

MACRO ECONOMICS

What is Macroeconomics?

Macroeconomics is the study of the large economy as a whole. It is the study of the big picture.

- **Instead of analyzing one consumer, we analyze everyone.**
- **Instead of one business we study all businesses.**

Why study the whole economy?

- **The field of macroeconomics was born during the Great Depression.**
- **Government didn't understand how to fix a depressed economy with 25% unemployment.**
- **Macro was created to:**
 - 1. Measure the health of the whole economy.**
 - 2. Guide government policies to fix problems.**

Unit 2:
Macro Measures and
International Trade

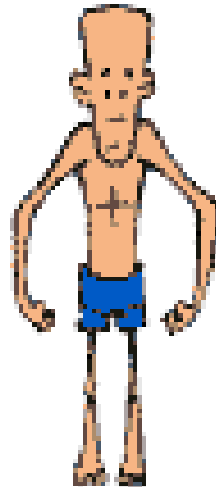
For all countries there are three major economic goals:

- 1. Promote Economic Growth**
- 2. Limit Unemployment**
- 3. Keep Prices Stable (Limit Inflation)**

In this unit we will analyze how each of these are measured.

Goal #1

Promote Economic Growth



How does a country measure economic growth?

How do we know how well the economy is doing?

- Economists collect statistics on production, income, investment, and savings.
- This is called national income accounting.

The most important measure of growth is GDP.

Gross Domestic Product (GDP) is the **dollar value** of all **final goods and services** produced within a country's borders in **one year**.

- **Dollar value**- GDP is measured in dollars.
- **Final Goods**-GDP does not include the value of intermediate goods. Intermediate goods are goods used in the production of final goods and services.
- **One Year**-GDP measures annual economic performance.

What does GDP tell us?

Just like calculating your own income, GDP measures how well the U.S. is doing financially.

How do you use GDP?

1. Compare to previous years (Is there growth?)
2. Compare policy changes (Did a new policy work?)
3. Compare to other countries (Are we better off?)

217	<u>Cook Islands</u>	\$ 183,200,000
218	<u>Tonga</u>	\$ 178,500,000
219	<u>Palau</u>	\$ 124,500,000
220	<u>Marshall Islands</u>	\$ 115,000,000
221	<u>Anguilla</u>	\$ 108,900,000
222	<u>Falkland Islands (Islas Malvinas)</u>	\$ 75,000,000
223	<u>Nauru</u>	\$ 60,000,000
224	<u>Wallis and Futuna</u>	\$ 60,000,000
225	<u>Saint Pierre and Miquelon</u>	\$ 48,300,000
226	<u>Montserrat</u>	\$ 29,000,000
227	<u>Saint Helena</u>	\$ 18,000,000
228	<u>Tuvalu</u>	\$ 14,940,000



How can you measure growth from year to year?

$$\% \text{ Change in GDP} = \frac{\text{Year 2} - \text{Year 1}}{\text{Year 1}} \times 100$$

Mordor's GDP in 2007 was \$4000

Mordor's GDP in 2008 was \$5000

What is the % Change in GDP?

Transylvania's GDP in 2007 was \$2,000

Transylvania's GDP in 2008 was \$2,100

What is the % Change in GDP?

What is NOT included in GDP?

1. Intermediate Goods

- **No Multiple Counting, Only Final Goods**
 - **EX: Price of finished car, not the radio, tire, etc.**

2. Nonproduction Transactions

- **Financial Transactions (nothing produced)**
 - **Ex: Stocks, bonds, Real estate**
- **Used Goods**
 - **Ex: Old cars, used clothes**

3. Non-Market (Illegal) Activities

- **Ex: Illegal drugs, unpaid work**

Calculating GDP

Two Ways of calculating GDP:

1. Expenditures Approach-Add up all the spending on final goods and services produced in a given year.

2. Income Approach-Add up all the income that resulted from selling all final goods and services produced in a given year.

Both ways generate the same amount since every dollar spent is a dollar of income.

Expenditures Approach

Four components of GDP:

1. Consumer Spending

Ex: \$5 Little Caesar's Pizza

2. Investments -When businesses put money back into their own business.

Ex: Machinery or tools

3. Government Spending

Ex: Bombs or tanks, *NOT social security*

4. Net Exports -Exports (X) – Imports (M)

Ex: Value of 3 Ford Focuses minus 2 Hondas

$$\mathbf{GDP = C + I + G + X_n}$$

Calculating GDP

Included or not Included in GDP?

For each situation, identify if it is included in GDP the identify the category C, I, G, or X_n

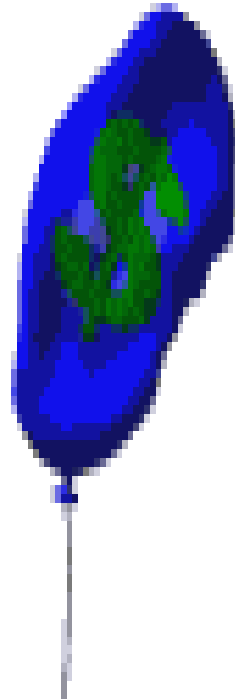
- 1. \$10.00 for movie tickets**
- 2. \$5M Increase in defense expenditures**
- 3. \$45 for used economics textbook**
- 4. Ford makes new \$2M factory**
- 5. \$20K Toyota made in Mexico**
- 6. \$10K Profit from selling stocks**
- 7. \$15K car made in US, sold in Canada**
- 8. \$10K Tuition to attend college**
- 9. \$120 Social Security payment to Bob**
- 10. Farmer purchases new \$100K tractor**

Included or not Included in GDP?

GDP=\$7,125,010

- 1. \$10.00 for movie tickets**
- 2. \$5M Increase in defense expenditures**
- X \$45 for used economics textbook**
- 4. Ford makes new \$2M factory**
- X \$20K Toyota made in Mexico**
- X \$10K Profit from selling stocks**
- 7. \$15K car made in US, sold in Canada**
- 8. \$10K Tuition to attend college**
- X \$120 Social Security payment to Bob**
- 10. Farmer purchases new \$100K tractor**

Nominal GDP vs. Real GDP



How can you figure out which is the most popular movie of all time?

