UNEMPLOYMENT AND INFLATION

Chapter 9 (Inflation)

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Chapter Outline

- **9.4** Measuring Inflation
- **9.5** Using Price Indexes to Adjust for the Effects of Inflation
- **9.6** Nominal Interest Rates versus Real Interest Rates
- **9.7** Does Inflation Impose Costs on the Economy?

“Inflation is when you pay fifteen dollars for the ten-dollar haircut you used to get for five dollars when you had hair.”

- Sam Ewing

9.4 Measuring Inflation

- In the previous chapter we introduced the idea of the **price level**: a measure of the average prices of goods and services in the economy.
- We refer to the percentage increase in the price level from one year to the next as the **inflation rate**.
- Last chapter, we used the *GDP deflator* to measure changes in the price level. By measuring changes in the prices of different *baskets of goods*, we would come up with different measures.

Two commonly-used measures are:

- The consumer price index (CPI)
- The producer price index (PPI)

Defining And Calculating the CPI

The **consumer price index** is a measure of the average change over time in the prices that a typical urban family of four pays for the goods and services they purchase.

To calculate the CPI in a given year, we need:

- A standard *basket of goods*
- The cost to purchase the basket of goods in a *base year*
- The prices in the current year

The CPI in the current year is the cost to purchase the basket of goods this year, divided by the cost in the base year. By convention, we multiply this by 100, so that the CPI in the base year is 100.

Calculating the CPI And Inflation Rate

- Learn how to calculate the CPI (there is an example in the book) using the formula:

$$\text{CPI} = \frac{\text{Expenditures in the current year}}{\text{Expenditures in the base year}} \times 100$$

- Learn how to calculate the inflation rate during Year 1 and Year 2 using the formula:

$$Inflation\ rate = \frac{CPI_2 - CPI_1}{CPI_1} * 100$$

where, CPI_1 = CPI of Year 1

CPI_2 = CPI of Year 2

An Example

		Base Year (1999)		2016		2017	
Product	Quantity	Price	Expenditures	Price	Expenditures (on base-year quantities)	Price	Expenditures (on base-year quantities)
Eye examinations	1	$50.00	$50.00	$100.00	$100.00	$85.00	$85.00
Pizzas	20	10.00	200.00	15.00	300.00	14.00	280.00
Books	20	25.00	500.00	25.00	500.00	27.50	550.00
TOTAL			$750.00		$900.00		$915.00

- How would you calculate the Consumer Price Index (CPI)?

CPI And Cost Of Living

- Since the CPI measures *consumer* prices, it is often referred to as the *cost of living index.* CPI-inflation is sometimes used to generate "fair" increases in wages for workers and government benefits.
- Say, if the percentage change in CPI between 2016 and 2017 is 1.7%, we may also say that the cost of living has increased by 1.7% during 2016-2017.

Is the CPI an Accurate Measure of Inflation?

Some potential problems with the CPI include:

- *Substitution bias*: Consumers may change their purchasing habits away from goods that have increased in price.
- *Increase in quality bias*: Difficult to separate improvement in quality from increase in price, say in cars or computers.
- *New product bias*: The basket of goods changes only every 10 years. There is a delay to including new goods like cell phones.
- *Outlet bias*: CPI uses full retail price, but many people now buy from discount stores or online.

For these reasons, economists believe the CPI overstates true inflation by 0.5 to 1 percentage point.

Producer Price Index

The **producer price index (PPI)** is an average of the prices received by producers of goods and services at all stages of the production process.

- It is conceptually similar to the CPI, in that it uses a basket of goods, but the goods are those used by producers.
- The PPI can give early warning of future movements in consumer prices.
- *Can you suggest why this is true?*

9.5 Use Price Indexes to Adjust for the Effects of Inflation

Suppose your mother won $25,000 in a lottery in 1989. This $25000 would have bought much more in 1989 than $25,000 in 2014.

We can use the CPI to estimate the purchasing power of that $25,000 in 2014 dollars:

- $\text{Value in 2014 dollars} = \text{Value in 1989 dollars} \times \left(\frac{\text{CPI in 2014}}{\text{CPI in 1989}}\right)$
- $\text{Value in 2014 dollars} = \$25{,}000 \times \left(\frac{237}{124}\right) = \$47{,}782$

- So $25,000 in 1989 would have bought almost as much as $48,000 in 2014. **Therefore, a consequence of inflation is the fall in value of money over time**.

Note: You should be able to calculate purchasing power on your own as in the example above.

