

# Unemployment and Inflation

## EC 201

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BSC

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# Context

- ① What causes unemployment?
- ② How do economists measure unemployment?
- ③ Who wins and loses from inflation?

# The U.S. unemployment rate 1948-2020

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



Source: FRED

## Some concepts first

- **Working age population:** People aged 16 or above *excluding* those in prison, nursing home, or mental health care facility (people in such institutions are called institutionalized).
- **Employed:** Working part time, full time, temporary; for pay or for profit or sometimes without pay (such as unpaid family workers) in past four weeks.
- **Unemployed:** Person without work, is available to work, and is looking for work. Note that all three conditions must be met (in past four weeks).
- **Labor force:** Employed + unemployed

## Some concepts first

- Apparently, working age population is composed of people in labor force and people not in labor force.
- **Who is not in labor force?** If you are neither employed nor unemployed, you are out of labor force. The following people are not in labor force.
  - ▶ **Not available for work:** retirees, full time students, homemakers.
  - ▶ **Available for work but not currently working:** discouraged workers + Not looking for jobs due to childcare responsibilities or transportation issues.
  - ▶ If you are available for work, but haven't searched work (in past four weeks) thinking there are no jobs for you, then you are a **discouraged worker**.

# Defining unemployment

- Unemployment rate: the percent of the total number of people in the labor force who are unemployed
- Labor force: all workers, employed or unemployed
- Labor force participation rate: the percentage of adults (people 16 and older) in the labor force

# Measuring unemployment

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

- $$\text{LFPR} = \frac{\text{Labor force}}{\text{Population age 16 years or older}} \times 100$$

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

## An example

In a country, there are 24 million people in the labor force. A total of 21.5 million people are employed. What is the unemployment rate ?

- 10.4%
- 2.5%
- 89.6%
- 21.5%



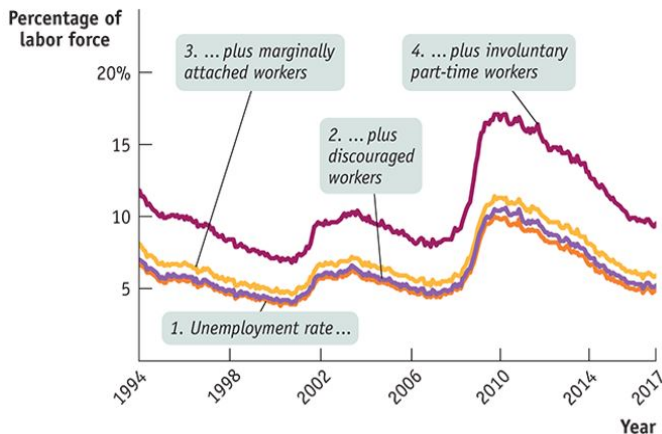
# Caution for interpreting the numbers

- The unemployment rate is a good indicator of how easy or difficult it is to find a job given the current state of the economy.
- It **can overstate** the true level of unemployment
  - ▶ Even if the labor market is healthy, it takes time to find the right job. (Meanwhile, you're "unemployed.")
- It **can understate** the true level of unemployment.
  - ▶ You are not "unemployed" if you have given up looking for a job because there are no jobs available;
  - ▶ You would like to work full time but are currently working part time.

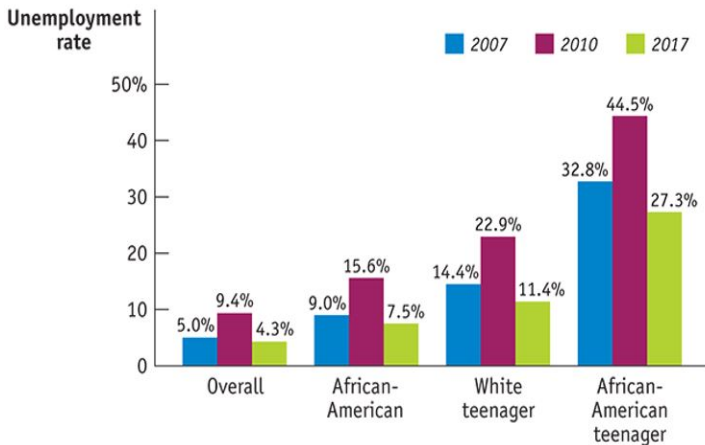
## Some problems with unemployment statistics