What is the problem with this method?

Nominal Box Office Receipts

Rank	Title	Studio	Lifetime Gross
1	<i>Avatar</i>	20th Century Fox	\$749,710,176
2	<i>Titanic</i>	Paramount Pictures	\$600,788,188
3	<i>The Dark Knight</i>	Warner Bros.	\$533,345,358
4	<i>Star Wars Episode IV: A New Hope</i>	20th Century Fox	\$460,998,007
5	<i>Shrek 2</i>	DreamWorks	\$441,226,247
6	<i>E.T. the Extra-Terrestrial</i>	Universal Pictures	\$435,110,554
7	<i>Star Wars Episode I: The Phantom Menace</i>	20th Century Fox	\$431,088,301
8	<i>Pirates of the Caribbean: Dead Man's Chest</i>	Walt Disney Pictures	\$423,315,812
9	<i>Spider-Man</i>	Columbia Pictures	\$403,706,375
10	<i>Transformers: Revenge of the Fallen</i>	Paramount Pictures/DreamWorks	\$402,111,870
11	<i>Star Wars Episode III: Revenge of the Sith</i>	20th Century Fox	\$380,270,577
12	<i>Toy Story 3</i>	Walt Disney Pictures	\$379,529,000
13	<i>The Lord of the Rings: The Return of the King</i>	New Line Cinema	\$377,027,325
14	<i>Spider-Man 2</i>	Columbia Pictures	\$373,585,825
15	<i>The Passion of the Christ</i>	Newmarket Films	\$370,782,930

How can you figure out which is the most popular movie of all time?

Real Box Office Receipts (adjusted for inflation)

Rank	Title	Year
1	<i>Gone With The Wind</i>	1939
2	<i>Star Wars</i>	1977
3	<i>The Sound of Music</i>	1965
4	<i>E.T. the Extra-Terrestrial</i>	1982
5	<i>The Ten Commandments</i>	1956
6	<i>Titanic</i>	1997
7	<i>Jaws</i>	1975
8	<i>Doctor Zhivago</i>	1965
9	<i>The Exorcist</i>	1973
10	<i>Snow White and the Seven Dwarfs</i>	1937
11	<i>One Hundred and One Dalmatians</i>	1961
12	<i>Star Wars Episode V: The Empire Strikes Back</i>	1980
13	<i>Ben-Hur</i>	1959
14	<i>Avatar</i>	2009
15	<i>Star Wars Episode VI: Return of the Jedi</i>	1983
16	<i>The Sting</i>	1973
17	<i>Raiders of the Lost Ark</i>	1981
18	<i>Jurassic Park</i>	1993
19	<i>The Graduate</i>	1967

The Problem with GDP

If a country's GDP increased from **\$4 Billion** to **\$5 Billion** in one year, is the country experiencing economic growth?

Did the country definitely produce **25%** more products?

What is Inflation?

- **A rising general level of prices**

EX: If apples are the only thing being produced

Year 1: 10 apples at \$1 each; GDP = \$10

Year 2: 10 apples x \$1.25; GDP = \$12.50

GDP is rising, but country is worse off!

Real vs. Nominal GDP

Nominal GDP is GDP measured in current prices. It does not account for inflation from year to year.

Real GDP is GDP expressed in constant, or unchanging, dollars.

Real GDP adjusts for inflation.

REAL GDP IS THE BEST MEASURE OF ECONOMIC GROWTH!

Real vs. Nominal GDP Example

2008

10 cars at \$15,000 each = \$150,000

10 trucks at \$20,000 each = \$200,000

Nominal GDP = \$350,000

2009

10 cars at \$16,000 each = \$160,000

10 trucks at \$21,000 each = \$210,000

Nominal GDP = \$370,000

2009

10 cars at **\$15,000** each = \$150,000

10 trucks at **\$20,000** each = \$200,000

REAL GDP = \$350,000

The GDP in year 20048 shows the dollar value of all final goods produced.

