

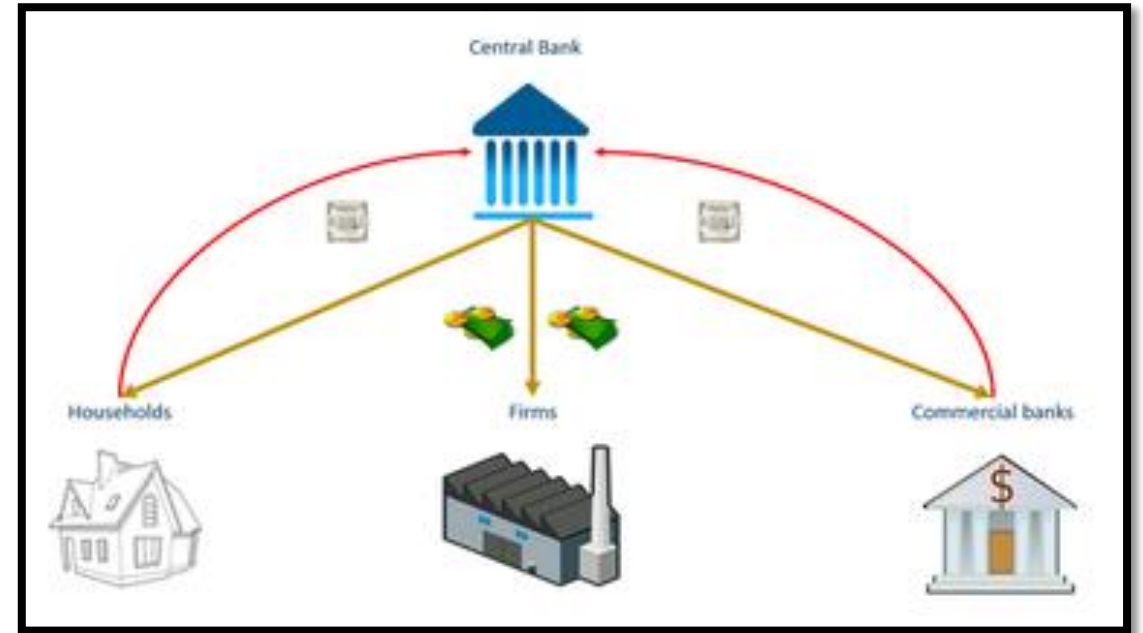


INTRODUCTION TO MACROECONOMICS



MACROECONOMICS

- Study of the economy as a whole
- Focuses on all the markets – consumers, workers and firms together – to create the big picture of the economy.



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- Macroeconomics will measure the Overall Economic Performance.
 - It will look to measure such things as:
 - Output – Gross Domestic Product (GDP)
 - Employment – Unemployment rates
 - Price Stability – Consumer Price Index (CPI)

WHY MEASURE ECONOMIC PERFORMANCE?

- Helps the government decide on tax policies and spending priorities.
- The government can use the information to measure the effectiveness of their economic policies.
- Allows a country to compare their economy to other countries.

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- Allows a country to look at the role and impact of specific industries on the whole economy.
 - Unions and wage earners use economic measurements in contract negotiations.
 - Industries and businesses use economic measurements to help them make investment decisions.