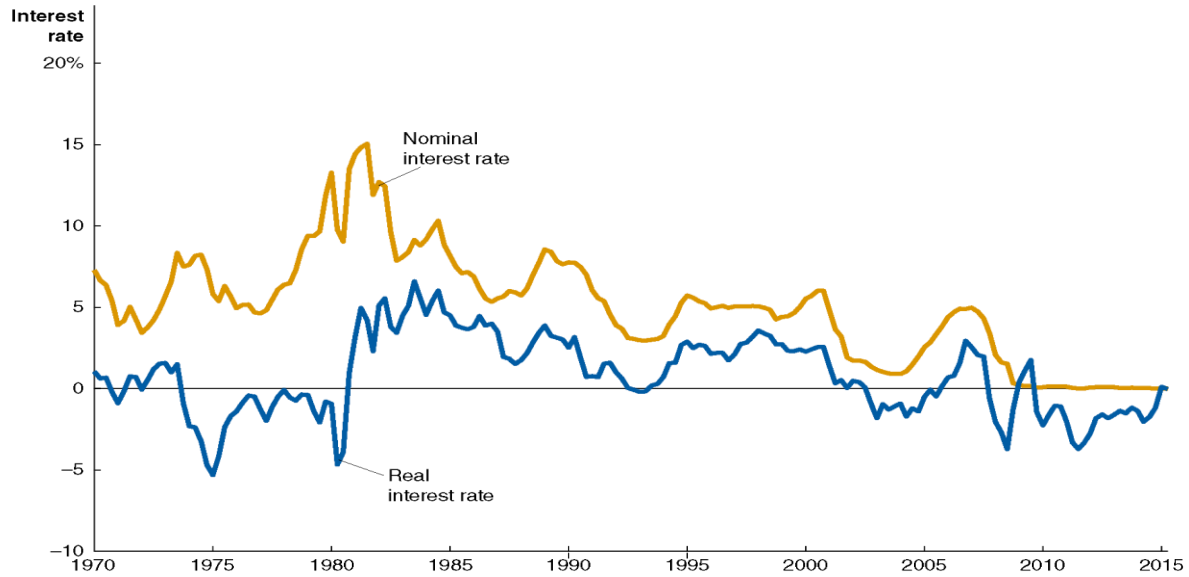
Nominal and Real Variables

- The current standard base “year” for the CPI is an average of 1982-1984 prices.
- Recall, a variable is any number, or quantity that increases or decreases over time, or takes different values in different situations. An **economic variable** is any measurement that helps to determine how an **economy** functions.
- Values like wages in current-year dollars are called ***nominal variables***. When we adjust them for inflation, by dividing by the current year’s price index and multiplying by 100, we convert them to ***real variables***.
- This is useful for comparing variables across time without price effects.

9.6 Nominal Interest Rates versus Real Interest Rates

- When you lend money to someone, they typically agree to pay you back *with interest*. If the *interest rate* is 6 percent, for example, then a $1,000 loan paid back in a year will be paid back with $1,060.
- 6 percent is the **nominal interest rate**: the stated interest rate on a loan.
- We can adjust for inflation by calculating the **real interest rate**, equal to the nominal interest rate minus the inflation rate.
  - This is an approximation, but it is quite accurate for low interest and inflation rates.
- If prices rise by 2 percent from this year to next, then your real interest rate on the loan is only 4 percent. This more accurately reflects the cost of borrowing and lending money.

Figure 9.8 Nominal and Real Interest Rates, 1970-2015



- The chart shows the interest rate on three-month treasury bills, a good measure of the nominal interest rate.
- The real interest rate adjusts them for changes in the CPI.
- In 2009, the real interest rate was *above* the nominal interest rate. The change in the CPI was negative then, indicating a rare **deflation**, or decline in the price level.

9.7 Does Inflation Impose Costs on the Economy?

Sometimes inflation seems unimportant.

- If all prices doubled overnight, it seems like nothing much would change: the prices of goods and services would have doubled, but so would your wage (remember, wage is a price too! It is the price firms pay to hire workers).
- So you could afford exactly as much as before.

But not all prices/wages rise at the same rate.

- So some people will see their real wage increase due to inflation, while others will see it decrease.
- Particularly for people on fixed incomes (e.g. retirees), inflation can seem unfair, as the purchasing power of their income falls.

The Problem with Anticipated Inflation

Even if inflation is anticipated, it still causes problems:

- People and firms have increased real costs of holding cash. Cash at hand has lower value due to inflation.
- Firms have **menu costs**: the cost to firms of changing prices on catalogs etc. Frequently changing prices are inconvenient for firms (and consumers too!) to deal with.
- Investors are taxed on *nominal* returns, rather than real returns; so this can increase the tax due.

