

# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## CHAPTER 8 LECTURE - UNEMPLOYMENT AND INFLATION



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## WHAT YOU WILL LEARN IN THIS CHAPTER

- How is unemployment measured and how is the unemployment rate calculated?
- What is the significance of the unemployment rate for the economy?
- What is the relationship between the unemployment rate and economic growth?
- What factors determine the natural rate of unemployment?
- What are the economic costs of inflation?
- How do inflation and deflation create winners and losers?
- Why do policy makers try to maintain a stable rate of inflation?

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## EMPLOYMENT AND UNEMPLOYMENT

- Why Unemployment Is a Problem
  - Unemployment results in
- Lost incomes and production
- Lost human capital
  - The loss of income is devastating for those who bear it. Employment benefits create a safety net but don't fully replace lost wages, and not everyone receives benefits.
  - Prolonged unemployment permanently damages a person's job prospects by destroying human capital.

<http://www.bls.gov/eag/eag.us.htm>

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## EMPLOYMENT AND UNEMPLOYMENT

The working-age population is divided into two groups:

1. People in the labor force
2. People not in the labor force

The **labor force** is the sum of employed and unemployed workers.

To be counted as unemployed, a person must be in one of the following three categories:

1. Without work but has made specific efforts to find a job within the previous four weeks
2. Waiting to be called back to a job from which he or she has been laid off
3. Waiting to start a new job within 30 days

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## DEFINING UNEMPLOYMENT

- **Measuring the labor force participation rate:** The % of the adult (16+) noninstitutionalized civilian population who are working or actively looking for work

$$\text{Labor force participation rate} = \frac{\text{Labor force}}{\text{Population age 16 and older}} \times 100$$

- **Measuring unemployment:** The *unemployment rate* is the percent of the labor force without a job

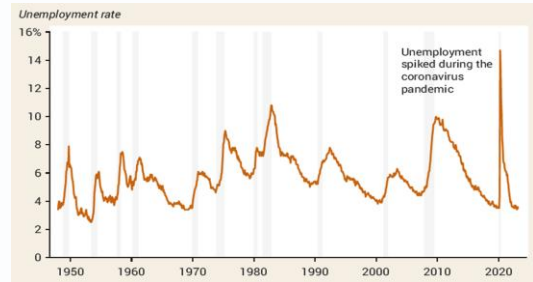
$$\text{Unemployment rate} = \frac{\text{Number of unemployed workers}}{\text{Labor force}} \times 100$$

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## THE U.S. UNEMPLOYMENT RATE, 1948-2023

- *Unemployment always rises during recessions and usually (but not always) falls during periods of economic expansion.*



<http://www.bls.gov/eag/eag.us.htm>

<https://www.imf.org/external/datamapper/LUR@WEO/OEMDC/ADVEC/WEO.WORLD>

<https://www.statista.com/statistics/808890/unemployment-rate-in-qatar/>

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## PROBLEMS WITH UNEMPLOYMENT STATISTICS

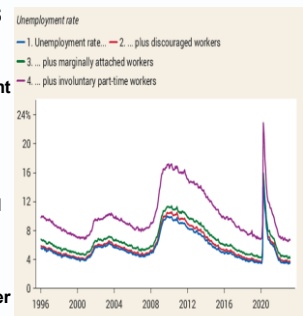
- **Discouraged workers:** nonworking people who have given up looking for work for the time being; not considered unemployed
  - *The deeper the recession, the more discouraged workers there are.*
- **Marginally attached workers:** those who were available and actively looked for work recently, but are not currently looking (looked in the past 12 months but NOT in the past 4 weeks)
- **Underemployed workers:** people who work part time because they cannot find full-time jobs

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## SIX ALTERNATIVE MEASURES

- **U-1:** Those unemployed for 15 or more weeks
- **U-2:** Unemployed job losers
- **U-3:** The official unemployment rate
- **Broader measures are**
- **U-4:** U-3 + Discouraged workers
- **U-5:** U-4 + Marginally attached workers
- **U-6:** U-4 + Part-time workers who want full-time jobs
- **All measures increase together in recession.**