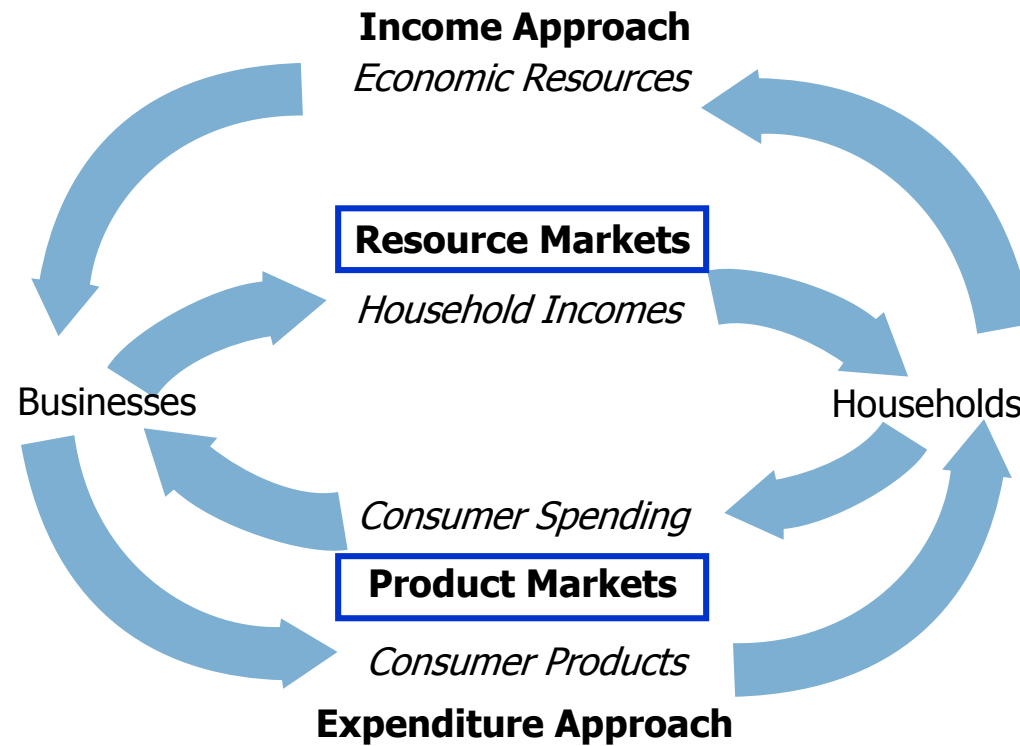
CARS – GDP AND FISCAL POLICY

- <https://www.youtube.com/watch?v=SYFYlaIH7KE>

MEASURING OUTPUT

- **Gross Domestic Product** is the most common economic indicator of a country's economic progress
- Represents the total market value of all final goods and services produced in a country in a given year (national income)
- There are two ways to measure national income
 - Calculate the value of what is produced over the year via what is called the **expenditure approach**
 - Measure the value of the income generated by production via the **income approach**

CIRCULAR FLOW IN A SIMPLE ECONOMY



THE EXPENDITURE APPROACH

- Calculates GDP as the market value of final output by adding up expenditures made on the final purchase of goods and services
- Is based on value added at each production stage to avoid double counting
- Excludes financial exchanges and second-hand purchases (they have already been counted)

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- Total expenditure is the sum of four broad categories
 - The overall formula used to calculate national income through expenditures is:

$$\mathbf{GDP = C + G + I + (X-M)}$$

CONSUMPTION EXPENDITURE (C)

- Includes expenditures on all goods and services produced and sold to final users of a product
- Largest component as it makes up approximately 60% of GDP.
- Broken down into 4 categories:
 - Durable goods – last a long time like cars and household appliances
 - Semi-durable goods – last for a reasonable amount of time like clothing
 - Non-durable goods – goods that are used quickly like food and gasoline
 - Services – haircut, eating out, etc.

INVESTMENT EXPENDITURE (I)

- Goods not for immediate consumption
- Includes purchases of assets intended to produce revenue (new equipment and machines)
- Varies between 15 – 25% of the GDP
- **Example:** Inventories, capital goods, warehouses and construction of new buildings including residential housing

GOVERNMENT EXPENDITURE (G)

- Includes current spending by all levels of government.
- Typically makes up 20% of GDP
- Wages for employees, office supplies, public capital goods (schools, highways, hospitals)

NET EXPORTS ($X - M$)

- Foreign trade had 2 categories:
 - Imports (M) are Canadian purchases of goods and services from the rest of the world
 - These are subtracted from GDP because the payment leaves the Canadian circular flow.
 - Exports (X) are purchases of Canadian goods by the rest of the world
- Represent a small fraction of GDP.

THE INCOME APPROACH

- Calculates GDP using the income generated in the economy over the year.
- $\text{GDP (Income Approach)} = W + R + I + P$
 - Wages (W): Salaries for labour service, incl. taxes, RRSP
 - Rent (R): Payment made for housing and commerce
 - Interest (I): Earned on bank deposits, loans, etc.
 - Profits (P): Dividends paid & retained earnings

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- The GDP in each case (expenditure and income) should be the same
 - Differences in calculation due to measurement error
 - An expenditure for one person = income for someone else

CANADA'S GROSS DOMESTIC PRODUCT (2010)

Income Approach (\$ billions)		Expenditure Approach (\$ billions)	
Wages and salaries	852.1	Personal consumption (C)	941.4
Corporate profits	190.6	Gross investment (I)	358.7
Interest Income	69.4	Government purchases (G)	352.7
Proprietors' incomes and rents	106.6	Net exports (X – M)	29.9
Indirect taxes	173.1	Statistical Discrepancy	-0.7
Depreciation	229.1		
Statistical discrepancy	0.5		
Gross Domestic Product	1621.5	Gross Domestic Product	1621.5

ECONOMIC GROWTH

- GDP is the most commonly used tool to measure the economic growth of a country
- How much a country's economy has grown from one year to the next.

$$\text{Real GDP growth rate} = [(\text{real GDP year 2} - \text{real GDP year 1}) / \text{real GDP year 1}] \times 100$$

ECONOMIC WELFARE

- Quality of life experienced by “average Canadian”
- To increase, we want economic progress
- GDP as a measure of economic welfare is limited

WHAT ARE THE LIMITATIONS?