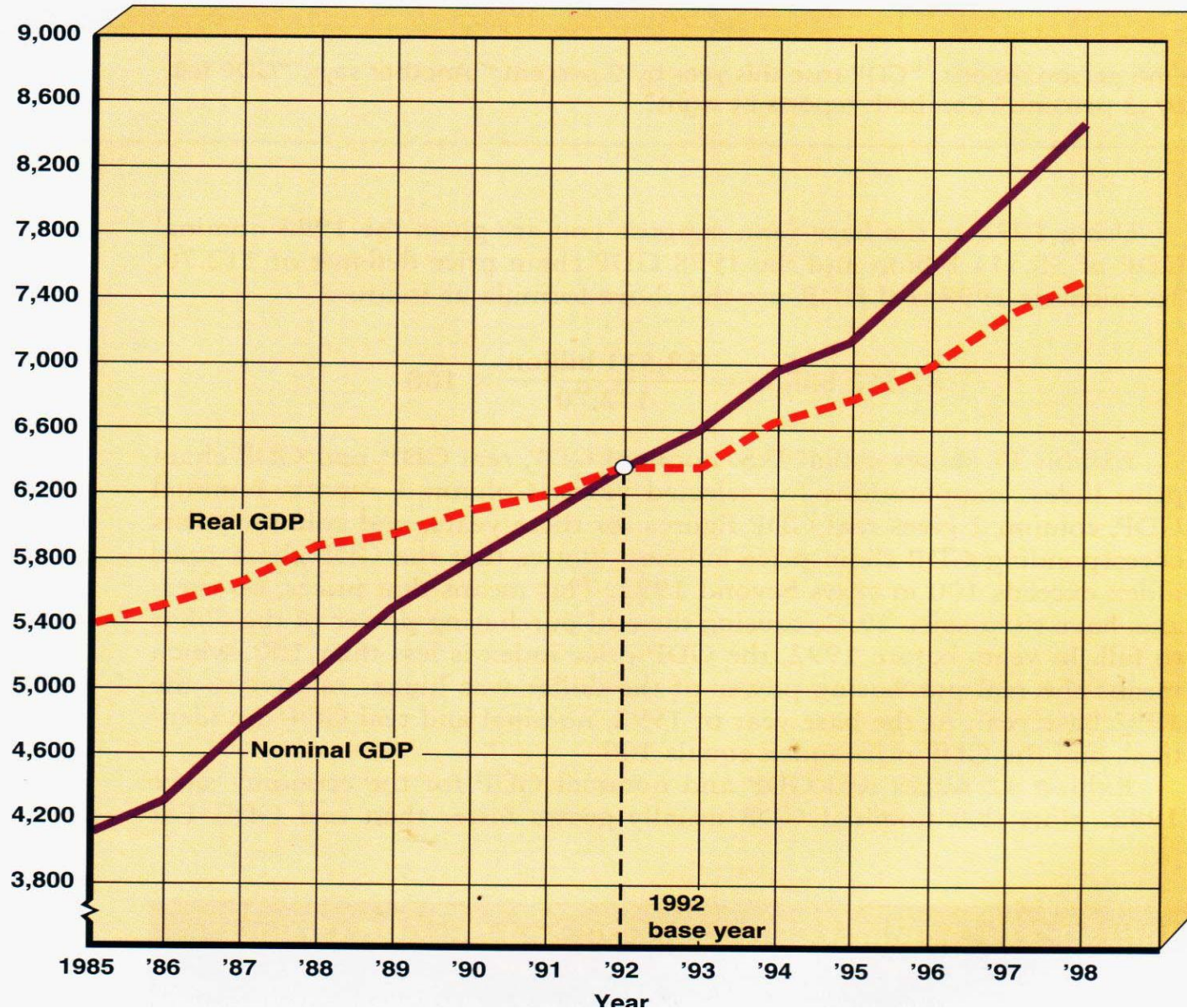
The nominal GDP in year 2009 is higher which suggests that the economy is improving.

But how much is the **REAL GDP**? How do you get it?

Use 2008 Prices.

The Real GDP for 2009 is the same as 2008 after we adjust for inflation.

Real GDP “deflates” nominal GDP by adjusting for inflation in terms of a base year prices.



Does GDP accurately measure standard of living?

Standard of living (or quality of life) can be measured, in part, by how well the economy is doing...

But it needs to be adjusted to reflect the size of the nation's population.

Real GDP per capita (per person)

- **Real GDP per capita** is real GDP divided by the total population. It identifies on average how many products each person makes.

Real GDP per capita is the best measure of a nation's standard of living.

List the top 5 most populated countries

Rank	Country	Population
1	<u>World</u>	6,602,224,175
2	<u>China</u>	1,321,851,888
3	<u>India</u>	1,129,866,154
4	<u>European Union</u>	490,426,060
5	<u>United States</u>	301,139,947
6	<u>Indonesia</u>	234,693,997
7	<u>Brazil</u>	190,010,647
8	<u>Pakistan</u>	164,741,924
9	<u>Bangladesh</u>	150,448,339
10	<u>Russia</u>	141,377,752

GDP Per Capita

Rank	Country	GDP - per capita (PPP)
1	<u>Luxembourg</u>	\$ 80,800
2	<u>Qatar</u>	\$ 75,900
3	<u>Bermuda</u>	\$ 69,900
4	<u>Jersey</u>	\$ 57,000
5	<u>Norway</u>	\$ 55,600
6	<u>Kuwait</u>	\$ 55,300
7	<u>United Arab Emirates</u>	\$ 55,200
8	<u>Singapore</u>	\$ 48,900
9	<u>United States</u>	\$ 46,000
10	<u>Ireland</u>	\$ 45,600
11	<u>Guernsey</u>	\$ 44,600
12	<u>Equatorial Guinea</u>	\$ 44,100
13	<u>Cayman Islands</u>	\$ 43,800

Why do some countries have higher GDPs than others?

Productivity (TECHN)

1. Technology

2. Economic System

Example#1: Capitalist countries have historically had more economic growth.

- Capital (like robots) can produce more than people
- Countries with more capital, can produce more products than countries without a lot of capital.

3. Capital

Ex: Capital stock is machinery, tools, and man-made resources.

Example#1: India has over a billion people (human resources) but relatively few capital resources and therefore a lower GDP than the U.S.