<https://www.bls.gov/cps/lfcharacteristics.htm#unemp>

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## LEARN BY DOING: PRACTICE QUESTION 2

|                     |                |
|---------------------|----------------|
| Adult population    | 200 million    |
| Labor force         | 150 million    |
| Employed persons    | 138.75 million |
| Discouraged workers | 10.5 million   |

- According to the table, the unemployment rate is \_\_\_\_\_%, and the labor force participation rate is \_\_\_\_\_%.
- a) 7; 60.4
- b) 0.7; 99.3
- c) 5.6; 69.4
- d) 7.5; 75

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## LEARN BY DOING: PRACTICE QUESTION 2 (Answer)

|                     |                |
|---------------------|----------------|
| Adult population    | 200 million    |
| Labor force         | 150 million    |
| Employed persons    | 138.75 million |
| Discouraged workers | 10.5 million   |

- According to the table, the unemployment rate is \_\_\_\_\_%, and the labor force participation rate is \_\_\_\_\_%.
- a) 7; 60.4
- b) 0.7; 99.3
- c) 5.6; 69.4
- d) **7.5; 75 (correct answer)**

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## LEARN BY DOING: PRACTICE QUESTION 3

- Which of these individuals can be counted as unemployed?
- a) Darren, a 10-year-old child
- b) Nazma, a stay-at-home mom
- c) Moesha, a full-time college student
- d) Carl, who works part time at the Olive Garden but would prefer more hours
- e) None of the answers is correct.

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## LEARN BY DOING: PRACTICE QUESTION 3 (Answer)

- Which of these individuals can be counted as unemployed?
- a) Darren, a 10-year-old child
- b) Nazma, a stay-at-home mom
- c) Moesha, a full-time college student
- d) Carl, who works part time at the Olive Garden but would prefer more hours
- e) **None of the answers is correct. (correct answer)**

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## THE SIGNIFANCE OF THE UNEMPLOYMENT RATE (4/4)

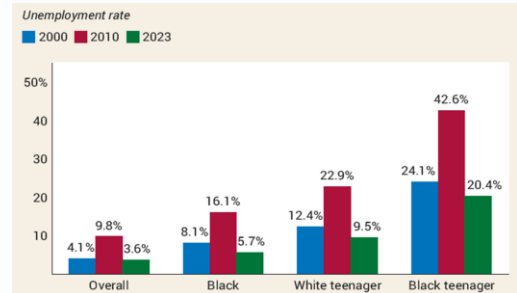
- So how good an indicator is the unemployment rate?
  - It isn't perfect.
  - It doesn't measure the quality of jobs or how well people are matched to their jobs.
  - *Economists also look at other indicators:*
    - Labor force participation rate
    - Number of full-time jobs
    - Average wages

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## UNEMPLOYMENT RATES AND DEMOGRAPHICS

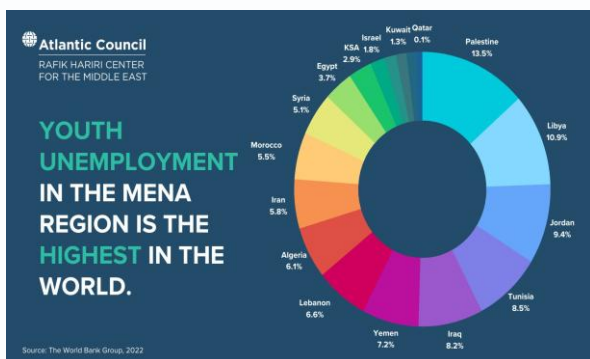
- Data show that unemployment rates vary greatly between groups.



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## Youth Unemployment Rates by Country MENA



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## GROWTH AND UNEMPLOYMENT



- During every recession, the unemployment rate rose.
- During economic expansion, the unemployment rate usually falls but not always: Look at the periods following the recessions of 1990–1991 and 2001.

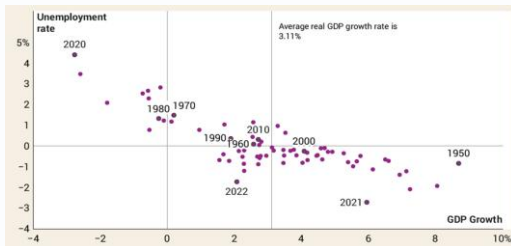
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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## GROWTH AND CHANGES IN UNEMPLOYMENT, 1949–2019

- There is a generally strong negative relationship between growth and unemployment.
- There is a generally strong negative relationship between growth and unemployment.
- In general, the unemployment rate fell when growth was above its average of 3.11% a year and rose when growth was below average.