1. Population Size

Comparing GDP from previous years can be tricky. If there was a significant growth in population, we must ask ourselves: has output per person actually grown? Example: If Canada's population grew by 4% and the GDP grew by 2% did we actually increase output? NO.





2. Non-market production is not measured

GDP only counts output that has a monetary value attached. For example, your dad may stay home to take care of you, but since this is unpaid labour it does not count in the overall value of GDP. Despite this, most would agree that this kind of contribution to the overall good of the society is very important.

3. The underground economy.

Any transaction that is unofficial and done without reporting transactions to the government is considered underground. For example: Illicit drugs are a huge market in Canada, yet no official means of tracking this exists. Many argue for the legalization of drugs based on the tax revenue and income that is lost by not tracking such items. Some statisticians believe that up to 20% of the GDP is unaccounted for because of underground activity.





4. Types of goods produced.

Some argue that the inclusion of all types of goods and services weakens the GDP as a measure of well being. For example, the number one export for some countries is armaments. Should these be allowed as measure OF WELL BEING? Or is there a larger moral concern perhaps?

5. Leisure.

If workers work many more hours, the GDP would definitely grow. On the other hand, a society where everyone works all the time would probably not be a pleasant society in which to live. Leisure time is considered valuable by many even if it often has no monetary value. Imagine lazing on the beach in Barbados 24/7 in a hut with more than enough coconuts and fish to get by versus working 24/7 in the freezing cold of Nunavut with enough ice and seals to get by.



