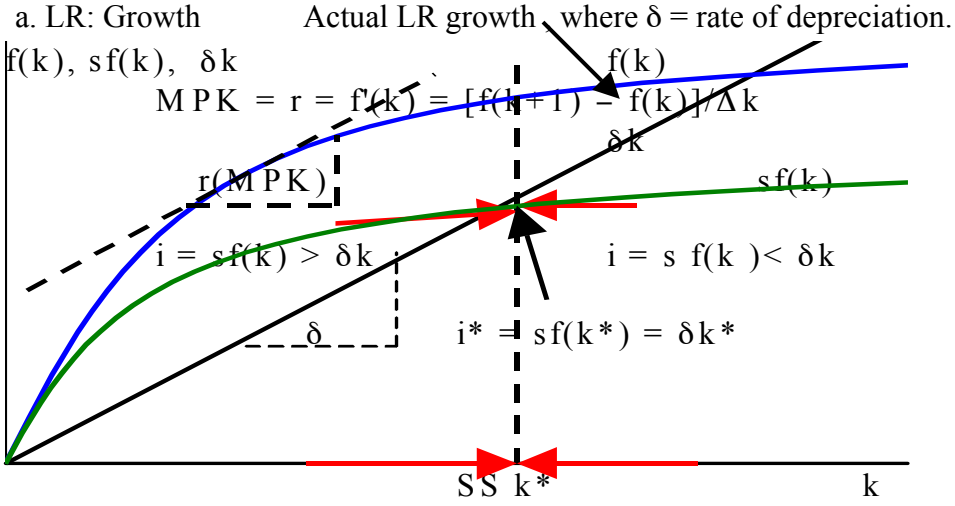
Week 2. Inflation and Unemployment

1. **LR vs. SR Goals of Macro**

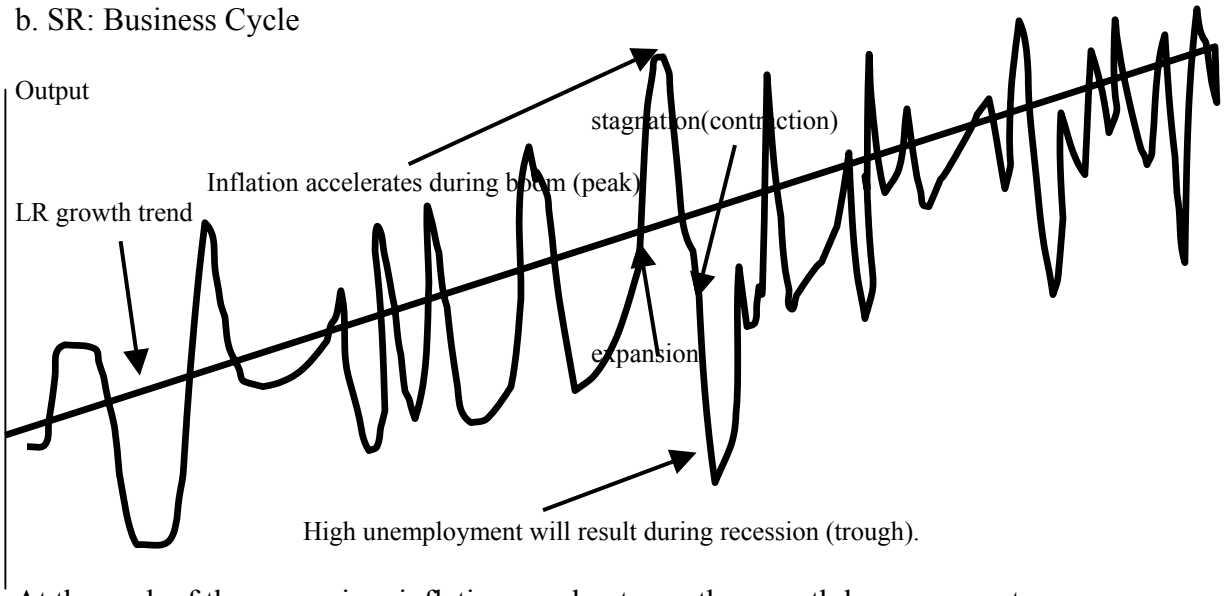
a. LR: Growth



$$Y/L = F(K/L,1) \rightarrow y = f(k) = c + i = (1-s)y + i, \text{ where } i = sy = sf(k) \;\&\; i = I/L$$

$$\Delta k = i - \delta k = sf(k) - \delta k \rightarrow 0 = sf(k^*) - \delta k^* \text{ in } SS \quad \rightarrow \quad k^*/f(k^*) = \delta/s$$

b. SR: Business Cycle



At the peak of the expansion, inflation accelerates as the growth loses momentum (∵DMR to I) while the increased D from increased income is still not subsiding. When inflation accelerates, nominal interest rate cannot catch up sufficiently with the inflation. Investors will be discouraged from lending and withdraw from the K market. As there is less investment going into the economy, the economy will phase into stagnation. Even if the ROI is positive, the loss of purchasing power due to inflation makes ROI still difficult to be viable. The cycle can also be explained as follows:

As ↑D pushes price & wage↑, production cost↑.→Firms ↓output.→Y↓.

As I↑to a glut, ROI↓ due to DMR to I.→I↓→Y↓ (Contraction).

RBC postulates that shock to production tech → fluctuations in I →↑↓Y.

2. **Measures of Inflation**

i) GDP deflator = $\frac{No\min al\ GDP}{\mathrm{Re}al\ GDP} \times 100$ *or* $\frac{P(all)\ givenyear}{P(all)\ baseyear}$,

where $\mathrm{Re}al\ GDP = \frac{No\min al\ GDP}{\pi}$

ii) Consumer Price Index is measured by pricing the finished retail items on a list representative of a typical urban household budget.
iii) Producer Price Index is measured by pricing the finished wholesale items on a list representative of producers.

