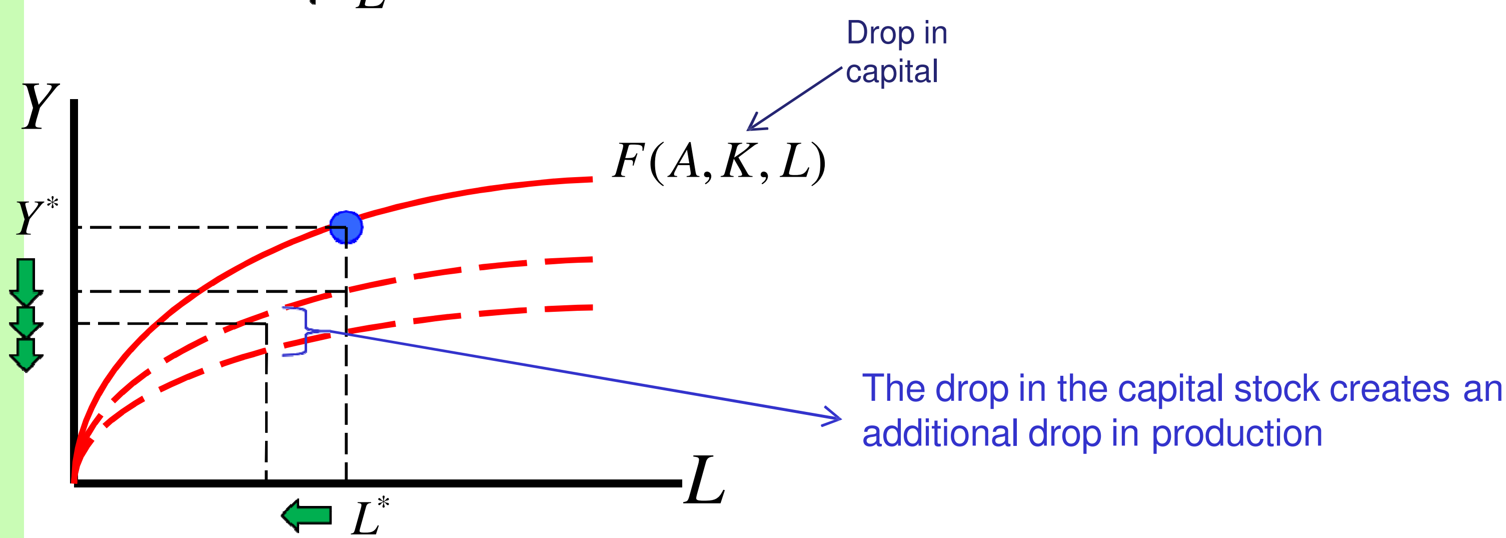
Remaining portion of current capital stock

If investment falls enough, the capital stock shrinks – this is what gives the recession "legs"

The drop in the capital stock worsens the recession – labour demand declines further