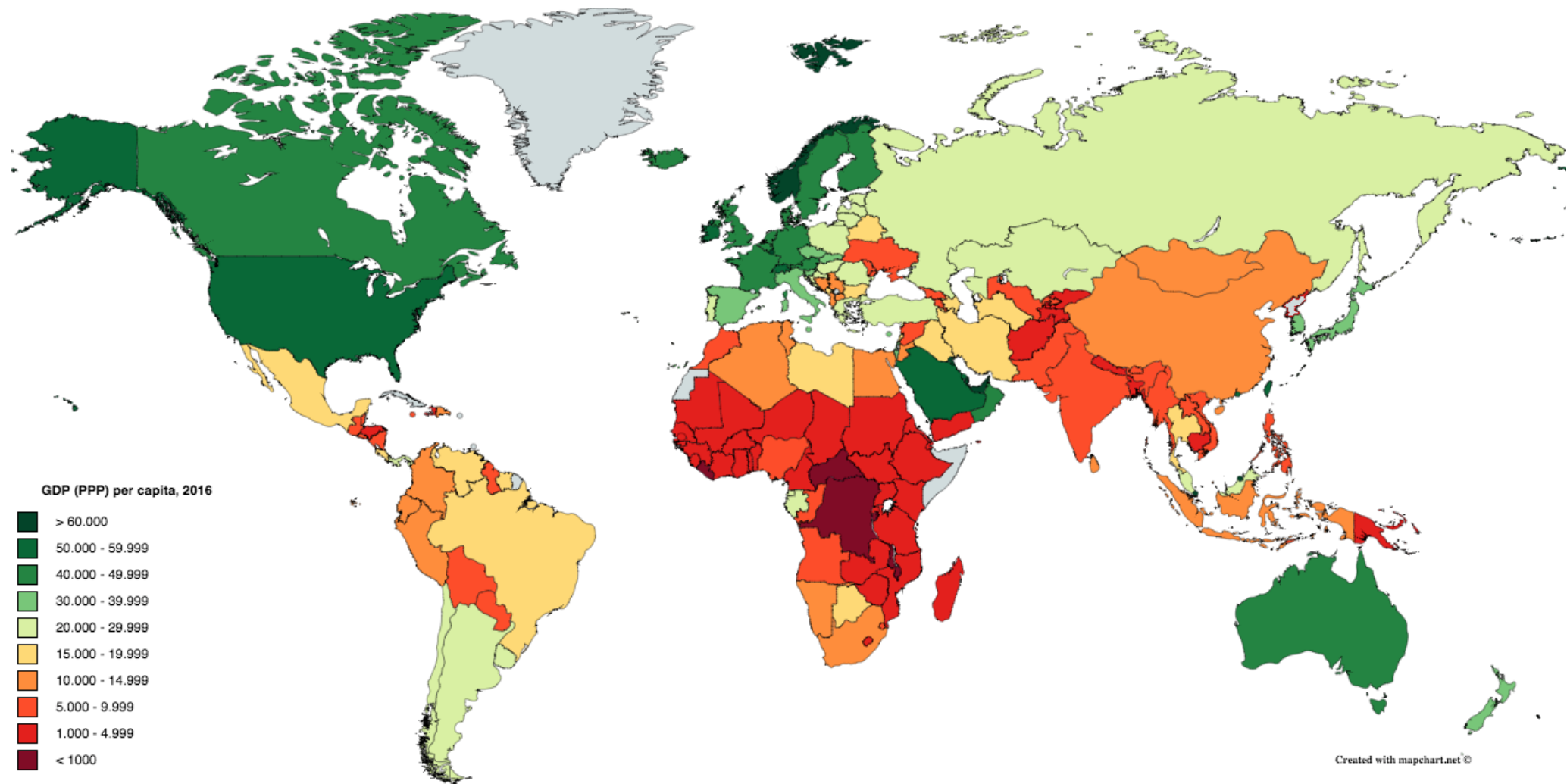


6. Environmental Degradation.

The GDP does not take into consideration the social costs and /or degradation of the environment. A country could have no environmental regulations yet have a very high GDP output. It begs the question, "is this country really well off?"

GDP AND LIVING STANDARDS

- Per capita GDP is GDP per person
 - = GDP divided by population.
- Per capita real GDP is used to compare living standards in a given country over time.
- Per capita GDPs for various countries are measured in a single currency (usually \$US)



International Monetary Fund (2017)^[5]

Rank ↕	Country/Territory ↕	Int\$ ↕
1	 Qatar	124,927
—	 Macau	114,430
2	 Luxembourg	109,192
3	 Singapore	90,531
4	 Brunei	76,743
5	 Ireland	72,632
6	 Norway	70,590
7	 Kuwait	69,669
8	 United Arab Emirates	68,245
9	 Switzerland	61,360
—	 Hong Kong	61,016
10	 San Marino	60,359
11	 United States	59,495
12	 Saudi Arabia	55,263
13	 Netherlands	53,582
14	 Iceland	52,150
15	 Bahrain	51,846
16	 Sweden	51,264
17	 Germany	50,206
18	 Australia	49,882
19	 Taiwan	49,827
20	 Denmark	49,613
21	 Austria	49,247
22	 Canada	48,141

MEASURING EMPLOYMENT

- The unemployment rate is the economic measure that receives the most attention in Canada.
- Unemployment Rate is the percentage of the labour force not working at any given time.

$$\text{Unemployment Rate} = \frac{\text{Number Unemployed}}{\text{Labour Force}} \times 100$$

UNEMPLOYMENT

- Unemployment is a major element in the management of any economy
- Anyone who is unemployed may feel that they are not contributing to the overall well-being of the society
- In Canada, the government becomes involved in these situations in order to try and help the unemployed

LABOUR FORCE SURVEY

- Statistics Canada calculates the unemployment rate.
- Conducts a monthly survey of 54k households about age and job market status
- Population divided in two main groups:
 - **Working age population** total number of people aged 15 and over
 - Working age split into **labour force** and **non labour force**
 - **Dependency load** – aged between 0 – 14 and 65+

- 
- Labour force is everyone employed and unemployed
 - Employed split into part time or full time
 - Part time split into voluntary part time or involuntary part time
 - Not in labour force means you aren't employed, and don't meet one of three criteria for unemployed:
 - Temporary layoff
 - Looked for work in past 4 weeks
 - Starting work within 4 weeks

DRAWBACKS OF THE OFFICIAL UNEMPLOYMENT RATE

- There are three main drawbacks of the official unemployment rate:
 - It does not include underemployed workers who are underutilized either as part-time workers or by working at jobs not appropriate to their skills or education.
 - It excludes discouraged workers who are unemployed and have given up looking for work.
 - It is based partly on dishonest responses.

TYPES OF UNEMPLOYMENT

Frictional unemployment:

- Due to being temporarily between jobs or looking for a first job.
- Unending flow of people in/out of labour force
- Unending process of job creation and destruction
- Natural unemployment periods are frictional unemployment



Structural unemployment:

- Due to a mismatch between people and jobs.
- Arises when changes in technology or international competition change skills needed to perform jobs or change locations of jobs
- Usually lasts longer than frictional unemployment.



Cyclical unemployment:

- Due to fluctuations in output and spending.
- Higher than normal unemployment at a business cycle trough and the lower than normal unemployment at a business peak
- Worker who is laid off because of an economic recession and gets rehired when expansion begins - cyclical unemployment



Seasonal unemployment:

- Due to the seasonal nature of some occupations and industries.

