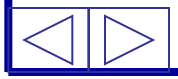
Chapter 19

Macroeconomics

Lecture

Macroeconomics

- studies the overall or aggregate economy
  - the overall price level, not individual prices
  - total production in the economy, not the production by individual firms
  - adjustments to changes across the whole economy



Macroeconomics

- Unemployment
- Inflation
- Interest Rates
- Business Cycles
- Exchange Rates
- Economic Growth

Gross Domestic Product [GDP]

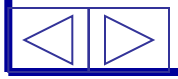
• Total output produced is the total value of all goods and services produced

• Production of output generates income

• The quantity of total output is measured in dollars

Nominal National Income: [**current dollar**]

• The dollar value of total output



Real GDP

• measures income at **base-period prices**

Nominal GDP - Inflation = Real GDP

• If price level changes over time are removed only changes in production remain

Changes in Real GDP:

• measures changes in production

Potential GDP [Y*]

Potential national income (output)

- what the economy could produce

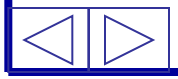
  if all resources were employed at their normal levels of utilization

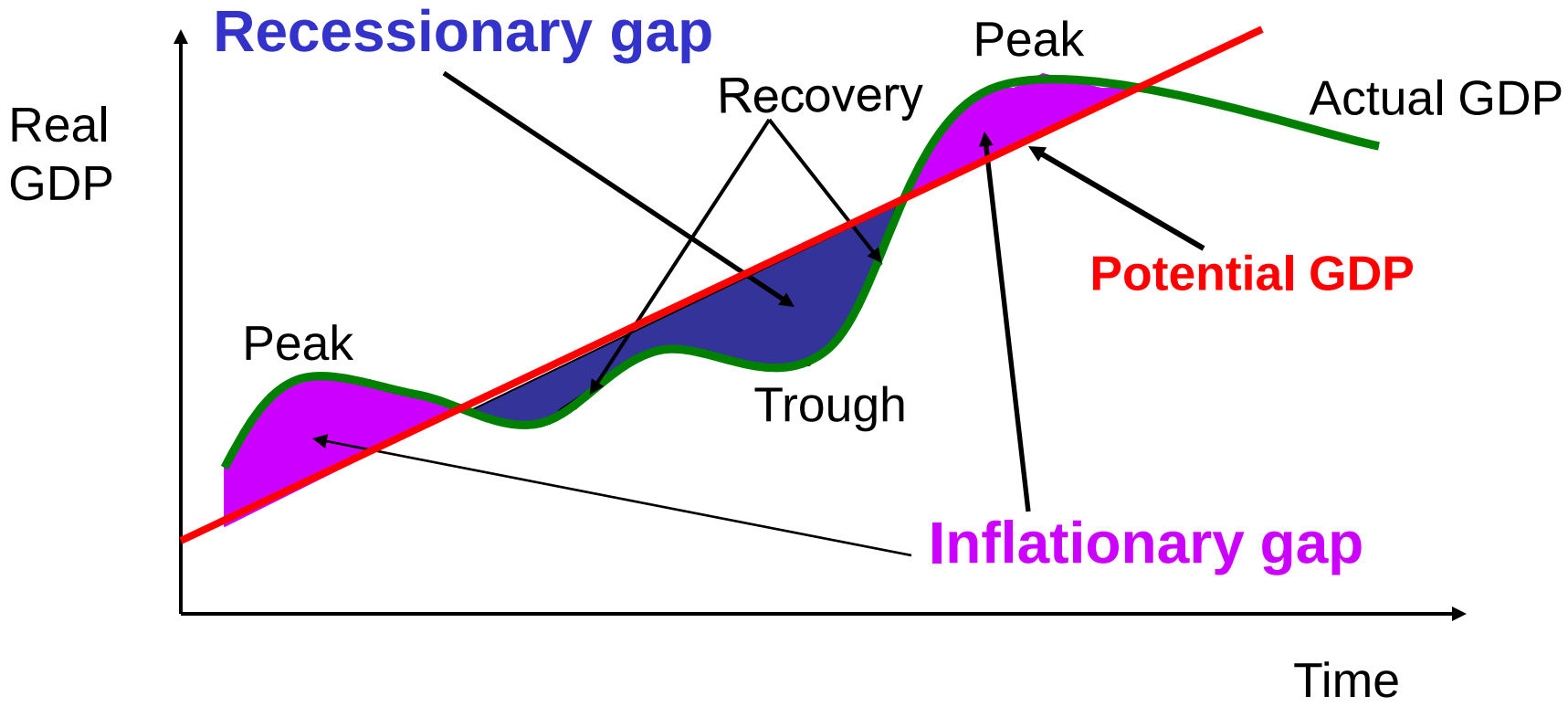
- often called **full-employment income**

Output gap = the difference between potential and actual output

Denote potential output by **Y*** and actual output by **Y**:

Output Gap = Y* - Y





Recessionary gap:

• when actual income (output) is less than potential income

Inflationary gap:

• when actual income (output) exceeds potential income

When GDP is **below** potential

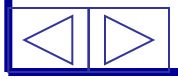
- output and incomes are lost
- Can never recover these losses

When GDP is **above** potential

- can generate inflation
- Growth in potential GDP can increase future incomes

But . . .