- **Discouraged workers:** nonworking people who have not looked for work in the past four weeks because they did not see any prospect of finding one; 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 for work sometimes in the past 12 months but NOT in the past 4 weeks). This group includes discouraged workers.
- **Underemployed workers:** people who work part time because they cannot find full-time jobs

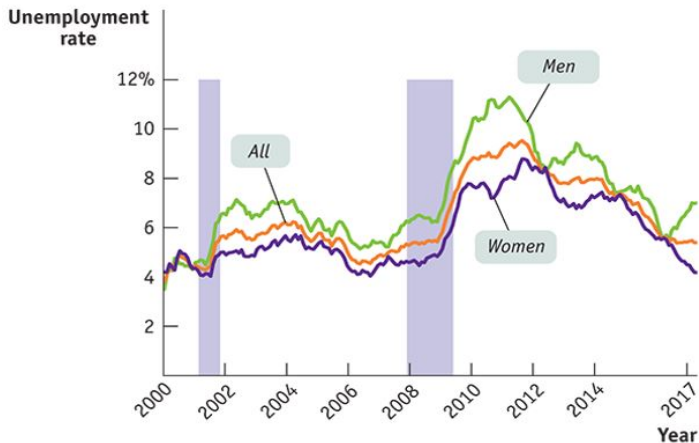
# Alternative measures of unemployment



# Unemployment rate varies across groups



# Unemployment rate varies across groups



## Another example

Adult population is 200 million, labor force is 150 million, there are 138.75 million employed people, and 10.5 million discouraged workers in the economy. What would be the unemployment rate and the labor force participation rate?

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Adult population is 200 million, labor force is 150 million, there are 138.75 million employed people, and 10.5 million discouraged workers in the economy. What would be the unemployment rate and the labor force participation rate?

Answer:

- Unemployment rate:  $\frac{150-138.75}{150} \times 100 = 7.5\%$
- LFPR:  $\frac{150}{200} \times 100 = 75\%$

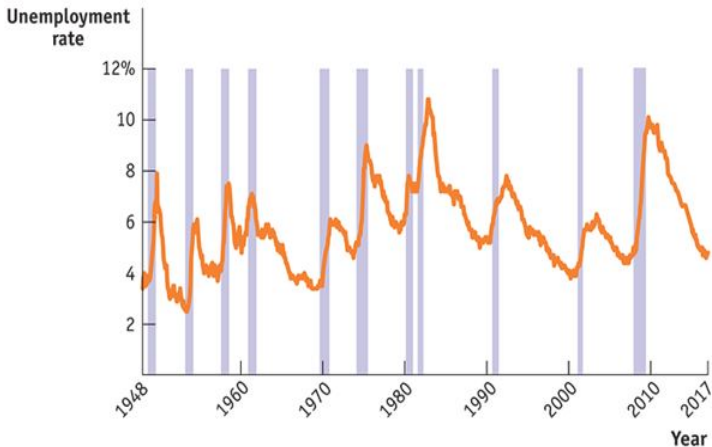
What if you included discouraged workers in the calculation of unemployment rate?

# Is unemployment rate a perfect measure?

- 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



# GDP and unemployment rates are negatively correlated



# The natural rate of unemployment

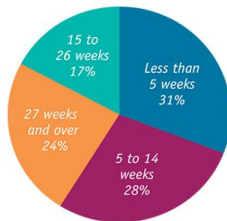
- Some unemployment is natural.
- Over the past 50 years, the national unemployment rate has never dropped below 2.9%.
- There are three types of unemployment:
  - ▶ frictional
  - ▶ structural
  - ▶ cyclical

# Frictional Unemployment

- Anthony is currently employed. He moving to Charlotte for his new job next month. After leaving the current job, he will need a week to start working in the new company. He is unemployed for that week.
- Caroline is currently looking for work. She has a couple of job offers, but she wants to take time to find her dream job. She is willing to wait for a week or two before accepting an offer. She will be unemployed in the meantime.