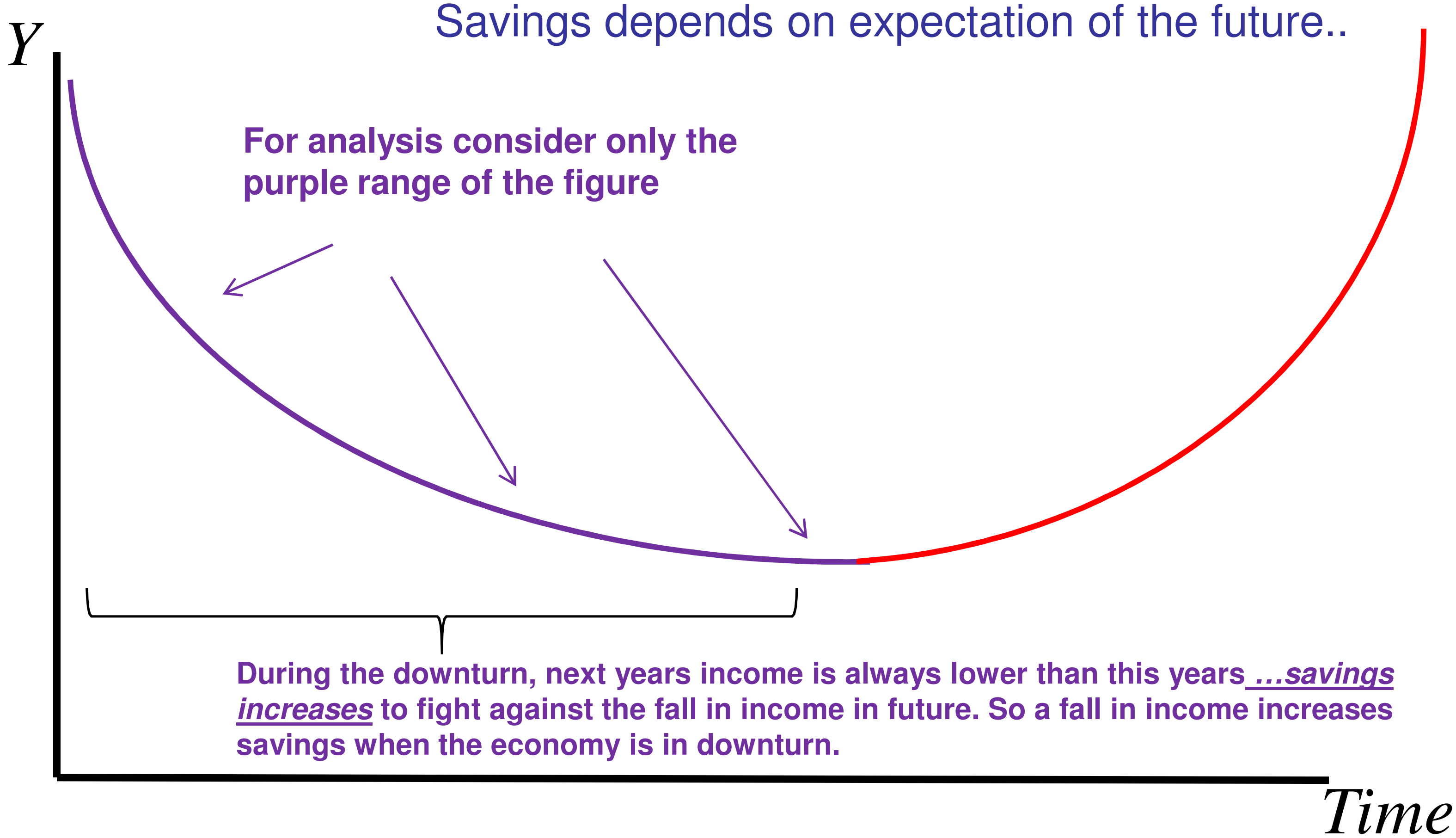






What about savings? The behaviour of savings is slightly modified here it is actually dependent on expected income.

Savings depends on expectation of the future..



