1) National Income Accounting

Economists care about how expenditure on output is allocated between different purposes. Four categories are: consumption, investment, government purchases, and net exports.

Can write $Y = C + I + G + NX$, where $Y$ represents GDP. Is an identity, is true by definition. Define the categories as useful way to divide up GDP expenditures. Useful to decompose because these categories of expenditure can react in different ways to economic events.

a) $C = \text{consumption: Purchases by private households.}$

Can be divided further:
1) **Nondurable goods**: last only a short time, such as food and clothing.
2) **Durable goods**: last long time, such as cars and TVs.
3) **Services** include work done for consumers by individuals and firms, such as haircuts.

b) $I = \text{investment: part of current output used to increase in the capital stock and produce more output in future}$

note the economic definition of investment is a little different from the common usage. If buy stocks and bonds, is saving not investment. When company you bought stock from uses the money you gave them to buy capital, machinery to make more output, this is called investment.

Also can be divided further:
1) business fixed investment: purchase of new plants and equipment by firms.
2) Residential fixed investment is new housing by households
3) Inventory investment is increase in firm’s inventory of goods. When firm produces goods but is unable to sell them, their contribution to GDP is captured by this category.
c)\[ G = \text{government purchases: goods and services purchased by the public sector} \]

example: government buys tanks for a war.

But government spending on welfare payments does not get counted here, because money is given to people who use it for consumption, and it will be counted there.

d)\[ \text{NX = Net exports:} \]

First, add in exports: Why: If Chrysler makes a car bought by a European, it is in our GDP, but not in domestic consumption, investment or government expenditure. Need list it separately.

Subtract out Imports: A Toyota made in Japan and bought by your cousin will appear in the US consumption, but it is not part of our national product, so it needs to be subtracted out.

NX = exports – imports

e) Case study to be discussed in class: current data and events

2) Measuring Inflation

a) How measure price level? Most common measure is

CPI: consumer price index: measure cost of a fixed basket of consumer goods relative to a base year.

Computed by Bureau of Labor statistics, as measure of cost of living for consumers.

Look at price of long list of goods typically bought by consumers - basket of typical goods.

But consumers buy more chicken than caviar, want to give more weight to price of chicken when estimating the cost of living. So weight the prices by the quantity purchased. Weights from a base year.

Again compare to a base year, say 1992.

Example suppose two goods in index, apples and oranges. Want to compute CPI for current year with 1992 as base year.

\[
\text{CPI} = \frac{(P_{\text{apples}}^{99} \times Q_{\text{apples}}^{92}) + (P_{\text{oranges}}^{99} \times Q_{\text{oranges}}^{92})}{(P_{\text{apples}}^{92} \times Q_{\text{apples}}^{92}) + (P_{\text{oranges}}^{92} \times Q_{\text{oranges}}^{92})}
\]

b) CPI s an alternative measure to the GDP deflator:
Differences from GDP deflator:
1) **GDP measures prices of all goods and services; CPI just bought by consumers.**
   So if is rise in price of goods bought by firms or governments, not show up in CPI.

2) **GDP only consider goods produced domestically, because that is what is in GDP.**  CPI include imported goods, because they bought by consumers.

3) **Different scheme for weighting prices of different goods.**  Recall:
   
   $\frac{(P_{apples}^{99} \cdot Q_{apples}^{99}) + (P_{oranges}^{99} \cdot Q_{oranges}^{99})}{(P_{apples}^{92} \cdot Q_{apples}^{99}) + (P_{oranges}^{92} \cdot Q_{oranges}^{99})}$

   CPI assigns fixed weights for each year - use quantities in base year.  Call this a **Laspeyres index.**

   While GDP deflator uses weights that change each year - current quantities.  Call this a **Paasche index.**

c) **CPI may overstate inflation.**

   main cause: **substitution bias:** Because weight prices by base year quantities, not consider that consumers will substitute away from goods that rise in price the most.

   Consider if frost that wipe out orange crop and price goes up.  CPI show big increase.  But GDP deflator not, although price of oranges rise, oranges not large part of current production any more - current quantity is low.

   Estimate that **CPI overstates annual inflation roughly 1 percentage point.**

   **Implication** is large.
   1) **Fed watches CPI to determine monetary policy**

   2) **Government transfer payments, like social security are indexed to the CPI, rise in proportion.**  Currently debated in Congress if should set a rule that Social security rises should be set at CPI less 1 percentage point.  Opposed by retirees.  Would save the government 634 billion dollars over ten years.
3) Measuring Unemployment

Question: are you included in the official unemployment rate?

Unemployment rate computed by Bureau of labor statistics. Based on a survey of 60,000 households. Put in one of three categories:
- **employed** - spent most of previous week working at a job
- **unemployed** if waiting for start of a new job, on temporary layoff, or looking for a job
- **not in labor force** if not fit either of two categories: ie if student, retiree, or wants job but has given up looking - discouraged worker.

a) Compute unemployment rate as follows:

Labor force = number of employed + number of unemployed

\[
\text{unemployment rate} = \frac{\text{number of unemployed}}{\text{labor force}} \times 100.
\]

Currently about 4.2%

Participation rate = labor force / total adult population * 100. (about two thirds)

b) **Okun’s Law** (Observation)

Appears in data to be a relationship between output and unemployment rate:

When unemployment rises, output tends to fall. Makes sense, if fewer people working, less will be produced.

Relationship: \( \text{Percent change in Real GDP} \approx 3\% - 2 \times \text{change in unemployment rate} \).

Even if no change in unemployment, output will tend to rise about 3% for other reasons. But if unemployment rise 1% point, tends to make GDP growth rate fall twice that much.

Just an empirical regularity that seems to be generally true in the data. No theoretical reason why must be true. But can be useful.