Example#2: Japan has few natural resources but a high GDP

4. Human Capital (Knowledge)

5. Natural Resources

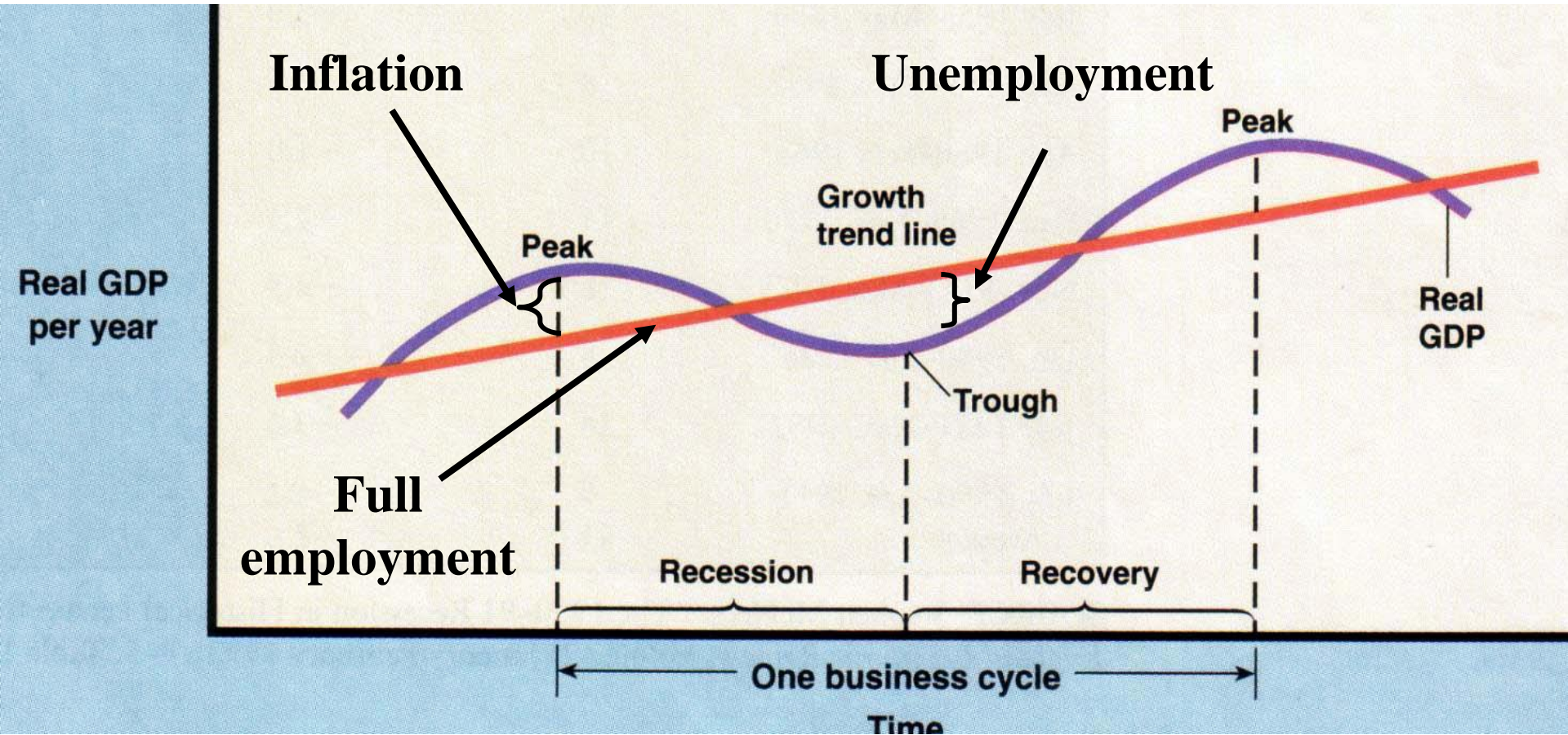
Ex: Syria has a lower GDP because it is mostly desert.

THE BUSINESS CYCLE



THE BUSINESS CYCLE

The national economy fluctuates resulting in periods of boom and bust.



A Recession is 6 month period of decline in output, income, employment, and trade. (If really bad...then depression)

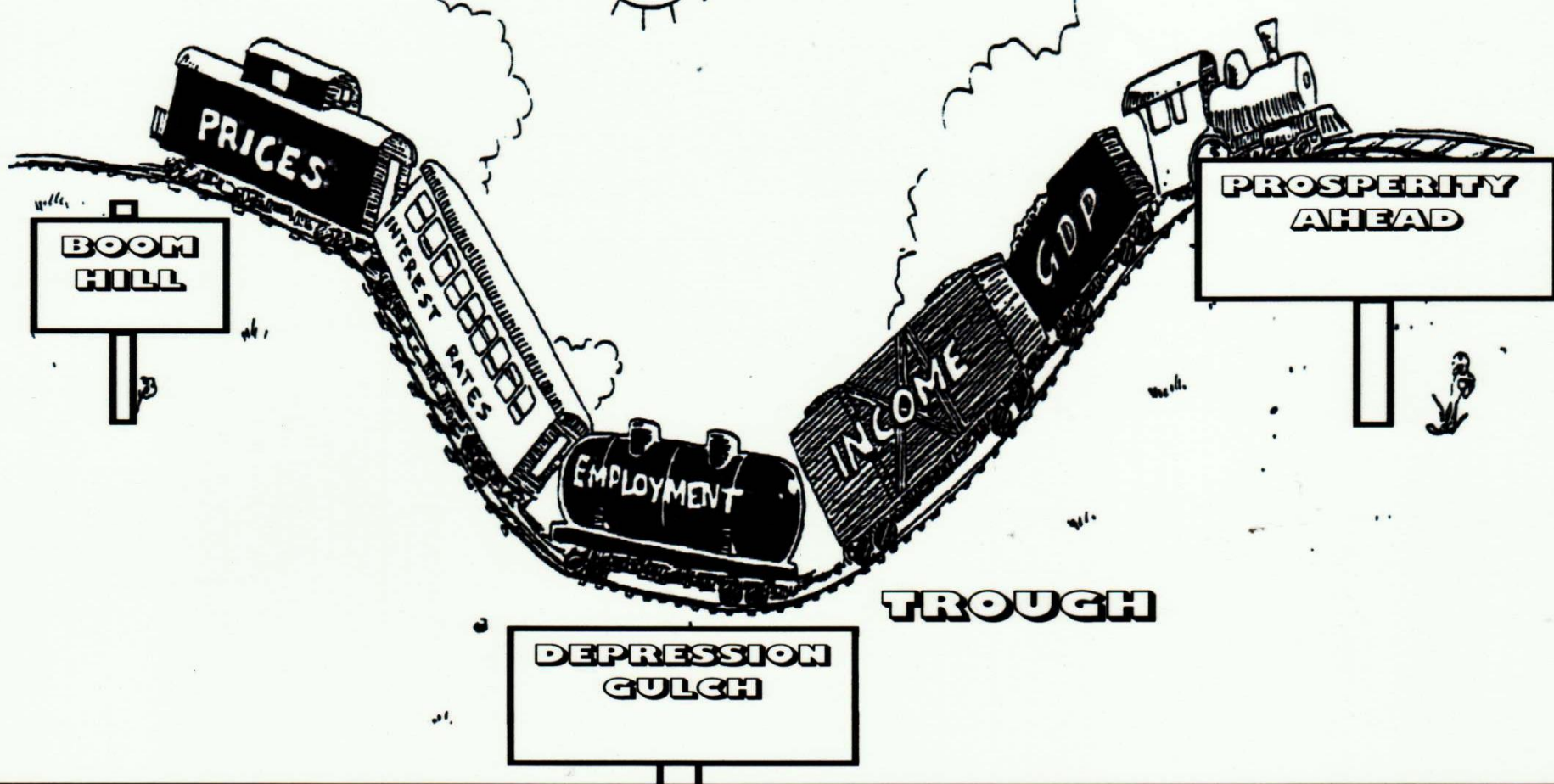
The Business Cycle

Why does the economy fluctuate?