# Frictional unemployment

- Frictional unemployment: unemployment due to the time workers spend in job search
  - ▶ Scarcity of information creates frictional unemployment.
  - ▶ Matching people to jobs takes time.



The short duration of unemployment for most workers suggests that unemployment in 2017 was mostly frictional. When the unemployment rate is low, most unemployment is for short duration, suggesting frictional unemployment.

# Frictional Unemployment

Question: Does frictional unemployment mean that there is labor surplus for sure?

Not necessarily. Frictional unemployment can exist even when total number of available jobs equals the number of workers looking for jobs.

# Structural Unemployment

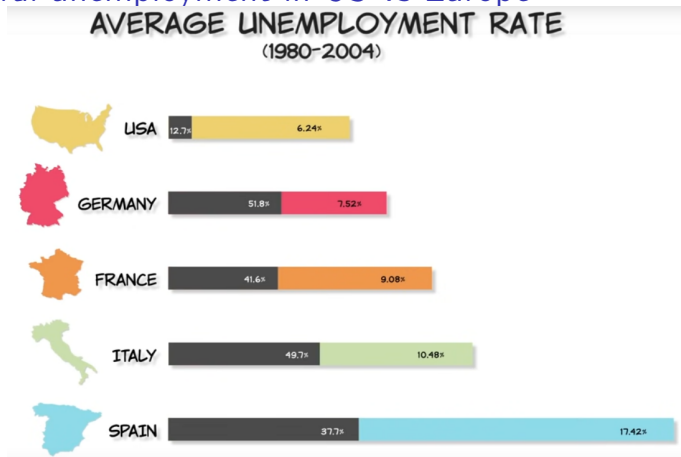
Structural unemployment occurs when more people are seeking jobs in a particular labor market than there are jobs available *at the current wage rate*, even when the economy is at the peak of the business cycle.

It is a persistent, long-term unemployment caused by large shocks or the permanent features of the economy that make it more difficult for some workers to find jobs.

# Causes of structural unemployment

- Large, long-lasting shocks that require economy to re-structure
  - 1 Oil shocks
  - 2 Shift from manufacturing to services
  - 3 Globalization and global competition (outsourcing)
  - 4 Technology shocks ( computers, internet, AI)
- Labor regulations
  - 1 Minimum wage
  - 2 Unemployment benefits
  - 3 Powerful unions
  - 4 Employment protection laws (at-will employment vs just-cause employment)
  - 5 Efficiency wages (wages that employers set above the equilibrium rate as an incentive for better employee performance)
- Mismatches between employees and employers such as a skill mismatch.
  - ▶ [Check this 2018 article out, for example](#) .

# Structural unemployment in US vs Europe



Source: mru.org

The fraction of long-term unemployed people in Europe is way higher than US  $\Rightarrow$  persistent, long-term unemployment (structural unemployment) is much higher in Europe.



# Large economic shocks could lead to structural Unemployment

In the 1800s a militant group of textile artisans called Luddites smashed newly invented mechanical looms because they feared the new technology will cause unemployment.

# Large economic shocks could lead to structural Unemployment

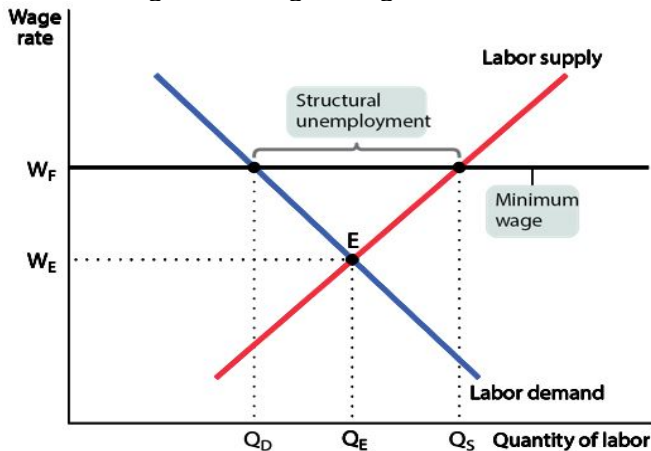
During the Great Depression in the United States in 1930s, people feared that upcoming technologies such as electricity and automation will lead to unemployment