- Increase in **average** income doesn't mean increase for all - Not all benefit



Employment:

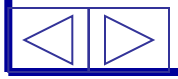
• number of adult workers (15 and over) who hold jobs

Unemployment:

• number of individuals not employed but actively searching for a job

Labour force:

• total number of people who are either employed or unemployed



Discouraged Workers:

- Not actively seeking work
- Not counted as unemployed

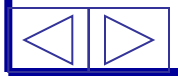
Part-time Workers:

- May be seeking a full-time position
- Considered employed

Unemployment rate:

- percentage of the labour force that is unemployed

$$\text{Unemployment Rate} = \frac{\text{Number of people unemployed}}{\text{Number of people in the labour force}} \times 100$$



e.g.,

labour force = 100

unemployed = 10

Unemployment rate = 10/100 x 100

= 0.10 x 100

= **10 percent**

Full employment [**Y = Y***]:

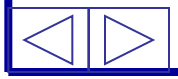
- some unemployment exists
  - frictional
  - structural

Frictional unemployment:

- caused by normal turnover of labour (retirement, quits, etc.) - Hiring takes time

Structural unemployment:

- occurs because of a mismatch between available workers and jobs



Examples of Structural change:

8 track tapes

Vinyl records

Record players

Tube TV's

AES – dedicated word processors

Dot matrix and Daisy wheel printers

Floppy discs

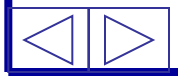
VCR's moving to DVD's

Cathode ray tubes for computers moving to flat screen

Fax machines from large to small – more email attachments

Full employment:

- occurs when all unemployment is frictional and structural
- there is **no Cyclical Unemployment**
- at potential GDP [**Y***]
- **Natural Rate of Unemployment** [**U***] exists at Y*



Unemployment [U] changes over the business cycle

During **recessions**: **U** rises **above U***

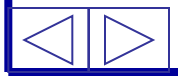
During **booms**: **U** falls **below U***

Cyclical Unemployment:

- when **U > U*** which exists at **Y***

Seasonal U: e.g.,

- **U** may rise by 0.3 percentage points in January
- StatsCan **seasonally adjusts** figure to remove this so can see trends more clearly



Effects of unemployment:

Economic problems:

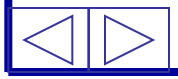
- loss of output, loss of skills, etc.

Immense human suffering:

- illness, breakdowns, etc.

Social problems:

- homelessness, crime



Price level:

• the **average** level of all prices in the economy

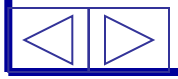
Inflation:

• the **rate** at which the price level is changing

Consumer Price Index [**CPI]:**

• the most common measure of the price level

• based on the price of a typical consumer **“basket”** of goods and services



CPI for the **base** period is set to 100 [always]

CPI in later years shows prices as a ratio of the price in the base period

$$CPI_t = \frac{\sum P_t Q_0}{\sum P_0 Q_0} \times 100$$

Problem

In the economy of Ultimate Pleasure, the **typical** urban **household consumes** the following goods and services:

		Base Year		Current Year	
Goods	Qty	Price	Expenditures	Price	Expenditures
Chocolates	100	$10		$15	
Ice wine	50	$50		$60	
Back rubs	70	$30		$30	

		Base Year		Current Year	
Goods	Qty	Price	Expenditures	Price	Expenditures
Chocolates	100	$10	$1,000	$15	
Ice wine	50	$50		$60	
Back rubs	70	$30		$30	

		Base Year		Current Year	
Goods	Qty	Price	Expenditures	Price	Expenditures
Chocolates	100	$10	$1,000	$15	
Ice wine	50	$50	$2,500	$60	
Back rubs	70	$30		$30	

		Base Year		Current Year	
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Chocolates	100	$10	$1,000	$15	$1,500
Ice wine	50	$50	$2,500	$60	$3,000
Back rubs	70	$30	$2,100	$30	$2,100
Total Expenditures			$5,600		$6,600

a) What is the value of expenditures in the base year and in the current year?

Base Year : $5,600

Current Year : $6,600

CPI in the base year equals 100

b) Find the value of the Consumer Price Index in the current period.

$$CPI_{current} = \frac{6{,}600}{5{,}600} \times 100$$

$$= 117.857$$

$$\approx 117.86$$

c) What is the inflation rate between the base and current years?

$$\text{Inflation Rate} = \frac{P_2 - P_1}{P_1} \times 100$$

$$= \frac{117.86 - 100}{100} \times 100$$

$$= 17.86\%$$

The **CPI** is a fixed, **base**-weighted index number.