3. **Cause of Inflation** (sustained increase in general price level)
Growing economy will increase output. People will demand more money for more efficient exchange of goods and services. However, if the central bank supplies more money than enough to meet the increased output through buying back bonds or printing new currency, the prices will be inflated. There is no harm in itself as long as there are proportionately higher output, because higher output translates into higher income. However, the harm is the unpredictability of inflation, loss of purchasing power and discouraged investment activities. Besides, w/o perfect foresight about how the inflation will behave, fair pricing will also be difficult.

4. **Deflation** (sustained decrease in price level)

Year	1997	1998	1999	2000
Price of Soda	$1.50	$1.35	$1.15	$1.00

Must watch out for deflation b/c it might lead to depression.

Disinflation (sustained decrease in inflation rate)

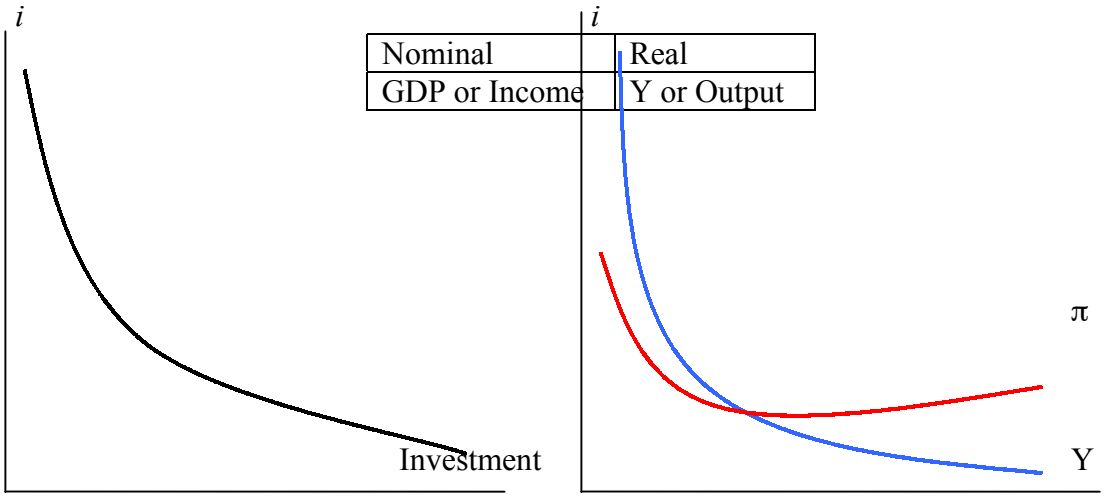
Year	1997	1998	1999	2000
Price of Soda	$1.00	$1.50	$1.75	$1.80

Stagflation refers to sustained period of inflation happening w/ recession at the same time. This is caused by high inflation w/o matching productivity growth, whereas investment decreases as high inflation as well as low productivity reduces incentives to invest. The central bank would pump in the money to liven up the economy by compensating for lack of investment, which would only exacerbate the high inflation with ↑*Ms.* *e.g.*) U.S. economy during the 1970's.
Hyperinflation refers to extreme case of inflation. *e.g.*) Germany after WWI

5. **Effects of Inflation**
i) **Erosion in Purchasing Power**.
ii) ***Ad-hoc* (Random) Rewarding and Punishing** - discourages borrowing and lending. e.g.) Pay off student loan when there is high inflation vs. when there is low inflation - unpredictable. Who's the winner and the loser in each case?
iii) **Effect on Interest Rate**: $i = \pi + r$,

where i = nominal interest rate, r = real interest rate, π = inflation rate.
If we can accurately predict π, the above identity will hold, and there will be no problem lending and borrowing, but it's hard to accurately predict π. → Uncertainty in Investing
iv) **Effect on K-Gains Tax**: Failure to recognize the difference btwn nominal and real interest rate will result in high
effective k-gains tax which discourages investing and eventually retards the economy.
v) **Effect on Long-Term Investment**: Severe inflation makes it risky to go into long-term contracts including loans. W/o long-term contracts, long-term investment, and long-term projects, economy stagnates.

6. **Interest Rate vs. Inflation** (or Output Growth)
What makes the economy grow? ↑Investment → ↑productivity → ↑Output



7. **Economic Cost of Unemployment**
When the economy does not generate enough jobs to employ all those willing to work, a valuable resource is lost (wasted). Potential goods and services that might have been enjoyed by consumers are lost forever. Think about the opportunity cost of those unemployed resources!

8. **Types of Unemployment**
i) **Frictional Unemployment** is due to normal turnover in the labor market. it includes people who are temporarily between jobs. They are not unable to find a job, but they don't want to hold on the job either because they are not quite satisfied w/ their job or they feel they are underemployed. Hence, the term frictional.
ii) **Structural Unemployment** refers to workers who have lost their jobs because they have been displaced by structural change in the economy, such as sunset industry (phasing out), automation that their skills are no longer in demand.
iii) **Cyclical Unemployment** is due to a decline in the economy's total output. Therefore, it rises during the recession falls in the boom.
iv) **Seasonal Unemployment**

9. **How to Calculate Unemployment Rate**

$$U = \frac{\#\ of\ \ Unemployed}{Total\ \#\ in\ Labor\ Force - \#\ of\ Discouraged\ Workers} \times 100$$

Natural Rate of Unemployment is practically the full employment rate, and is roughly equal to 4.5% (by convention), not 0%. This is because although the economy is at full employment, there is still some unemployment due to frictional, structural, and/or seasonal component. AKA NAIRU (Non-Accelerating Inflation rate of Unemployment)