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## UNEMPLOYMENT AND FULL EMPLOYMENT

### Types of Unemployment

#### Structural

Results from industrial reorganization, often due to technological change rather than fluctuations in supply or demand.

#### Seasonal

Occurs when jobs are only available at certain times of the year. For example, Santa Claus impersonators.

#### Cyclical

Relates to the cyclical trends in growth and production that occur within the business cycle. When the business cycle is at its peak, cyclical unemployment is low.

#### Frictional

Occurs when a worker moves from one job to another and spends time trying to find his or her ideal job. Exists even when there is full employment.

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## Frictional Unemployment

**Frictional Unemployment** is unemployment that arises from normal labor market turnover.

- The creation and destruction of jobs requires that unemployed workers search for new jobs.
- Increases in the number of people entering and reentering the labor force and increases in unemployment benefits raise frictional unemployment.
- Frictional unemployment is a permanent and healthy phenomenon of a growing economy

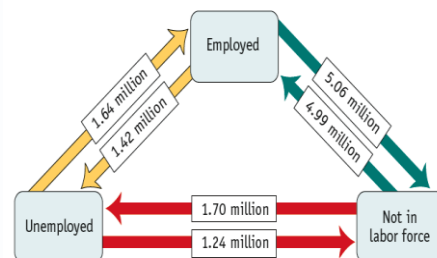


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## LABOR MARKET FLOWS, FEBRUARY 2023

- Even in low-employment months, many workers move into and out of both employment and unemployment.



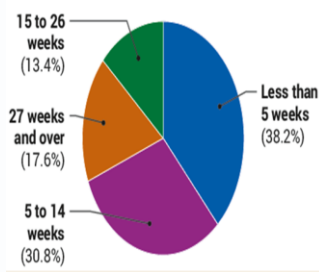
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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## DURATION OF UNEMPLOYMENT, FEBRUARY 2023

- The short duration of unemployment for most workers suggests that unemployment in early 2023 was mostly frictional.



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## UNEMPLOYMENT AND FULL EMPLOYMENT

**Structural Unemployment** is unemployment created by changes in technology and foreign competition that change the skills needed to perform jobs or the locations of jobs. More people are seeking jobs in a particular labor market than there are jobs available at the current wage rate, even when the economy is at the peak of the business cycle

- Structural unemployment lasts longer than frictional unemployment.

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## STRUCTURAL UNEMPLOYMENT

Some causes of structural unemployment:

- Labor unions**
  - Union:** an association of workers that bargains collectively with employers over wages, benefits, and working conditions
  - Unions take many forms: some act to increase wages simply by restricting entry into a profession with licensing requirements.*
- Efficiency wages:** wages that employers set above the equilibrium rate as an incentive for better employee performance
- Side effects of government policies**
- Mismatches between employees and employers**

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## STRUCTURAL UNEMPLOYMENT

- The traditional argument: minimum wage creates low-skilled unemployment; the higher the wage, the more structural unemployment

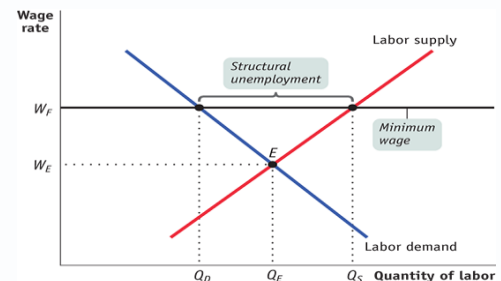


FIGURE 8-10 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## CYCLICAL UNEMPLOYMENT

- **Cyclical Unemployment** is the higher than normal unemployment at a business cycle trough and lower than normal unemployment at a business cycle peak.
  - A worker laid off because the economy is in a recession and is then rehired when the expansion begins experiences cycle unemployment.