- **Retailer and Producers send misleading information about consumer demand.**
- **Advances in tech, productivity, or resources.**
- **Outside influences (wars, supply shocks, panic).**

Who cares?

- **Macroeconomics measures these fluctuations and guides policies to keep the economy stable.**
- **The government has the responsibility to:**
 - **Promote long-term growth.**
 - **Prevent unemployment (resulting from a bust).**
 - **Prevent inflation (resulting from a boom).**



Characteristics of Expansions and Recessions

Expansions

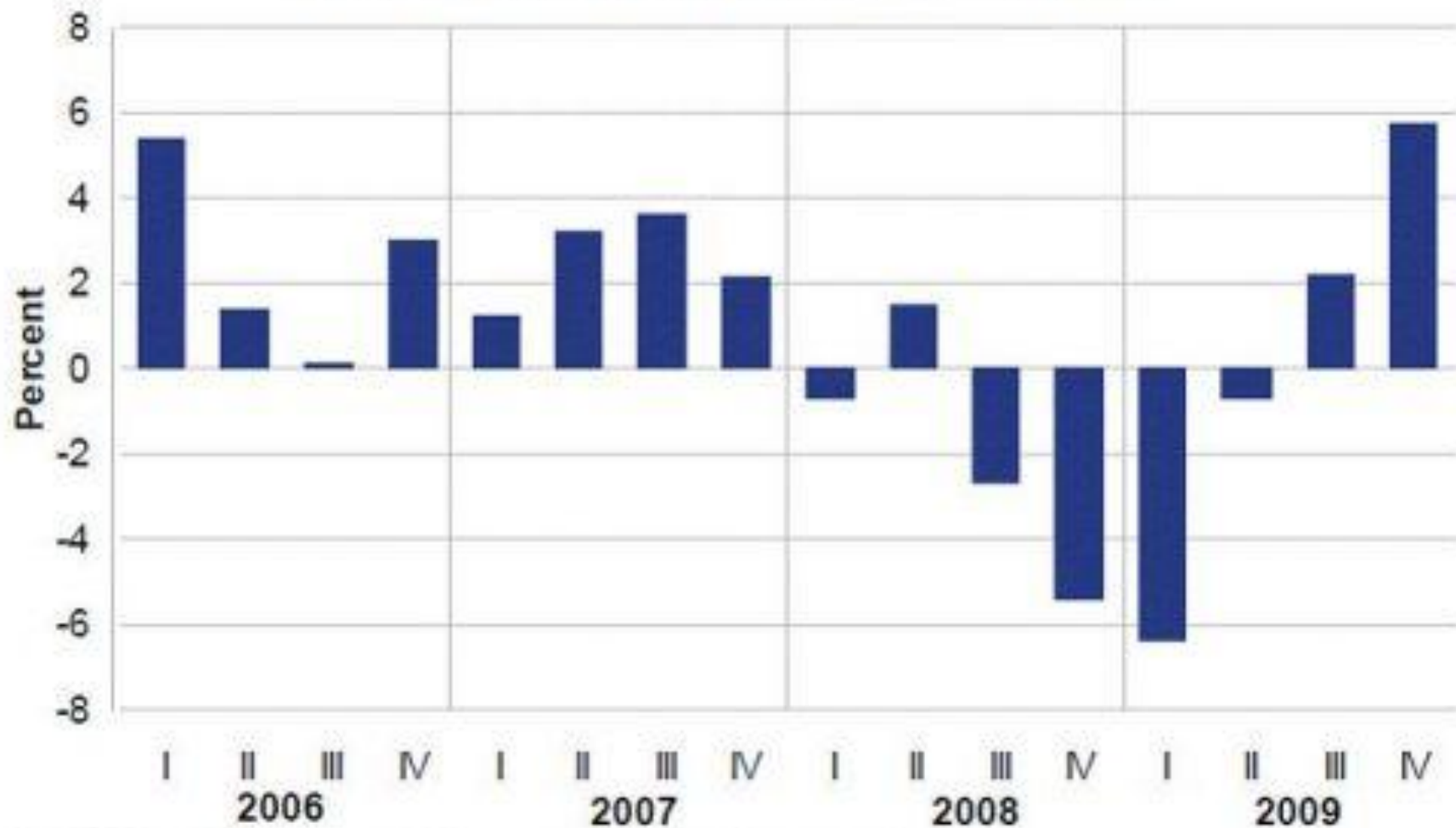
1. Less unemployment
2. Increase in real GDP
3. Rapid job growth
4. Increasing interest rates
5. Increasing prices
6. Fewer social problems
[alcoholism, domestic violence, divorce, and suicides]

Recessions

1. More unemployment
2. Decrease in Real GDP
3. Reduced job growth
4. Lower interest rates
5. Decreasing prices
6. More social problems
[alcoholism, domestic violence, divorce, and suicides]



Quarter-to-Quarter Growth in Real GDP



Real GDP growth is measured at seasonally adjusted annual rates.

What is Economic Growth?

1. An increase in real GDP over time
2. An increase in real GDP per capita over time (usually used to determine standard of living)

Why is economic growth the goal of every society?

- Provides better goods and services
- Increases wages and standard of living
- Allows more leisure time
- Economy can better meet wants

Goal #2

Limit Unemployment



What is Unemployment?

The Unemployment rate

The percent of people in the labor force who want a job but are not working.

$$\text{Unemployment rate} = \frac{\# \text{ unemployed}}{\# \text{ in labor force}} \times 100$$

Who is in the Labor Force?