FULL EMPLOYMENT

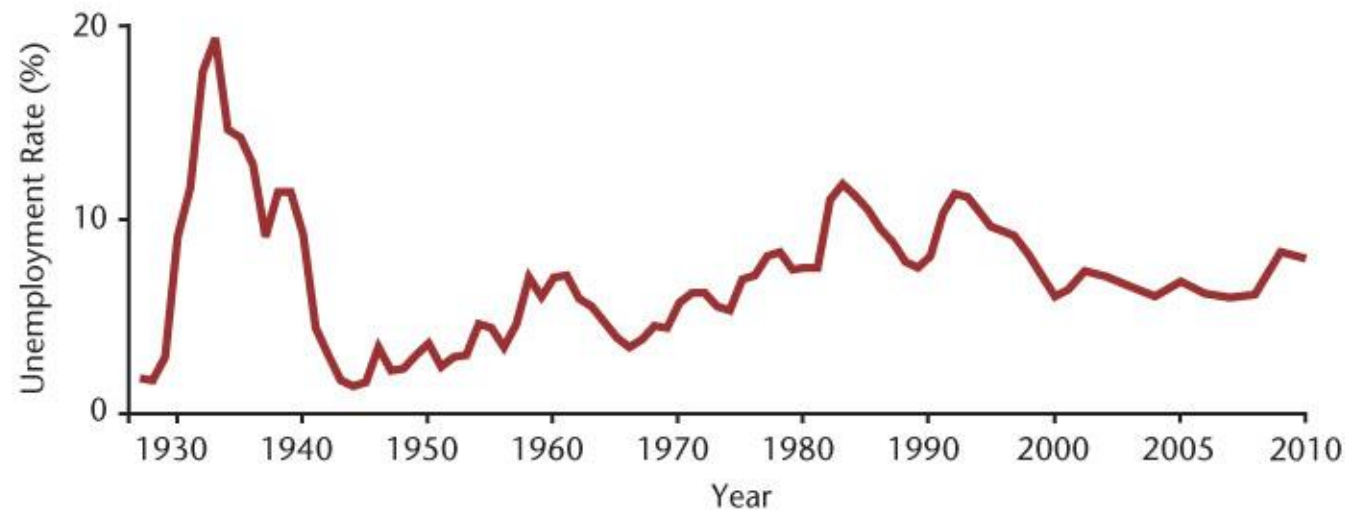
- Full employment is always the goal of any responsible fiscal policy.
- Is the highest reasonable expectation of employment for the economy as a whole.
- Is defined in terms of the Natural Unemployment Rate
 - Includes frictional and at least some structural unemployment.
- In Canada it is presently associated with an unemployment rate between 6% and 7%.

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- Natural unemployment influenced by:
 - Age Distribution of Population
 - Economy with young population has large number of job seekers and high levels of frictional UE
 - Aged population brings low frictional UE

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- Scale of Structural Change
 - Scale sometimes small
 - Sometimes, technological upheaval makes scale large
 - Real Wage Rate
 - Minimum wages and efficiency wage bring unemployment
 - Unemployment Benefits
 - Lower opportunity cost of job search and thus increase natural unemployment