# Large economic shocks could lead to structural Unemployment

Today many people fear that AI will lead to unemployment of professionals such as lawyers, doctors, which previously were thought to be immune to automation

# Does minimum wage cause higher structural unemployment?

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



# Does minimum wage cause higher structural unemployment?

- But some economists argue that higher minimum wage isn't associated with higher structural unemployment especially in the U.S. because the minimum wage here is lower than many European countries.
- Overall though, economists agree that a sufficiently large increase in minimum wage does lead to structural unemployment.

Check [this link](#) out for a cool visualization of minimum wage in different states.

[Here is the history](#) of the federal minimum wage rate.

# The natural rate of unemployment

- Frictional and structural unemployment are always present; they are “natural.”
- Natural unemployment = frictional unemployment + structural unemployment
- Actual unemployment = natural unemployment + cyclical unemployment
  - ▶ Cyclical unemployment: unemployment correlated with the business cycle—the deviation from the natural rate

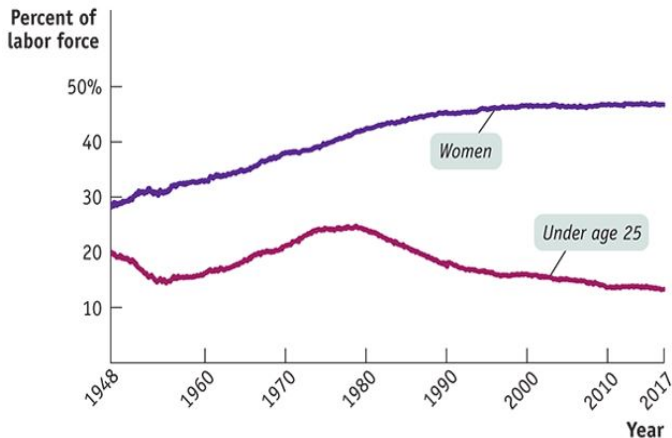
# Changes in the natural rate of unemployment

We need estimates of the natural rate of unemployment both to make forecasts and to conduct policy analyses. What causes it to change?

- Changes in characteristics of the labor force, such as the demographics
- Changes in labor market institutions such as unions, temporary employment agencies, and new technology
- Changes in government policies such as job training programs

# Changes in the natural rate of unemployment

Increasing female labor force participation since 1940s





## Which unemployment is it?

After completing a complex programming project, Alexa is laid off. Her prospects for a new job requiring similar skills are good, and she has signed up with a programmer placement service. She has passed up offers for low-paying jobs.

## Which unemployment is it?

When Sam and his co-workers refused to accept pay cuts, his employer outsourced their programming tasks to workers in another country. This phenomenon is occurring throughout the programming industry.

# Which unemployment is it?

Due to the current slump, Cade has been laid off from his programming job. His employer promises to rehire him when business picks up

# Which unemployment is it?

As the economy had to shut down due to COVID-19, a lot of people lost jobs.

# Which unemployment is it?



Computer generated 3-D animation has been widely used in movies such as Inside Out and Minions. It is becoming way more popular than the traditional hand drawn 2-D animation. People such as Messi, who used to be extremely good at 2-D hand-drawn animation, have been losing job at movie studios such as Walt Disney Pictures and Dream Works.

# Inflation and deflation

# Inflation is concerning



Gustavo Ventura

@King\_ofSweden

...

Argentina, October 2021. 8 officials (?) monitor and control retail prices to keep inflation under control.

All after decades of inflationary experiences, including two hyperinflations. 😊



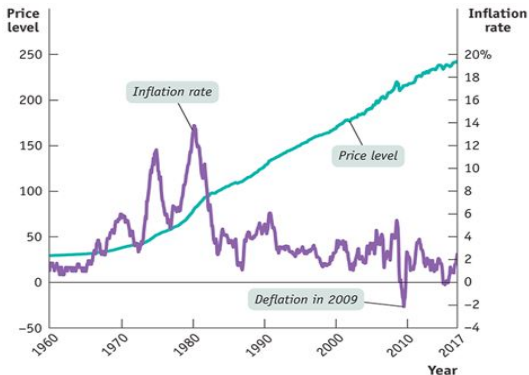
Inflation can get really scary

Zimbabwe went through hyperinflation earlier this century



# Inflation rate is NOT the consumer price index

The consumer price index has continuously increased, but the inflation rate fluctuates.