- Above 16 years old
- Able and willing to work
- Not institutionalized (jails, hospitals)
- Not in military, in school full time, or retired

Why is a stay at home mom not unemployed?

Three Types of Unemployment



3 Types of Unemployment

#1. Frictional Unemployment

- “Temporarily unemployed” or being between jobs.
- Individuals are qualified workers with transferable skills but they aren't working.

Examples:

- High school or college graduates looking for jobs.
- Individuals that were fired and are looking for a better job.



You're
Fired!

3 Types of Unemployment

Seasonal Unemployment

- This is a specific type of frictional unemployment which is due to time of year and the nature of the job.
- These jobs will come back



Examples:

- Professional Santa Clause Impersonators
- Construction workers in Michigan



3 Types of Unemployment

#2. Structural Unemployment

- Changes in the structure of the labor force make some skills obsolete.
- Workers DO NOT have transferable skills and these jobs will never come back.
- Workers must learn new skills to get a job.
- The permanent loss of these jobs is called “creative destruction.” (Why?)

Examples:

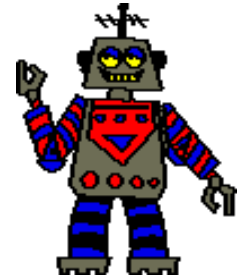
- VCR repairmen
- Carriage makers



3 Types of Unemployment

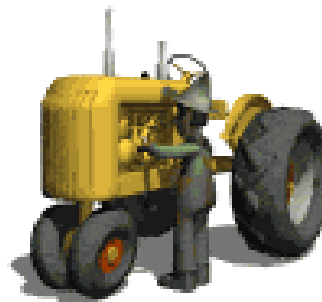
Technological Unemployment

• Type of structural unemployment where automation and machinery replace workers causing unemployment



Examples:

- Auto assemblers fired as robots take over production
- Producers of Capital Goods (tractors) fire assemblers



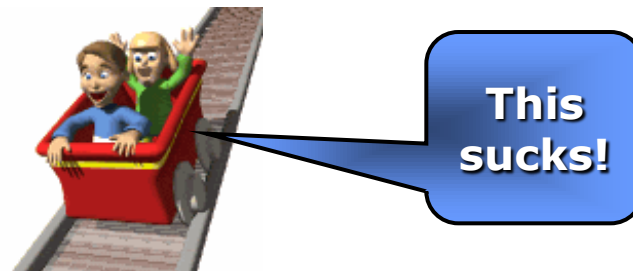
3 Types of Unemployment

#3 Cyclical Unemployment

- Unemployment that results from economic downturns (recessions).
- As demand for goods and services falls, demand for labor falls and workers are fired.

Examples:

- Steel workers laid off during recessions.
- Restaurant owners fire waiters after months of poor sales due to recession.



The Natural Rate and Full Employment

Two of the three types of unemployment are unavoidable:

- Frictional unemployment
- Structural unemployment
- Together they make up the **natural rate of unemployment (NRU)**.

We are at full employment if we have only the natural rate of unemployment.

• This is the normal amount of unemployment that we **SHOULD** have.

- **The number of jobs seekers equals the number of jobs vacancies.**

The Natural Rate an Full Employment

In other words...

Full employment means NO Cyclical unemployment!

Economists generally agree that an unemployment rate of around 4 to 6 percent is normal.

4-6% Unemployment = Full Employment

Currently the U.S. is at _____%

California is at _____%

Criticisms of the Unemployment Rate

What is wrong with the unemployment rate?

It can misdiagnose the actual unemployment rate because of the following:

Disgruntled job seekers-

- Some people are no longer looking for a job because they have given up.

Part-Time Workers-

- Someone who wants more shifts but can't get them is still considered employed.

Race/Age Inequalities-

- Hispanics – 5.8% for January
- African American- 8.9% for January
- Teenagers- 15.3% for January

Illegal Labor-

- Many people work under the table.

Goal #3

LIMIT INFLATION



Country and Time-
Zimbabwe, 2008
Annual Inflation Rate-
79,600,000,000%
Time for Prices to Double-
24.7 hours

PRICES

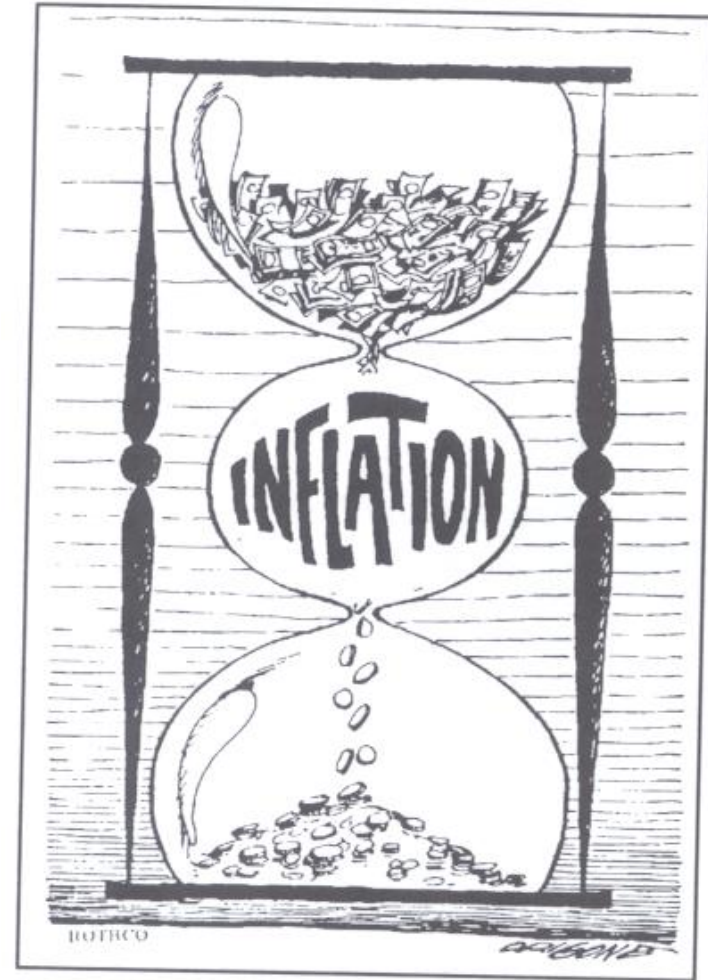
What is Inflation?