### Cyclical Unemployment

$$\text{Cyclical Unemployment Rate} = \text{Unemployment Rate} - \text{Frictional Unemployment Rate} - \text{Structural Unemployment Rate}$$



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## LEARN BY DOING: PRACTICE QUESTION 4

- Jasmine has recently moved to Florida because she loves the warm climate there. Being new to the area, she will need to spend a few weeks looking for a new job. This is an example of:
  - a) frictional unemployment.
  - b) cyclical unemployment.
  - c) structural unemployment.
  - d) underemployment.

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## LEARN BY DOING: PRACTICE QUESTION 4 (Answer)

- Jasmine has recently moved to Florida because she loves the warm climate there. Being new to the area, she will need to spend a few weeks looking for a new job. This is an example of:
  - a) **frictional unemployment. (correct answer)**
  - b) cyclical unemployment.
  - c) structural unemployment.
  - d) underemployment.

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## UNEMPLOYMENT AND FULL EMPLOYMENT

**"Natural" Unemployment** is the unemployment that arises from frictions and structural change when there is no cyclical unemployment.

- Frictional and structural unemployment are always present; they are "natural."
- **Natural unemployment** = frictional unemployment + structural unemployment
- **Actual unemployment** = natural unemployment + cyclical unemployment

### Natural Rate of Unemployment

$$\text{Natural Unemployment} = \text{Frictional Unemployment} + \text{Structural Unemployment}$$

### Cyclical Unemployment

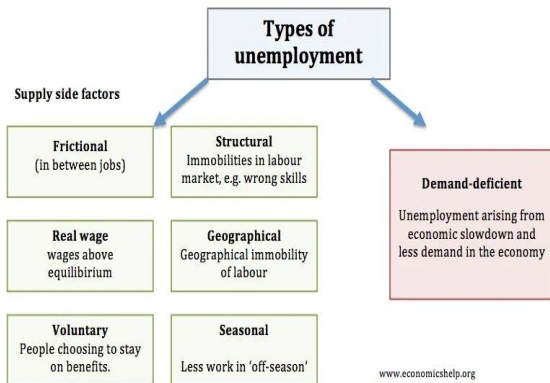
$$\text{Actual Unemployment} = \text{Natural Unemployment} + \text{Cyclical Unemployment}$$

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## EXPANDED DEFINITIONS



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## UNEMPLOYMENT AND FULL EMPLOYMENT

The natural unemployment rate changes over time and is influenced by many factors.

- Key factors are
  - The age distribution of the population
  - The scale of structural change
  - The real wage rate
  - Unemployment benefits

### Real GDP and Unemployment Over the Cycle

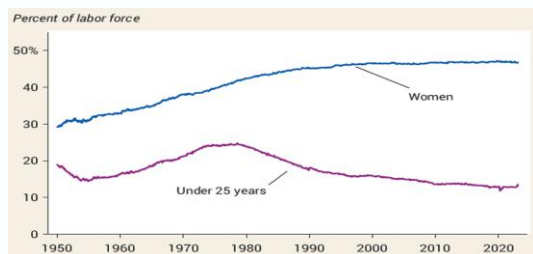
- **Potential GDP** is the quantity of real GDP produced at full employment.
- Potential GDP corresponds to the capacity of the economy to produce output on a sustained basis.
- Real GDP minus potential GDP is the output gap.
- Over the business cycle, the output gap fluctuates and the unemployment rate fluctuates around the natural unemployment rate.

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## THE CHANGING MAKEUP OF THE U.S. LABOR FORCE, 1950–2020

Changes in the 1970s:

- Large numbers of women joined the labor force.
- Baby boomers were reaching the working age.



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## LEARN BY DOING: PRACTICE QUESTION 5

- Which of these statements is true?
  - a) The natural rate of unemployment equals a country's unemployment rate during a recession.
  - b) The natural rate of unemployment is the sum of frictional and structural unemployment.
  - c) The natural rate of unemployment is the sum of frictional and cyclical unemployment.
  - d) The natural rate of unemployment is the sum of structural and cyclical unemployment.

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## LEARN BY DOING: PRACTICE QUESTION 5 (Answer)

- Which of these statements is true?
  - a) The natural rate of unemployment equals a country's unemployment rate during a recession.
  - b) **The natural rate of unemployment is the sum of frictional and structural unemployment. (correct answer)**
  - c) The natural rate of unemployment is the sum of frictional and cyclical unemployment.
  - d) The natural rate of unemployment is the sum of structural and cyclical unemployment.