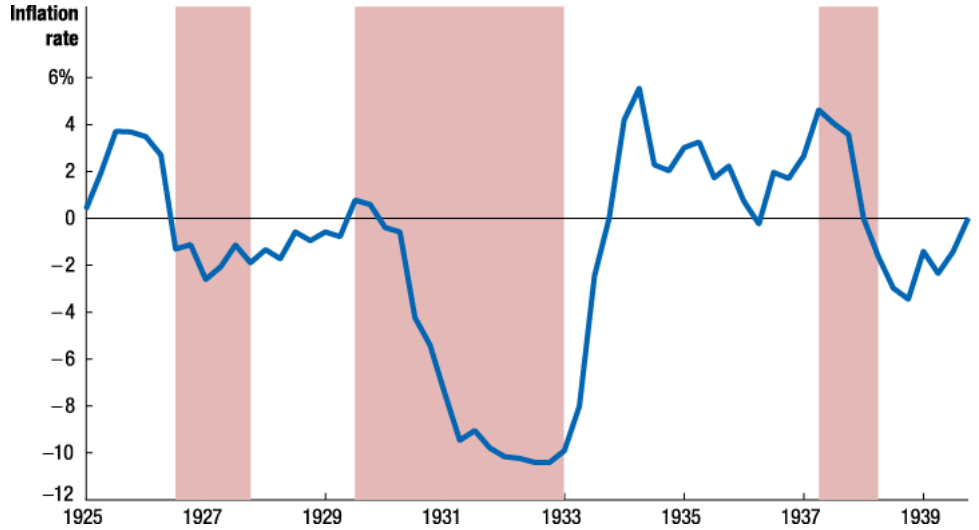
The Problem with Unanticipated Inflation

- When people cannot predict the rate of inflation, they find it hard to make good borrowing and lending decisions.

For example, in 1980 banks were charging 18 percent or more on home loans because the rate of inflation was very high. People who bought homes were locked into high rates even when inflation subsided.

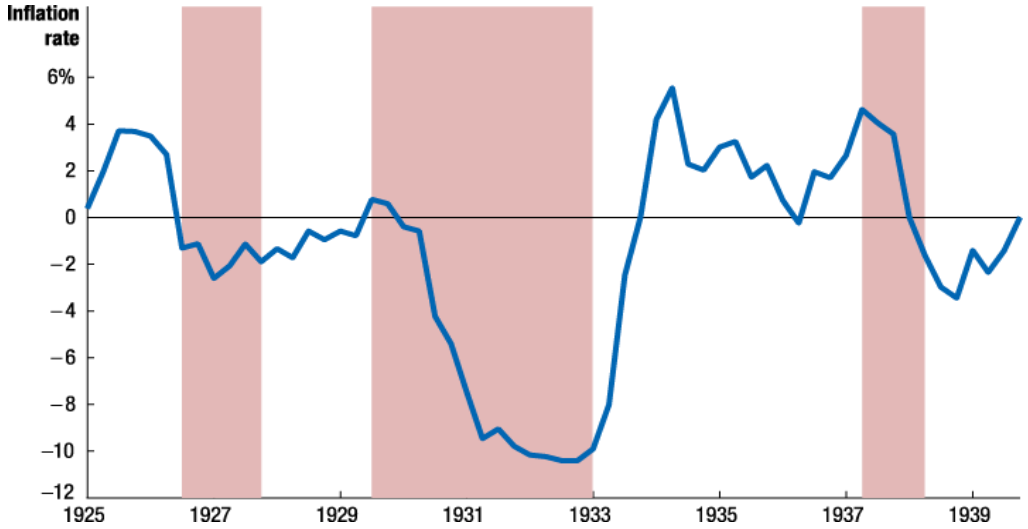
- On the other hand, if banks lend money at a low rate and then high inflation takes place, the real interest rate they receive may be zero or negative; thus the risk of inflation makes banks wary of lending.
- *Unpredictable inflation makes borrowing and lending risky*.

Making the Connection: What's So Bad about Falling Prices? (1 of 2)



- How are low prices detrimental to consumers and producers? *Deflation* is much more dangerous for an economy than inflation.
- Why? Suppose you are considering buying a car. You know the car will be cheaper next year, so you delay purchasing. But if everyone does the same, then many purchases are postponed, firms stop producing, people become unemployed, etc.

Making the Connection: What's So Bad about Falling Prices? (2 of 2)



- This can create a dangerous downward spiral, delaying economic recovery. Economists believe this occurred after the Great Depression of the 1930s and also in Japan in the 1990s.
- There were concerns that significant periods of deflation might have followed the recession of 2007-2009, but fortunately that did not occur.

THE END

“Thirty years ago, many economists argued that inflation was a kind of minor inconvenience and that the cost of reducing inflation was too high a price to pay. No one would make those arguments today.”

- Martin Feldstein