Inflation is rising general level of prices

Inflation reduces the “purchasing power” of money

Examples:

- **It takes \$2 to buy what \$1 bought in 1982**
- **It takes \$6 to buy what \$1 bought in 1961**
- **When inflation occurs, each dollar of income will buy fewer goods than before.**

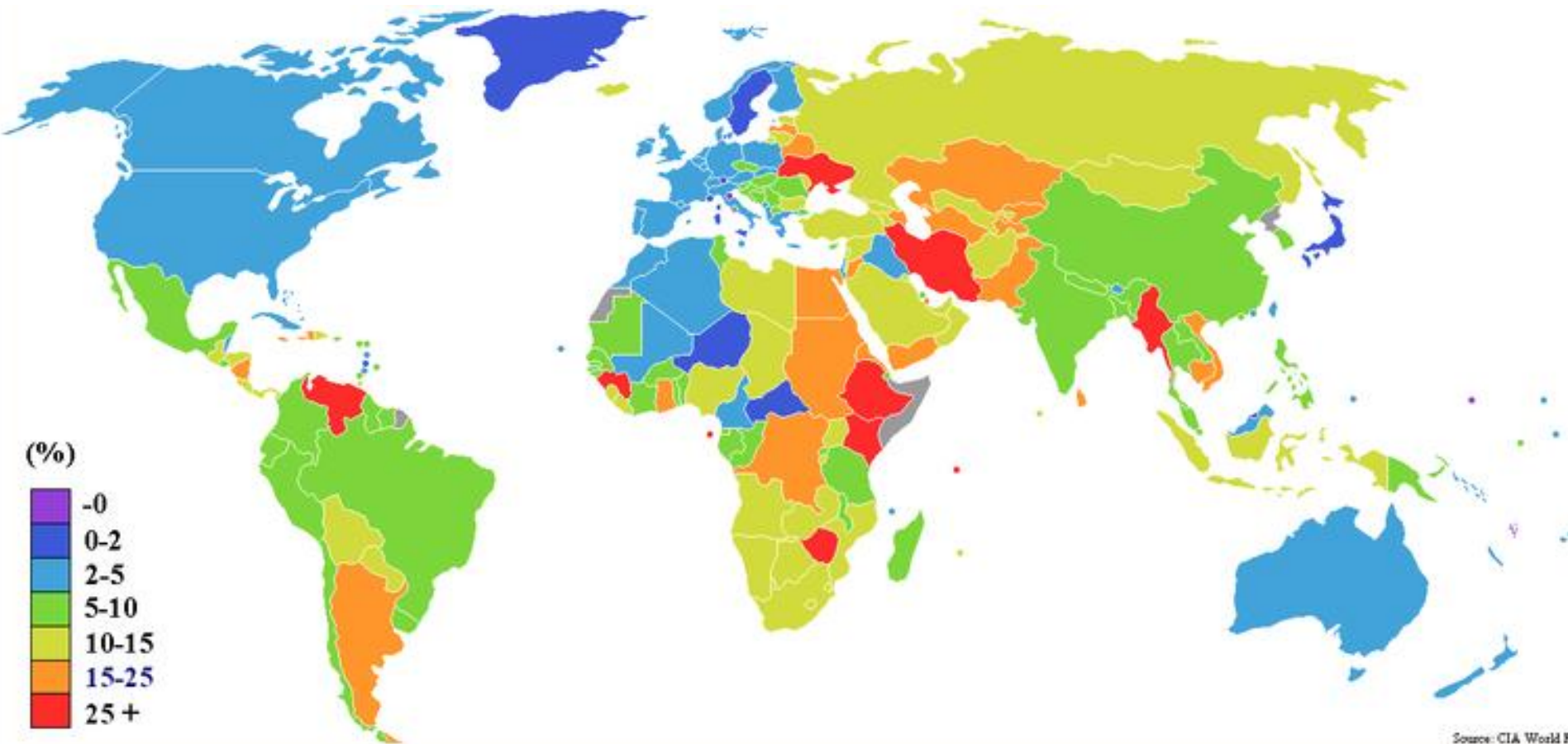


How is Inflation measured?

The government tracks the prices of the same goods and services each year.

- This “**market basket**” is made up of about 300 commonly purchased goods
- **The Inflation Rate**-% change in prices in 1 year
- They also compare changes in prices to a given base year (usually 1982)
- Prices of subsequent years are then expressed as a percentage of the base year
- **Examples:**
 - 2005 inflation rate was 3.4%
 - U.S. prices have increase 98.3% since 1982 (base year).
 - The inflation rate in Bolivia in 1985 was 50,000%
 - **This is called Hyperinflation**
 - **A \$25 meal today would cost \$12,525 a year later**

World Inflation Rates



Is Inflation Good or Bad?

Identify which people are helped and which are hurt by unanticipated inflation?

- 1. A man who lent out \$500 to his friend in 1960 and is still waiting to be paid back.**
- 2. A tenant who is charged \$850 rent each year.**
- 3. An elderly couple living off fixed retirement payments of \$2000 a month**
- 4. A man that borrowed \$1,000 in 1995 and paid it back in 2006**
- 5. A women who saved a paycheck from 1950 by putting it under her mattress**

Make a T-Chart

Hurt by Inflation

- **Lenders-People who lend money (at fixed interest rates)**
- **People with fixed incomes**
- **Savers**

Helped by Inflation

- **Debtors-People who borrow money**
- **A business where the price of the product increases faster than the price of resources**

Cost-of-Living-Adjustment (COLA)

**Some works have salaries that mirror inflation.
They negotiated wages that rise with inflation**

Measuring Inflation

Consumer Price Index (CPI)

Consumer Price Index (CPI)

The most commonly used measurement inflation for consumers is the Consumer Price Index

Here is how it works:

- The base year is given an index of 100
- To compare, each year is given an index # as well

$$\text{CPI} = \frac{\text{Price of market basket}}{\text{Price of market basket in base year}} \times 100$$

1997 Market Basket: Movie is \$6 & Pizza is \$14
Total = \$20 (Index of Base Year = 100)

2009 Market Basket: Movie is \$8 & Pizza is \$17
Total = \$25 (Index of 125)

- This means inflation increased 25% b/w '97 & '09
- Items that cost \$100 in '97 cost \$125 in '09

CPI vs. GDP Deflator

The GDP deflator measures the prices of all goods produced, whereas the CPI measures prices of only the goods and services bought by consumers.