THE UNEMPLOYMENT RATE

FIGURE 9.8 The Unemployment Rate



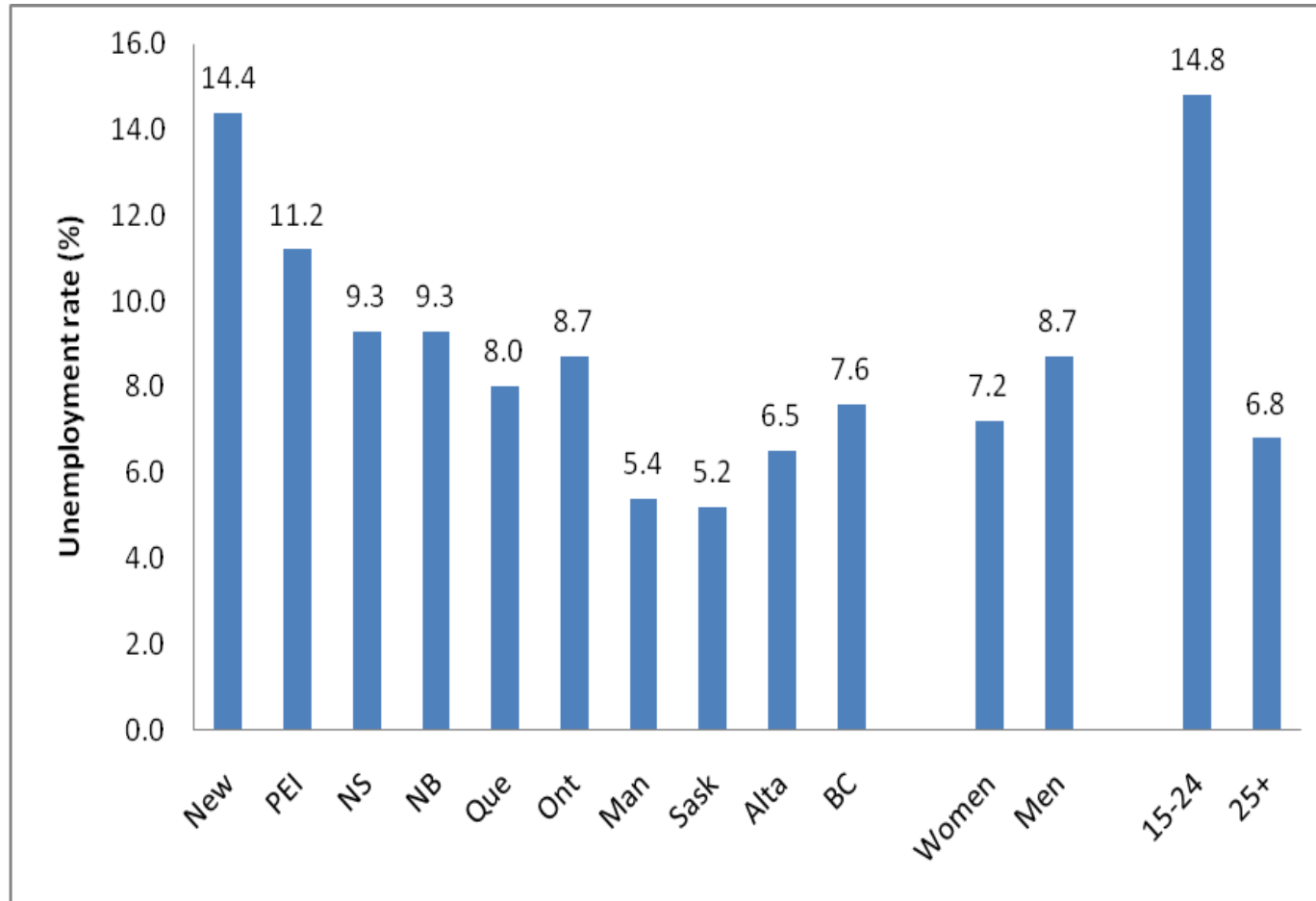
After rising significantly in the 1930s, the unemployment rate fell to 2 to 4 percent for much of the 1940s and 1950s. Since the late 1950s, the rate has gradually risen. Much of this increase can be attributed to a rise in natural unemployment.

Sources: Statistics Canada "Unemployment Rates by Province, Gender, and Age (2007)," adapted from the Statistics Canada Summary Table, <http://www40.statcan.gc.ca/l01/cst01/econ10-eng.htm>. Retrieved April 2, 2011.

THE RISE IN THE NATURAL UNEMPLOYMENT RATE

- In recent decades Canada's estimated natural unemployment rate rose because of several trends:
 - Structural change, with shrinking manufacturing and expanding services.
 - Past reforms to unemployment insurance.
 - Higher minimum wages in many provinces.

UNEMPLOYMENT RATES BY PROVINCE, GENDER AND AGE (2010)



THE COSTS OF UNEMPLOYMENT

- High unemployment hurts individuals and the Canadian economy as a whole.
- The cost of unemployment for the entire economy can be measured by the difference between actual GDP produced by the economy and the potential GDP that could be produced if the unemployment rate was not higher than the natural rate.

OKUN'S LAW

- Arthur Okun created a formula that is used to estimate the size of this gap.
- Okun's Law states that for every % point that the actual unemployment rate exceeds the natural unemployment rate, the GDP gap is 2%.

$$\text{GDP gap} = \text{actual GDP} \times \frac{(\text{unemployment rate} - \text{natural rate}) \times 2}{100}$$

100

MEASURING PRICE STABILITY

- **Inflation** is the persistent rise in the general level of prices.
- **Deflation** is the persistent fall in the general level of prices.
- The consumer price index (CPI):
 - Is the most common measure of inflation
 - Measure of average of prices paid by urban consumers for a fixed basket of consumer goods and services
 - Tells you value of money in pocket

WHY INFLATION/DEFLATION ARE PROBLEMS

- Redistributes income
 - Workers/employees may sign contracts that last for a year or more
 - Unexpected burst of inflation raises prices but not wages benefitting employers but not employees
 - Deflation, prices fall and wages stay the same benefiting consumers but not employers

- Redistributes Wealth

- Inflation, money borrower repays to a lender is less than money originally loaned
- Deflation is opposite

- Lowers Real GDP and Employment

- Unexpected inflation that raises firms' profits and brings rise in investment and a boom in production and employment
- Real GDP rises above potential GDP and unemployment falls below natural unemployment
- Situation is *temporary* as profitable investments dry up, spending falls, real GDP falls below potential GDP and unemployment rises

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- Diverts Resources from Production
 - Turns economy into casino and diverts resources from productive activities to forecasting inflation.
 - It can be more profitable to forecast inflations rather than invent or discover something.
 - **Hyperinflation:** Inflation rate of 50% a month or higher that grinds economy to a halt and causes society to collapse.