# Inflation rate

We learned in the previous chapter that  
Inflation rate from year 1 to year 2

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

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

## Price level and *real* stuff

Remember that the level of prices doesn't matter. What matters is the rate of change of price, or the inflation rate.

Increasing or decreasing the level of price may change the “nominal” wage or income, but the “real” wage and income don't change. In other words, their purchasing power doesn't change.

# Costs of Inflation

- Hyperinflation in Venezuela got pretty bad recently
- Hyperinflation is not new. Germany faced it in 1920s

# Costs of inflation

Inflation hurts the economy, but most people misunderstand how. Remember that it makes some people poorer while others might actually get rich. We will learn about three kinds of costs of inflation.

- 1 Shoe-leather costs
- 2 Menu costs
- 3 Unit-of account costs

# Shoe-leather costs

- It means that inflation increases the cost of transactions.
- “shoe-leather cost” alludes to the wear and tear caused by excessive running around during high inflation times.
  - ▶ Cash loses its value quickly during periods of high inflation
  - ▶ So people waste more time running around to spend it as fast as they can
  - ▶ For example, when the inflation rate in Israel hit 500% in 1985, people spent a lot of time in lines at banks.
  - ▶ During the German hyperinflation of 1921-23, merchants employed runners to bring their cash home from the bank.

# Menu costs

- It means that inflation increases the real cost of changing a listed price.
- Imagine having to change the listed price of every item every day by Walmart, CVS, Costco, or Amazon.com!
  - ▶ For example, during the Brazilian high inflation of 1990s the supermarket workers had to spend half of their time changing price stickers.
  - ▶ As you can imagine, menu costs are present even in low inflation countries, but they are very small.
- In May 2008, Zimbabwe had 1,694,000% inflation rate. They printed one hundred trillion dollar bill! *Imagine the menu costs!*