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## PRICE LEVEL, INFLATION, AND DEFLATION

- The **price level** is the average level of prices and the value of money.
- A persistently rising price level is called **inflation**.
- A persistently falling price level is called **deflation**.
- We are interested in the price level because we want to
  1. Measure the inflation rate or the deflation rate
  2. Distinguish between money values and real values of economic variables.

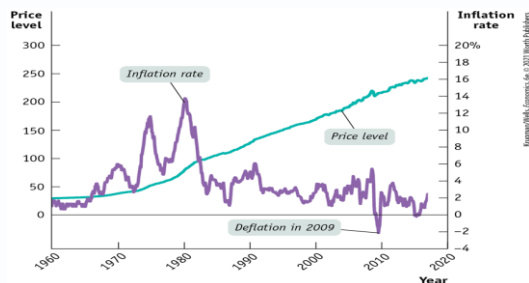
**What is disinflation?**

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## INFLATION AND DEFLATION

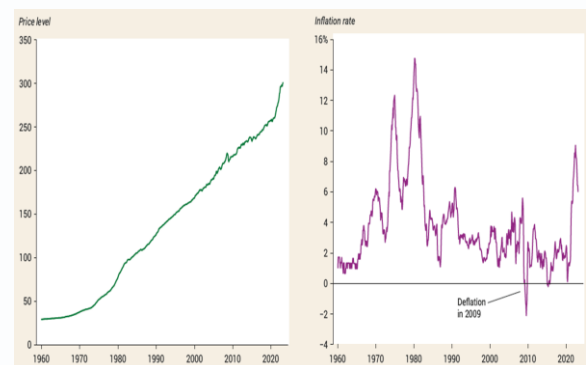
- **Inflation hurts the economy**, but most people misunderstand how.
- *The consumer price index has continuously increased, but the inflation rate fluctuates.*



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## INFLATION AND DEFLATION



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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## WHY INFLATION AND DEFLATION ARE PROBLEMS

- Low, steady, and anticipated inflation or deflation is not a problem.
- Unpredictable inflation or deflation is a problem because it
  - Redistributes income and wealth
  - Lowers real GDP and employment
  - Diverts resources from production
- Unpredictable changes in the inflation rate redistribute income in arbitrary ways between employers and workers and between borrowers and lenders.
  - At its worse, inflation becomes **hyperinflation**—an inflation rate that is so rapid that workers are paid twice a day because money loses its value so quickly.

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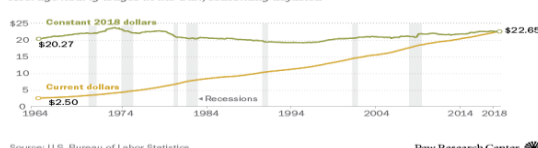
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## THE LEVEL OF PRICES DOESN'T MATTER

- Inflation does not make everyone poorer because incomes often rise with prices.
- **A better measure? Real wages.**
- **Real wage** is the wage rate divided by the price level.
- **Real income** is income divided by the price level.

**Americans' paychecks are bigger than 40 years ago, but their purchasing power has hardly budged**

*Average hourly wages in the U.S., seasonally adjusted*



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## Consumer Price Index Once Again

- Consumer price index (CPI)
  - Market basket
  - 300 goods and services
  - Typical urban consumer
  - 2 year updates

$$\text{CPI} = \frac{\text{Price of the Most Recent Market Basket in the Particular Year}}{\text{Price estimate of the Market Basket in 1982-1984}} \times 100$$

**The next slides show how a CPI is calculated.**

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In order to properly measure the rate of inflation or deflation it is necessary establish a base year from which to make a comparison. Once the base is established, future (or past) price level changes can then be compared to this base.

The easiest way see this is to look at how the consumer price index or CPI is calculated. The formula for CPI is:

$$\text{CPI} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \times 100$$

$P_0$  is the price of the good in time period 0.  
 $Q_0$  is the quantity of the good in time period 0.  
 $P_1$  is the price of the good in time period 1.

Suppose your were given a shopping list of a number of different items (or a basket of items) and told to find out how much it would cost to purchase this basket at a given point in time.