CONSTRUCTING THE CPI

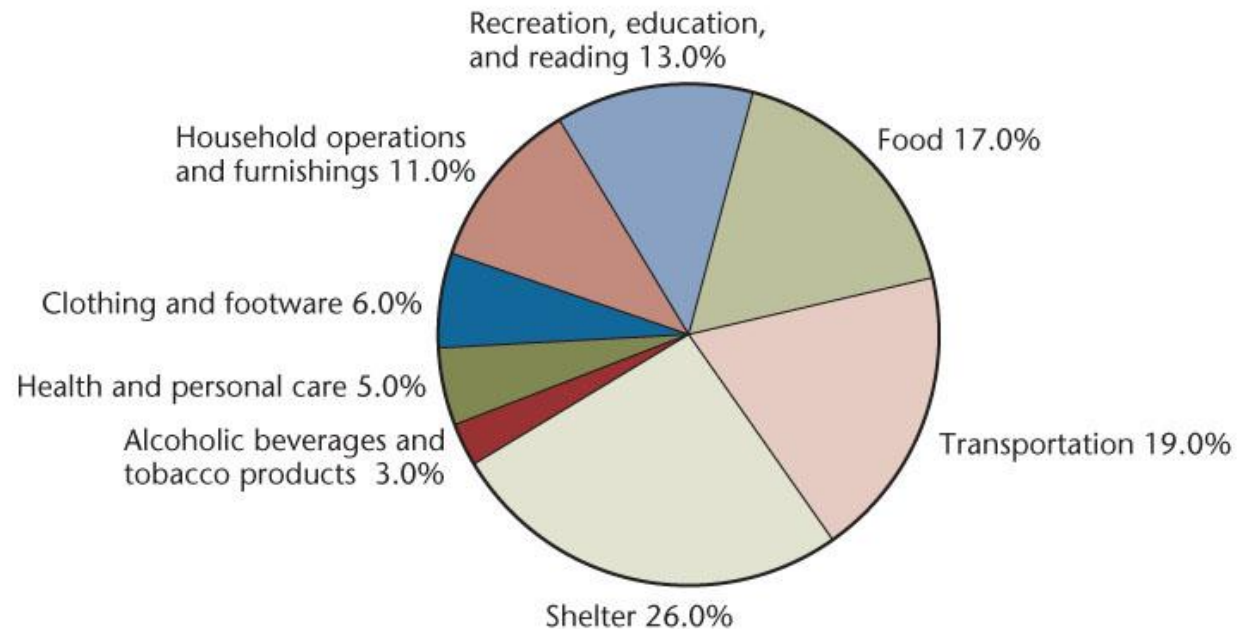
I. Selecting the CPI Basket

- Basket contains goods and services represented in the index, each weighted by relative importance
- Goal to make relative importance of items in the basket the same as that in the budget of an average urban household
 - Ex. People spend more on housing than bus rides, CPI places more weight on housing
- Statistics Canada conducts survey of consumer expenditures

CONSUMER PRICE INDEX WEIGHTS (2005)

FIGURE 9.2

Consumer Price Index Weights (2005)



According to Statistics Canada's 2005 survey, a typical urban household's expenditures had the above weights. As shown, shelter was the biggest expenditure, followed by transportation and food.

Source: Statistics Canada "Consumer Price Index Weights (2005)," adapted from the Statistics Canada Database (Definitions, data sources, and methods), Record No. 2301, http://www.statcan.gc.ca/imdb-bmdi/document/2301_D34_T9_V1_B.pdf. Retrieved May 31, 2011.



2. Conducting monthly price survey

- Each month, Stats Canada check prices of goods/services in CPI basket in major cities
- CPI aims to measure price *changes* and so the prices recorded each month refer to exactly same item
- If price of jelly beans has risen but so has number of jelly beans, stats employees must record all changes including packaging to isolate variables in price increase



3. Calculating the CPI

- Find cost of CPI basket at base period prices
- Find cost of CPI basket at current period prices
- Calculate CPI for base period and current period

$$\text{CPI} = \frac{\text{Cost of CPI basket at current period prices}}{\text{Cost of CPI basket at base period prices}}$$