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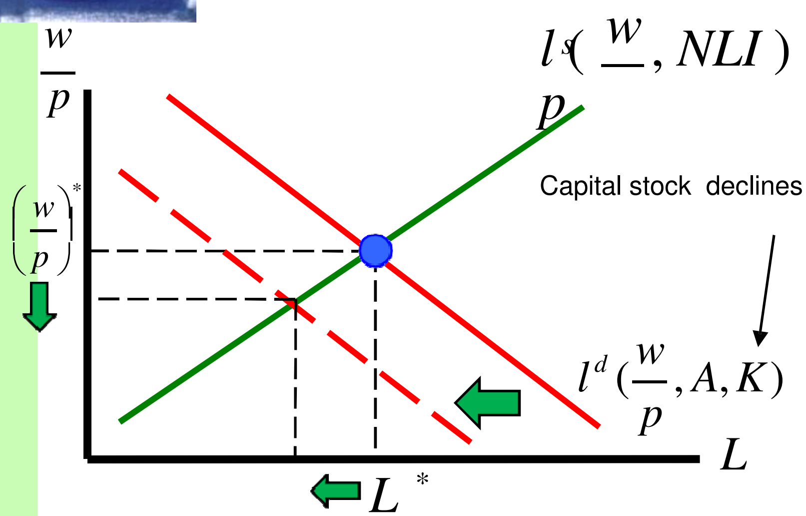
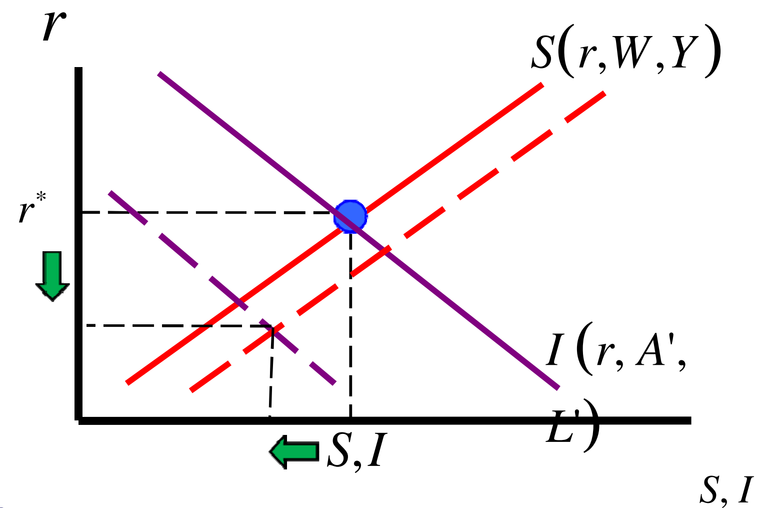
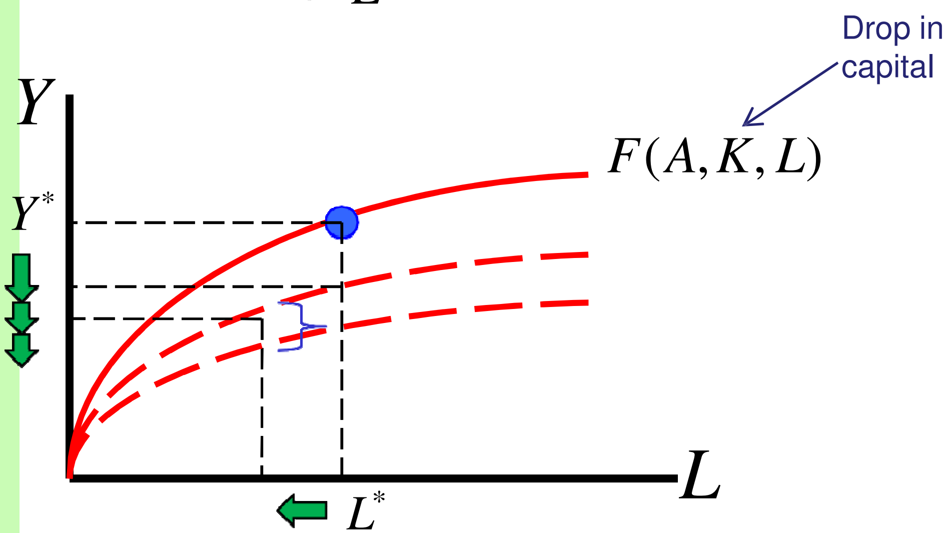
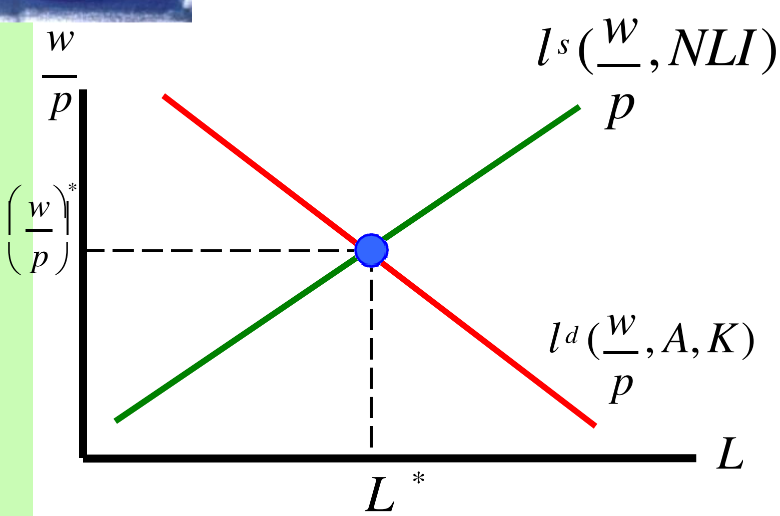