In time period 0 you purchase a market basket which includes:

2 haircuts at 2.50 per haircut = 5.00  
 4 shirts at 10.00 per shirt = 40.00  
 10 apples at .50 per apple = 5.00

Total cost = 50.00

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

One year later (time period 1) you go out and purchase the same market basket.

Time period 1

2 haircuts at 3.50 per haircut = 7.00  
4 shirts at 11.25 per shirt = 45.00  
10 apples at .40 per apple = 4.00

Total cost = 56.00

As shown, the market basket which cost 50.00 in time period 0 costs 56.00 in time period 1. It is important to note that the index looks at the price of a market basket of goods, not just one good's price.

In general form, to calculate the CPI in any given year, other than the base year which is always equal to 100, the following formula is used:

$$\text{CPI} = \frac{\text{Cost of Market Basket in given year}}{\text{Cost of Market Basket in base year}} \times 100.$$

Using a little bit of algebra,  
 $\frac{56.00}{50.00} \times 100 = 1.12 \times 100 = 112$

Since the base is 100, the index, 112, can be interpreted as what costs 100 in time period 0 will cost 112 in time period 1.

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## THE RATE OF CHANGE DOES MATTER

- Remember, it's crucial to distinguish between the **level of prices** and the **inflation rate**.

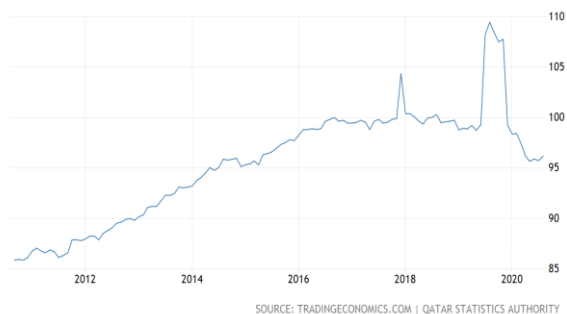
$$\text{Inflation rate} = \frac{\text{Price level in year 2} - \text{Price level in year 1}}{\text{Price level in year 1}} \times 100$$

- Example:** If the CPI increases from 120 to 135 over 1 year, what is the inflation rate?

$$\text{Answer : } \frac{135 - 120}{120} \times 100 = 12.5\%$$

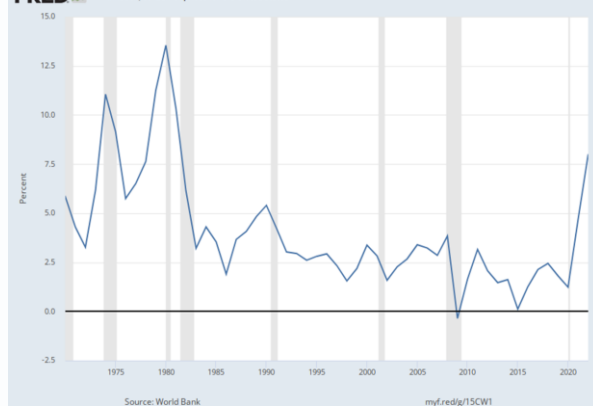
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## QATAR CONSUMER PRICE INDEX (CPI) BASE YEAR = 100



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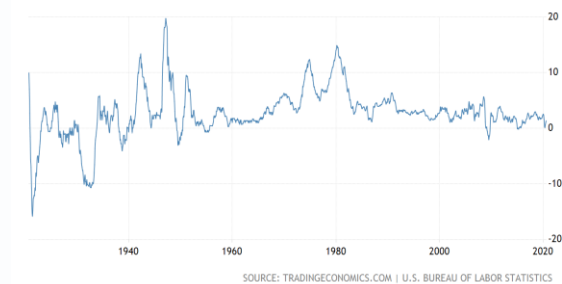
## FRED — Inflation, consumer prices for the United States



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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## INFLATION RATES AROUND THE WORLD



<https://www.imf.org/external/datamapper/PCPIPCH@WEO/WEOWORLD/VEN>

<http://www.usinflationcalculator.com>

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## THE COSTS OF INFLATION

- **Shoe-leather costs:** the increased costs of transactions caused by inflation
- Since cash loses its value quickly during high inflation, people waste more time running around to spend it as fast as they can
- **Menu cost:** the real cost of changing listed prices
- **Unit-of-account costs:** costs arising from the way inflation makes money a less reliable unit of measurement



Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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## THE BIASED CPI

### New Goods Bias

- New goods that were not available in the base year appear and, if they are more expensive than the goods they replace, they put an upward bias into the CPI.