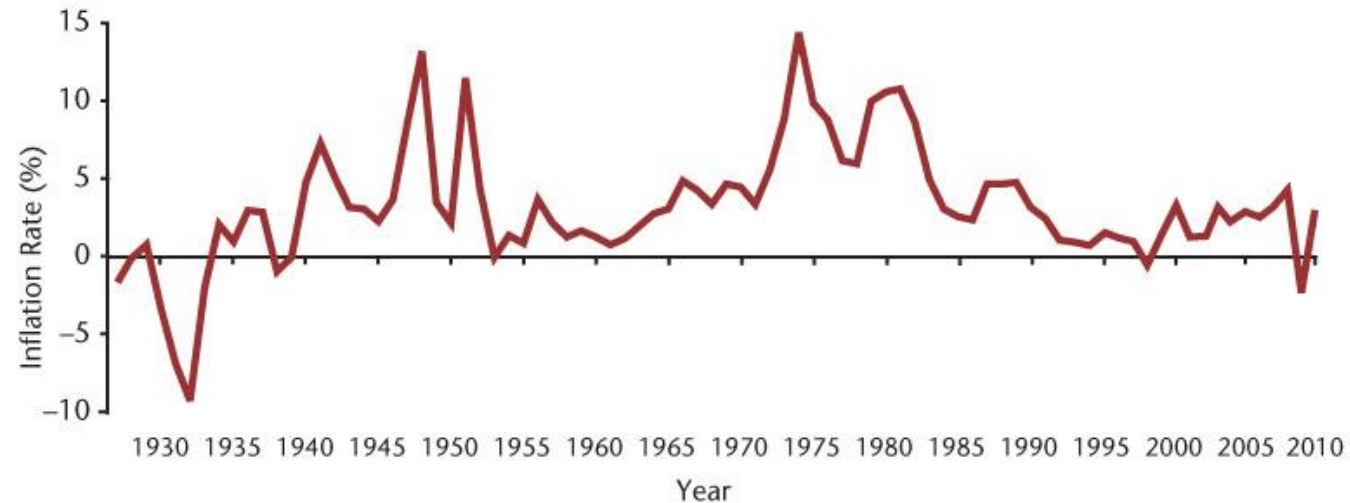
CALCULATING INFLATION USING CPI

- Inflation Rate is the annual percentage by which the CPI has risen.

$$\text{Inflation Rate} = \frac{(\text{CPI year 2} - \text{CPI year 1})}{\text{CPI year 1}} \times 100$$

THE INFLATION RATE

FIGURE 9.5 The Inflation Rate



The graph shows annual inflation rates as measured by changes in the GDP price deflator. While deflation occurred during the early 1930s, inflation has been the dominant trend ever since. Inflation was most pronounced after World War II, during the 1970s, and in the early 1980s. In the late 1980s and early 1990s, the inflation rate dropped significantly and it has remained low since then.

Sources: Statistics Canada "The Inflation Rate," adapted from the Statistics Canada publication, *Canadian Economic Observer: Historical Statistical Supplement*, 2001/02, Catalogue 11-210, Vol. 16, July 2002; Statistics Canada CANSIM II database, <http://cansim2.statcan.gc.ca>, Table 380-0056; for the 2007 to 2010 data: adapted from the Statistics Canada website, Summary Table <http://www40.statcan.gc.ca/l01/cst01/econ06-eng.htm>. Retrieved March 3, 2011.

LIMITATIONS OF THE CPI

I. Weighting of different categories

- Statistics Canada goes to great lengths to ensure that all categories represent the spending habits of the “typical” Canadian household
- However not every household’s spending habits reflect the index weightings of the CPI
 - Ex: Some households may not spend money on tobacco and spend an above average amount on housing. An increase in the CPI due to a price increase in tobacco does not really affect that household.



2. Family Size Definition

- Statistics Canada sets the family size of 4 members per household.
- All CPI calculations are based on this number, but many households do not have 4 members.
- As a result changes in the CPI may not reflect reality for many individuals in the economy.



3. Changing in spending habits

- It uses base year baskets that contain products that may no longer be purchased or that may have been updated.
- Statistics Canada tries to solve some of these problems by updating the spending patterns and revising the weight of items in the basket.

REAL GDP

- The existence of inflation brings up a problem when measuring GDP and its annual growth rate.
- It is necessary to use some tool to remove the effect of inflation when comparing year to year output effectively.
- Can use the:
 - GDP Deflator: Index of prices of all items included in GDP (used up to 2001)
 - Chained Price Index for Consumption: Index of prices of all items included in consumption expenditure to real consumption expenditure in GDP

NOMINAL VERSUS REAL GDP

- Nominal GDP
 - Known as Current dollar GDP
 - Total value of the output of the economy before the effect of price increases is removed.
- Real GDP:
 - Known as Constant dollar GDP
 - Total value of the output of the economy adjusted for price changes

$$\text{Real GDP} = \text{Nominal GDP} / \text{GDP deflator} \times 100$$

BACK TO THE FUTURE – NOMINAL VS REAL UNEMPLOYMENT, INFLATION

- <https://www.youtube.com/watch?v=3GTgniuxA50>