# Menu Costs

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<div> <div> <div>CLOSED MONDAYS</div> <div>700-510-4750</div> <div>HOW TO GO, CATERING</div> <div>WWW.AJOUROBISMAN.COM</div> <div>ON-LINE ORDERING</div> </div> <div> <div>WEEKEND BRUNCH</div> <div>ROJO</div> <div>ENTREES</div> <div>(Saturdays and Sundays 11am - 3pm)</div> <div>★ MARGARITA VEGAN (75% DRINKS DUTY FREE AVAILABLE IN OTHER FORMS)</div> </div> <div> <div> <div>ROJO'S MENU</div> <div>GUATEMALA-INSPIRED MEXICAN</div> <div>LATIN &amp; AMERICAN MENU</div> <div>7071 WIDEWALK AVENUE</div> <div>BIRMINGHAM, ALABAMA 35209</div> </div> </div> </div>		<div> <div> <div>CLOSED MONDAYS</div> <div>700-510-4750</div> <div>HOW TO GO, CATERING</div> <div>WWW.AJOUROBISMAN.COM</div> <div>ON-LINE ORDERING</div> </div> <div> <div>WEEKEND BRUNCH</div> <div>ROJO</div> <div>ENTREES</div> <div>(Saturdays and Sundays 11am - 3pm)</div> <div>★ MARGARITA VEGAN (75% DRINKS DUTY FREE AVAILABLE IN OTHER FORMS)</div> </div> <div> <div> <div>ROJO'S MENU</div> <div>GUATEMALA-INSPIRED MEXICAN</div> <div>LATIN &amp; AMERICAN MENU</div> <div>7071 WIDEWALK AVENUE</div> <div>BIRMINGHAM, ALABAMA 35209</div> </div> </div> </div>	
<b>ENTREES</b> (Saturdays and Sundays 11am - 3pm)		<b>ENTREES</b> (Saturdays and Sundays 11am - 3pm)	
<b>CHORIZO CON HUEVOS</b> 9.95 Eggs scrambled with spicy ground chorizo sausage and queso. Served with flour tortillas, bacon, later tots and a side of salsa.		<b>CHORIZO CON HUEVOS</b> 10.95 Eggs scrambled with spicy ground chorizo sausage and queso. Served with flour tortillas, bacon, later tots and a side of salsa.	
<b>MIGAS</b> 8.95 Eggs scrambled with pico de gallo and queso. Served with flour tortillas, bacon, later tots and a side of salsa.		<b>MIGAS</b> 9.50 Eggs scrambled with pico de gallo and queso. Served with flour tortillas, bacon, later tots and a side of salsa.	
<b>SCRAMBLED EGGS</b> 8.95 (plain or with cheddar cheese) Served with flour tortillas, bacon, later tots and a side of salsa.		<b>SCRAMBLED EGGS</b> 9.25 (plain or with cheddar cheese) Served with flour tortillas, bacon, later tots and a side of salsa.	
<b>BREAKFAST BURRITO</b> 9.75 Eggs, rice, black beans, jalapeño sausage, queso and pico de gallo in a flour tortilla. Topped with queso and served with a side of salsa.		<b>BREAKFAST BURRITO</b> 9.95 Eggs, rice, black beans, jalapeño sausage, queso and pico de gallo in a flour tortilla. Topped with queso and served with a side of salsa.	
<b>BACON BURRITO</b> 8.95 Eggs, rice, black beans, bacon, queso and pico de gallo in a flour tortilla. Topped with queso and served with a side of salsa.		<b>BACON BURRITO</b> 9.25 Eggs, rice, black beans, bacon, queso and pico de gallo in a flour tortilla. Topped with queso and served with a side of salsa.	
<b>* EGG, POTATO AND PEPPERS BURRITO</b> 8.95 Eggs, potatoes, red and green bell peppers, and queso in a flour tortilla. Topped with queso and served with a side of salsa.		<b>* EGG, POTATO AND PEPPERS BURRITO</b> 8.95 Eggs, potatoes, red and green bell peppers, and queso in a flour tortilla. Topped with queso and served with a side of salsa.	
<b>THE LUMBERJACK</b> 8.95 Potatoes, pico de gallo, cheddar cheese, bacon, salsa, sour cream and jalapeños.		<b>THE LUMBERJACK</b> 9.25 Potatoes, pico de gallo, cheddar cheese, bacon, salsa, sour cream and jalapeños.	
<b>BRUNCH SANDWICH</b> 9.50 Scrambled eggs, cheddar cheese, jalapeño bacon, and sliced avocado with choice of side item.		<b>BRUNCH SANDWICH</b> 9.95 Scrambled eggs, cheddar cheese, jalapeño bacon, and sliced avocado with choice of side item.	
<b>SIDES</b> a la carte 2.25 French fries • pasta salad • rice salad • rice • chicken • fruit ater mix • black bean • sweet potato • corn • sweet potato salad (3.00) 4 pieces bacon - 4.00 or jalapeño bacon - 4.50		<b>SIDES</b> a la carte 2.25 French fries • pasta salad • rice salad • rice • chicken • fruit ater mix • black bean • sweet potato • corn • sweet potato salad (3.00) 4 pieces bacon - 4.00 or jalapeño bacon - 4.50	
<b>DRINKS</b> Teal Francisco Soda 2.35 • Can Soda 1.77 • Malt 2.00 • Caffe 2.95 Non-Alcoholic Ginger Beer, Mexican Coca Cola (12 oz) 3.50 Jarritos Pure Case Sodas, Big Red Soda 2.75 Juices (16 oz): Cranberry, Pineapple, Ruby Red Grapefruit 2.95 La Crema, Hot Chocolate, Hot Tea 1.75		<b>DRINKS</b> Teal Francisco Soda 2.35 • Can Soda 1.77 • Malt 2.00 • Caffe 2.95 Non-Alcoholic Ginger Beer, Mexican Coca Cola (12 oz) 3.50 Jarritos Pure Case Sodas, Big Red Soda 2.75 Juices (16 oz): Cranberry, Pineapple, Ruby Red Grapefruit 2.95 La Crema, Hot Chocolate, Hot Tea 1.75	
<b>COCKTAILS</b> Sangria 5.00, pitcher 25.00 Standard Margarita 6.75, pitcher 30.00 Spicy Margarita 7.25, pitcher 32.50 Mimosa 5.50, bottle champagne + coffee 22.00 Mango or Grapefruit Mimosa 6.00, bottle champagne + coffee 24.00 Bloody Mary 6.75, pitcher 30.00 Honey Bubble (Caramel Honeycomb vodka, champagne, lemonade) 7.25 Eggnog Cider (vodka, bubble, honey, eggnog) 10.50 See cocktail list for more items		<b>COCKTAILS</b> Sangria 5.00, pitcher 25.00 Standard Margarita 6.75, pitcher 30.00 Spicy Margarita 7.25, pitcher 32.50 Mimosa 5.50, bottle champagne + coffee 22.00 Mango or Grapefruit Mimosa 6.00, bottle champagne + coffee 24.00 Bloody Mary 6.75, pitcher 30.00 Honey Bubble (Caramel Honeycomb vodka, champagne, lemonade) 7.25 Eggnog Cider (vodka, bubble, honey, eggnog) 10.50 See cocktail list for more items	
<b>SAUCES &amp; ADD-ONS</b> SPICY HAWAIIAN PINEAPPLE 7.25 ALL THE SAUCE, PICO DE GALLO 7.50 SOUR CREAM, CHIPPED SAUCE, WINGS SAUCE 4.50 EXTRA DRINKS 1.25 BACON 4.75		<b>SAUCES &amp; ADD-ONS</b> SPICY HAWAIIAN PINEAPPLE 7.25 ALL THE SAUCE, PICO DE GALLO 7.50 SOUR CREAM, CHIPPED SAUCE, WINGS SAUCE 4.50 EXTRA DRINKS 1.25 BACON 4.75	