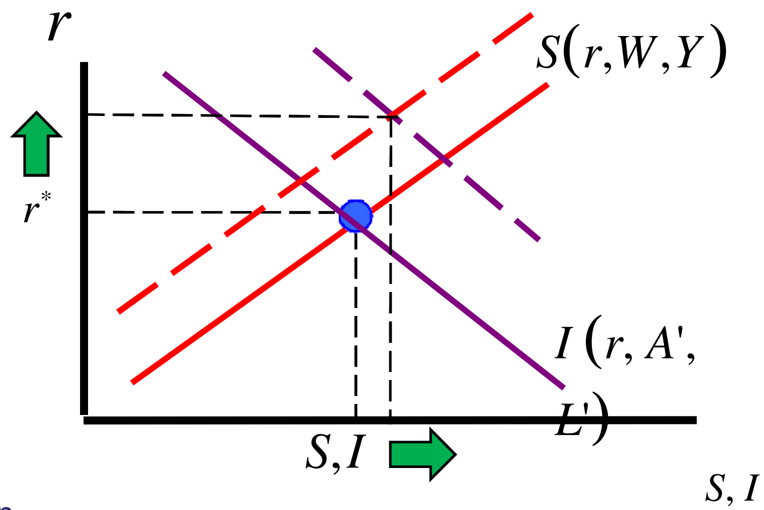


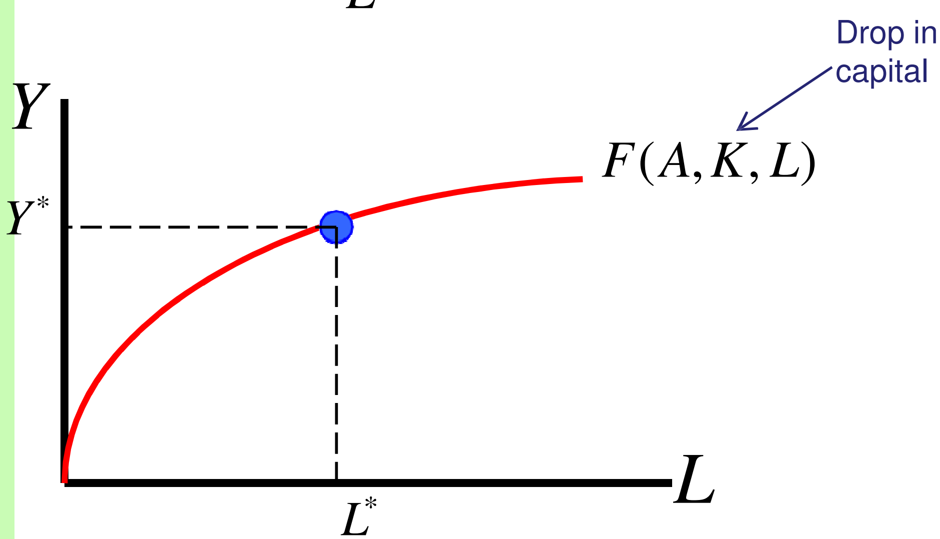


With lower investment, the capital stock continues to fall

The rise in MPK raises investment, while expected increases in income lower savings