- **CPI** in the current year is 117.86
- prices rose by 17.86% from base to current year

d) Have the relative prices changed?

Yes, the price of chocolate has increased 50%

$$= \frac{15 - 10}{10} \times 100 \qquad = 50\%$$

The price of ice wine has increased 20%

$$= \frac{60 - 50}{50} \times 100 \qquad = 20\%$$

While the price of back rubs has stayed the same.

Inflation Rate:

- the **percentage** change in the **CPI**

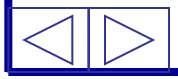
- usually calculated over a year – the annual inflation rate

Inflation calculated between any two years: e.g.,

$$\frac{P2 - P1}{P1} \times 100$$

CPI in January 1995: **131.9**

CPI in January 1996: **135.2**



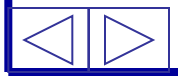
The percentage change in the CPI from 1995 to 1996?

$$\frac{135.2-131.9}{131.9}x100$$

$$=\frac{3.3}{131.9}x100$$

$$=0.025x100=2.50$$

- Price level rose by 2.5 % between Jan. 1995 & Jan. 1996
- An inflation rate of 2.5%



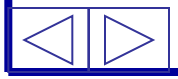
Effects of Inflation:

- Money is the financial yardstick

Purchasing power of money changes with inflation

- i.e. **real value** of money changes with inflation [**M / P**]

Inflation changes value of any sum that is fixed in **nominal** terms [**M**]



Fully-anticipated inflation:

• If included in all financial contracts inflation has no real effects

Unanticipated inflation:

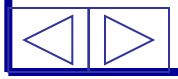
• benefits those with an obligation to pay money [borrowers]
• harms those who are entitled to receive money [lenders]

• e.g. a house mortgage during unanticipated inflation
• benefits buyer
• harms lender

Inflation is hard to forecast accurately

• Adds to the uncertainties of economic life

• Highly variable inflation rates cause great uncertainty



Note:

As the **inflation rate falls**

the **price level** can still be **rising**

Interest Rate:

- the price of borrowing funds
- expressed as a percentage amount per period of time
  - many interest rates tend to move together
  - prime rate, bank rate

Inflation affects **interest rate**:

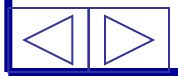
- **nominal** vs. **real** interest rates

Nominal interest rate:

- the price expressed in money terms

Real interest rate:

- price expressed in terms of purchasing power



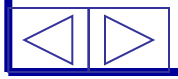
e.g.

- **nominal** interest rate is 8% per year
- **inflation** rate is 3%
- **real** interest rate is 5%

Nominal – Inflation = Real

The burden of borrowing depends on

- the **real rate of interest**
- not the nominal rate of interest



The International Economy

Foreign exchange:

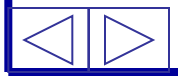
- foreign currencies

Foreign-exchange market:

- where foreign currencies are traded

Exchange rate:

- number of Canadian dollars required to purchase one unit of foreign currency
- it is the Canadian-dollar price of foreign currency

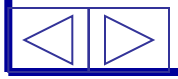


Depreciation of the Canadian dollar:

• means the Canadian dollar is worth less on the foreign-exchange market

• the exchange rate has **increased**

(Must pay more to purchase foreign currency)



Internal value of C$:

- the purchasing power of the dollar in Canada

External value of C$:

- the foreign currency price of the Canadian dollar
- the opposite of the exchange rate

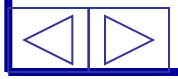
e.g., Canadian dollar is worth $1.0091 USD**:** (11/09/06)

- **exchange rate** [1/1.0075 = 0.9926]

  is $0.9926 (costs $0.9926 CAD for $1.00 USD)

- **external value** [1/.9926 = 1.0075 USD]

  is $1CAD is $1.0075 USD (30/08/2012 noon)



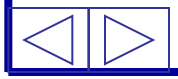
International trade accounted for in:

<u>Balance of payments</u> accounts:

• records all international payments made for goods, services, and assets.

<u>Trade account:</u>

• part of the balance of payments that records transactions in goods and services
• imports and exports

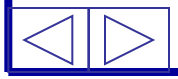


Trade balance: Net Exports

- difference between value of exports and value of imports

$$NX = X - IM$$

- Both exports and imports are very large
- ≈ 40% of GDP
- trade balance is usually very small (4%)

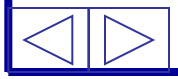


Growth Versus Fluctuations

Economic Growth

- Total output and output per person generally rise in industrialized countries

  - Rising **per capita output** leads to rising living standards



Business cycles:

- Short-term fluctuations in output and unemployment

Monetary policy:

- changes in the money supply and interest rates
- e.g., Bank of Canada had an inflation-reduction policy in early 1990s

Did high interest rates contribute to the recession?

Fiscal policy:

- changing government spending and/or taxes
- may be important in smoothing short-term fluctuations

Should governments “fine-tune” the economy?