### Quality Change Bias

- Quality improvements occur every year. Part of the rise in the price is payment for improved quality and is not inflation.
- The CPI counts all the price rise as inflation.

### Commodity Substitution Bias

- The market basket of goods used in calculating the CPI is fixed and does not take into account consumers' substitutions away from goods whose relative prices increase.

### Outlet Substitution Bias

- As the structure of retailing changes, people switch to buying from cheaper sources, but the CPI, as measured, does not take account of this outlet substitution.

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## LEARN BY DOING: PRACTICE QUESTION 6

- Mary expects the inflation rate to be 5%, and she is willing to pay a real interest rate of 3%. Joe expects the inflation rate to be 5%, and he is willing to lend money if he receives a real interest rate of 3%. If the actual inflation rate is 6% and the loan contract specifies a nominal interest rate of 8%, then:
  - a) Joe is glad he lent out funds even though his real interest rate has fallen.
  - b) Joe is sorry he lent out funds, since his real interest rate is now 9%.
  - c) Mary is glad she borrowed the funds because her real interest rate has fallen.
  - d) Mary is sorry she borrowed funds, since her real interest rate is now 9%.

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## LEARN BY DOING: PRACTICE QUESTION 6 (Answer)

- Mary expects the inflation rate to be 5%, and she is willing to pay a real interest rate of 3%. Joe expects the inflation rate to be 5%, and he is willing to lend money if he receives a real interest rate of 3%. If the actual inflation rate is 6% and the loan contract specifies a nominal interest rate of 8%, then:
  - Joe is glad he lent out funds even though his real interest rate has fallen.
  - Joe is sorry he lent out funds, since his real interest rate is now 9%.
  - Mary is glad she borrowed the funds because her real interest rate has fallen. (correct answer)**
  - Mary is sorry she borrowed funds, since her real interest rate is now 9%.

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## TYPES OF INFLATION

- Demand-pull inflation:** increases in aggregate demand outpace increases in aggregate supply.
- Cost-push inflation:** increases in production costs cause firms to raise prices.
- Hyperinflation:** extremely high rate of inflation.



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## WINNERS AND LOSERS FROM INFLATION

- If inflation is different from predictions, some will win and some will lose.
- Interest rate:** the price (calculated as a percentage of the amount borrowed) that a lender charges for the use of his or her savings for one year
- Nominal interest rate:** the interest rate expressed in dollar terms
- Real interest rate:** the nominal interest rate minus the rate of inflation

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## INFLATION IS EASY, DISINFLATION IS HARD

- The policies needed to slow prices usually cause unemployment.
- Disinflation:** the process of bringing down the inflation rate

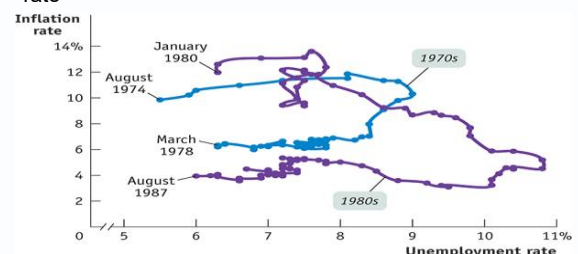


FIGURE 8-13 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers  
Data from: Bureau of Labor Statistics.

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# CHAPTER 8 LECTURE – UNEMPLOYMENT AND INFLATION

## LEARN BY DOING: PRACTICE QUESTION 7

- You have just been awarded a cost-of-living increase tied to the CPI. The CPI has gone from 110 to 112. If your salary is \$30,000 per year before the increase, what will it be after the CPI increase is factored in?
  - \$29,464
  - \$30,545
  - \$30,600
  - \$33,600

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## LEARN BY DOING: PRACTICE QUESTION 7 (Answer)

- You have just been awarded a cost-of-living increase tied to the CPI. The CPI has gone from 110 to 112. If your salary is \$30,000 per year before the increase, what will it be after the CPI increase is factored in?
  - \$29,464
  - \$30,545 (correct answer)**
  - \$30,600
  - \$33,600

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