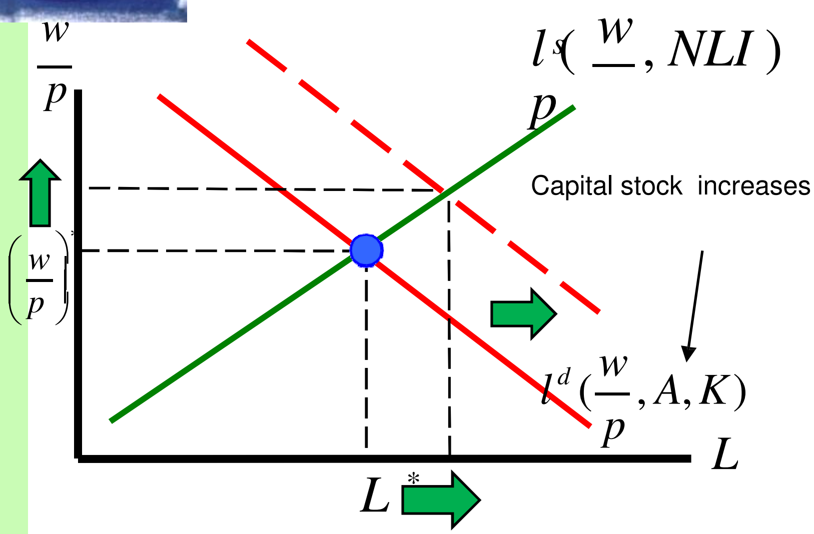


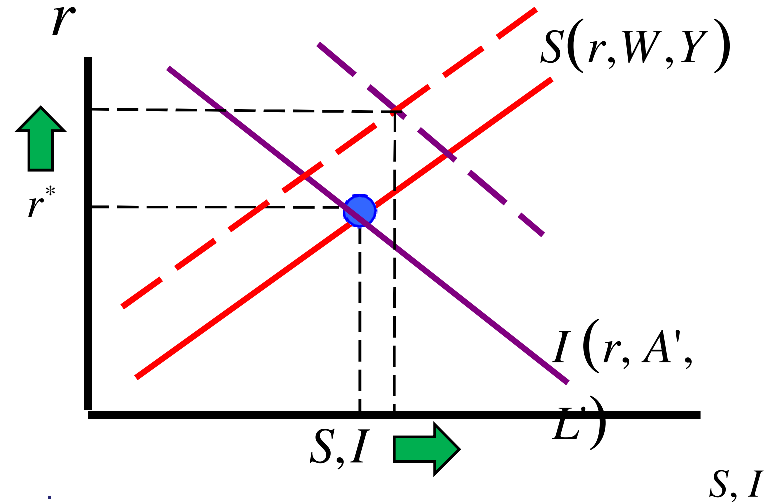


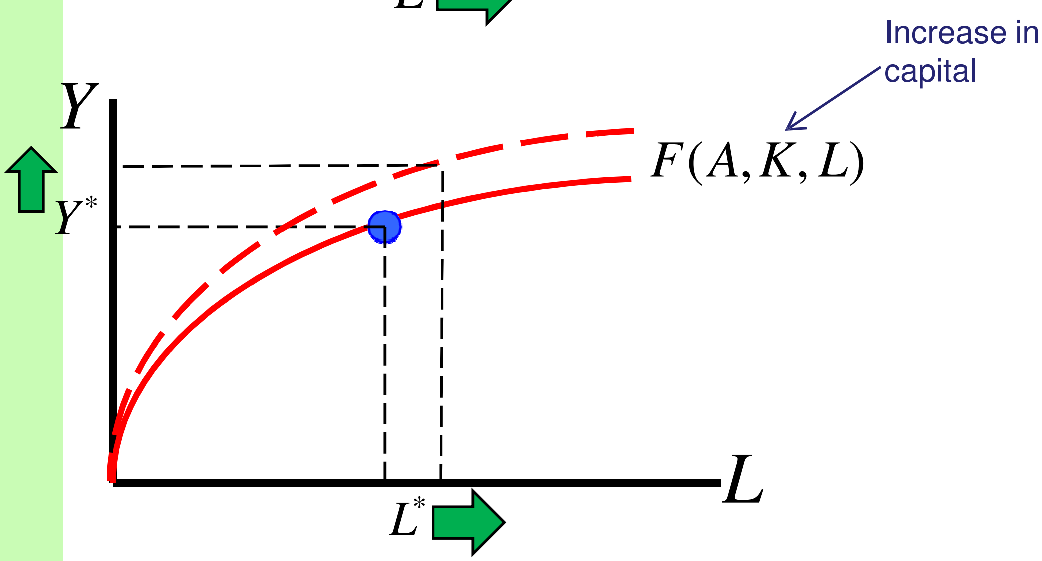


Now, the upturn begins!

The capital stock begins to rise, which raises labour demand…
As investment increases tomorrow's capital stock increases







Employment starts to increase!