(o) July 2021 Menu

(p) Nov 2021 Menu



# Unit-of-Accounts costs

- Dollar acts as a Unit-of-Accounts in the sense that we count the value of every goods and services in terms of units of dollars. For example, you pay \$1,200 units of dollars every month as rent.
- But when inflation exists the value of Dollar keeps changing. A Dollar next year could be less valuable or more valuable than a Dollar today. There is uncertainty about how its value will change.
  - ▶ If there is no inflation indexing of tax brackets, it could have big distorting effect, like in the 1970s in the U.S.
  - ▶ It could discourage businesses and workers alike from working harder.
- Such uncertainty makes Dollar a less reliable unit of measurement.
- **Unit-of-accounts** costs of inflation arises because inflation makes Dollar a less reliable unit of measurement.

# Real and nominal interest rates

- While inflation may mostly hurt people, it could also help some. How?
- Let's define **real interest rate = nominal interest rate - inflation rate**
  - ▶ If you pay 8% interest on your student loan and the economy currently has 2% inflation rate, you pay  $8 - 2 = 6\%$  real interest rate.

# Who wins or loses from inflation?

## When actual inflation rate is higher than expected

- Let's say, when you got the loan approval, your loan contract was based on an expected inflation of say 2% for the next year. Based on 8% nominal interest rate, your real interest rate is 6%.
- Now imagine that the inflation rate in reality went up to 3%.
- You will still pay 8% interest rate even with higher inflation than expected.
- In this case, you are paying a lower real interest rate (5%) as a borrower.
- So you as a borrower gain, at the cost of a lender.

Can you guess what happens when the actual inflation rate is lower than the expected one?

# Data Exercise (Due in class on Thursday, April 14)

- Go to the [FRED](#) database and create the following two graphs.
  - 1 In the first graph, plot the labor force participation rate for male and female
  - 2 In the second graph, plot the unemployment rate and the natural rate of unemployment (Noncyclical Rate of Unemployment)

Explain why you see the differences in male and female labor force participation rates over the years.

Why is there difference between the natural rate of unemployment and the unemployment rate?