An increase in the price of goods bought by firms or the government will show up in the GDP deflator but not in the CPI.

The GDP deflator includes only those goods and services produced domestically. Imported goods are not a part of GDP and therefore don't show up in the GDP deflator.

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

If the nominal GDP in '09 was 25 and the real GDP (compared to a base year) was 20 how much is the GDP Deflator?

Problems with the CPI

- 1. Substitution Bias-** As prices increase for the fixed market basket, consumers buy less of these products and more substitutes that may not be part of the market basket. **(Result: CPI may be higher than what consumers are really paying)**
- 2. New Products-** The CPI market basket may not include the newest consumer products. **(Result: CPI measures prices but not the increase in choices)**
- 3. Product Quality-** The CPI ignores both improvements and decline in product quality. **(Result: CPI may suggest that prices stay the same though the economic well being has improved significantly)**

Calculating Nominal GDP, Real GDP, and Inflation

Calculating CPI

Year	Units of Output	Price Per Unit	Nominal, GDP	Real, GDP	CPI/ GDP Deflator (Year 1 as Base Year)	Inflation Rate
1	10	\$ 4				
2	10	5				
3	15	6				
4	20	8				
5	25	4				

Make year one the base year

$$\text{CPI} = \frac{\text{Price of market basket in the particular year}}{\text{Price of the same market basket in base year}} \times 100$$

Calculating CPI

Year	Units of Output	Price Per Unit	Nominal, GDP	Real, GDP	CPI or GDP Deflator (Year 1 as Base Year)	Inflation Rate
1	10	\$ 4	\$40	\$40	100	N/A
2	10	5	50	40	125	25%
3	15	6	90	60	150	20%
4	20	8	160	80	200	33.33%
5	25	4	100	100	100	-50%

Inflation Rate

$$\% \text{ Change in Prices} = \frac{\text{Year 2} - \text{Year 1}}{\text{Year 1}} \times 100$$

Calculating GDP Deflator

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

$$\text{Nominal GDP} = \frac{\text{Deflator (Real GDP)}}{100}$$

Calculations

- 1. In an economy, Real GDP (base year = 1996) is \$100 billion and the Nominal GDP is \$150 billion. Calculate the GDP deflator.**
- 2. In an economy, Real GDP (base year = 1996) is \$125 billion and the Nominal GDP is \$150 billion. Calculate the GDP deflator.**
- 3. In an economy, Real GDP for year 2002 (base year = 1996) is \$200 billion and the GDP deflator 2002 (base year = 1996) is 120. Calculate the Nominal GDP for 2002.**
- 4. In an economy, Nominal GDP for year 2005 (base year = 1996) is \$60 billion and the GDP deflator 2005 (base year = 1996) is 120. Calculate the Real GDP for 2005.**

Review

- 1. Identify the 3 goals of all economies**
- 2. Define Natural Rate of Unemployment**
- 3. Define inflation rate**
- 4. What is a market basket?**
- 5. Explain the difference between nominal and real interest rates**
- 6. How do you calculate CPI?**
- 7. What does a CPI of 130 mean?**
- 8. Who is helped and hurt by inflation?**
- 9. Why did Bolivia experience hyperinflation?**
- 10. List 10 old-school Nintendo games**

Practice

Year	Units of Output	Price Per Unit	Nominal, GDP	Real, GDP	Consumer Price Index (Year 3 as Base Year)
1	5	\$ 6	\$30	\$50	60
2	10	8	80	100	80
3	20	10	200	200	100
4	40	12	480	400	120
5	50	14	700	500	140

Make year three the base year

$$\text{CPI} = \frac{\text{Price of market basket in the particular year}}{\text{Price of the same market basket in base year}} \times 100$$



Three Causes of Inflation

- 1. If everyone suddenly had a million dollars, what would happen?**
- 2. What two things cause prices to increase? Use Supply and Demand**

3 Causes of Inflation

1. The Government Prints TOO MUCH Money (The Quantity Theory)

- Governments that keep printing money to pay debts end up with hyperinflation.
- There are more “rich” people but the same amount of products.
- Result: Banks refuse to lend and GDP falls

Examples:

- Bolivia, Peru, Brazil
- Germany after WWI



What would happen if the government decided to pay off the \$13 Trillion national debt all at once?



3 Causes of Inflation

2. DEMAND-PULL INFLATION

“Too many dollars chasing too few goods”

DEMAND PULLS UP PRICES!!!

- Demand increases but supply stays the same. What is the result?
- A Shortage driving prices up
- An overheated economy with excessive spending but same amount of goods.

3 Causes of Inflation

3. COST-PUSH INFLATION

Higher production costs increase prices

A negative supply shock increases the costs of production and forces producers to increase prices.

Examples:

- **Hurricane Katrina destroyed oil refineries and causes gas prices to go up. Companies that use gas increase their prices.**



Cost-Push Inflation



"THIS NEW TAX PLAN SOUNDS PRETTY GOOD... WE GET A 9% CUT AND BUSINESS PICKS UP THE BURDEN...."

The Wage-Price Spiral

A Perpetual Process:

1. Workers demand raises
2. Owners increase prices to pay for raises
3. High prices cause workers to demand higher raises
4. Owners increase prices to pay for higher raises
5. High prices cause workers to demand higher raises
6. Owners increase prices to pay for higher raises

