Principles of Macroeconomics

Topic 1 Part 2

Unemployment, Inflation, and Long-Run Growth (CH 7)

Copyright © 2017 Pearson Education, Ltd.

Unemployment

Measuring Unemployment (for 16 y.o. or older)

- **employed** Any person
  - (1) who works for pay, either for someone else or in his or her own business,
  - (2) who works without pay in a family business,
  - (3) who has a job but has been temporarily absent.
- **unemployed** A person who is not working, is available for work, and has made specific efforts to find work.

Copyright © 2017 Pearson Education, Ltd.

Unemployment

- **not in the labor force** A person who is not looking for work because he or she does not want a job or has given up looking.
- **labor force** The number of people employed plus the number of unemployed.

labor force = employed + unemployed

population = labor force + not in labor force

Copyright © 2017 Pearson Education, Ltd.

Measuring Unemployment

- **unemployment rate** The ratio of the number of people unemployed to the total number of people in the labor force.

$$\text{unemployment rate} = \frac{\text{unemployed}}{\text{employed} + \text{unemployed}}$$

- **labor force participation rate** The ratio of the labor force to the total population 16 years old or older.

$$\text{labor force participation rate} = \frac{\text{labor force}}{\text{population}}$$

Copyright © 2017 Pearson Education, Ltd.

TABLE 7.1 Employed, Unemployed, and the Labor Force, 1950–2014

	(1) Population 16 Years Old or Over (Millions)	(2) Labor Force (Millions)	(3) Employed (Millions)	(4) Unemployed (Millions)	(5) Labor Force Participation Rate (Percentage Points)	(6) Unemployment Rate (Percentage Points)
1990	189.2	125.8	118.8	7.0	66.5	5.6
2000	212.6	142.6	136.9	5.7	67.1	4.0
2010	232.8	153.9	139.1	14.8		
2014	247.9	155.9	146.3	9.6		

Source: Economic Report of the President, 2015 and U.S. Bureau of Labor Statistics.

Copyright © 2017 Pearson Education, Ltd.

Components of the Unemployment Rate

Unemployment Rates for Different Demographic Group

TABLE 7.2 Unemployment Rates by Demographic Group, 1982 and 2015

	Years	November 1982	March 2015
Total		10.8	5.5
White		9.6	4.7
Men	20+	9.0	4.4
Women	20+	8.1	4.2
Both sexes	16–19	21.3	15.7
African American		20.2	10.1
Men	20+	19.3	10.0
Women	20+	16.5	9.2
Both sexes	16–19	49.5	25.0

Source: U.S. Bureau of Labor Statistics. Data are seasonally adjusted.

Copyright © 2017 Pearson Education, Ltd.

Components of the Unemployment Rate

Discouraged-Worker Effects

- Sometimes, people who want to work but cannot find jobs become discouraged and stop looking for work.
- These people are not classified as “unemployed” and are not included in calculation of the unemployment rate.
- As a result, the unemployment rate falls.

Copyright © 2017 Pearson Education, Ltd.

Components of the Unemployment Rate

Discouraged-Worker Effects

- Discouraged-Worker Effects can mislead us into thinking that more people have got their jobs.
- Some economists argue that discouraged workers should be included as “the unemployed” to get a better picture of the unemployment situation.

Copyright © 2017 Pearson Education, Ltd.

Components of the Unemployment Rate

Discouraged-Worker Effects

Example

Suppose the labor force is 10 people, 2 of whom are unemployed. The unemployment rate is 0.2 or 20%.

Now, 1 out of 2 unemployed people becomes discouraged.

The labor force is now 9 people, 1 of whom is unemployed.

The new unemployment rate is 1/9 = 0.11 or 11%.

Copyright © 2017 Pearson Education, Ltd.

Categories of Unemployment

- There are four categories of unemployment:
  - Frictional unemployment
  - Structural unemployment
  - Cyclical unemployment
  - Seasonal unemployment

natural rate of unemployment The unemployment rate that occurs as a normal part of the economy, often taken as the sum of frictional and structural unemployment rates.

Copyright © 2017 Pearson Education, Ltd.

Categories of Unemployment

- **frictional unemployment** Unemployment as a result of the normal turnover in the labor market; used to denote short-run job-skill matching problems.

e.g. people change jobs to find better workplaces/salaries.

- **structural unemployment** Unemployment as a result of changes in the structure of the economy that result in a significant loss of jobs in certain industries.

e.g. newspaper workers are replaced by E-Book workers.

Copyright © 2017 Pearson Education, Ltd.

Categories of Unemployment

- **cyclical unemployment** Unemployment that is above frictional plus structural unemployment, due to fluctuations in business cycles.

e.g. when economy is good, jobs are plenty, and vice versa.

- **seasonal unemployment** Unemployment due to changing seasons.

e.g. rice farmers are laid off in summer.

Copyright © 2017 Pearson Education, Ltd.

Inflation and Deflation

- **inflation** An increase in the overall price level.
- **deflation** A decrease in the overall price level.

- **price level** = prices of some set of goods and services
- Measures of the overall price level are price indices, e.g.
  - Consumer Price Index or CPI
  - Producer Price Index or PPI
  - GDP Deflator (for next topic)

Copyright © 2017 Pearson Education, Ltd.

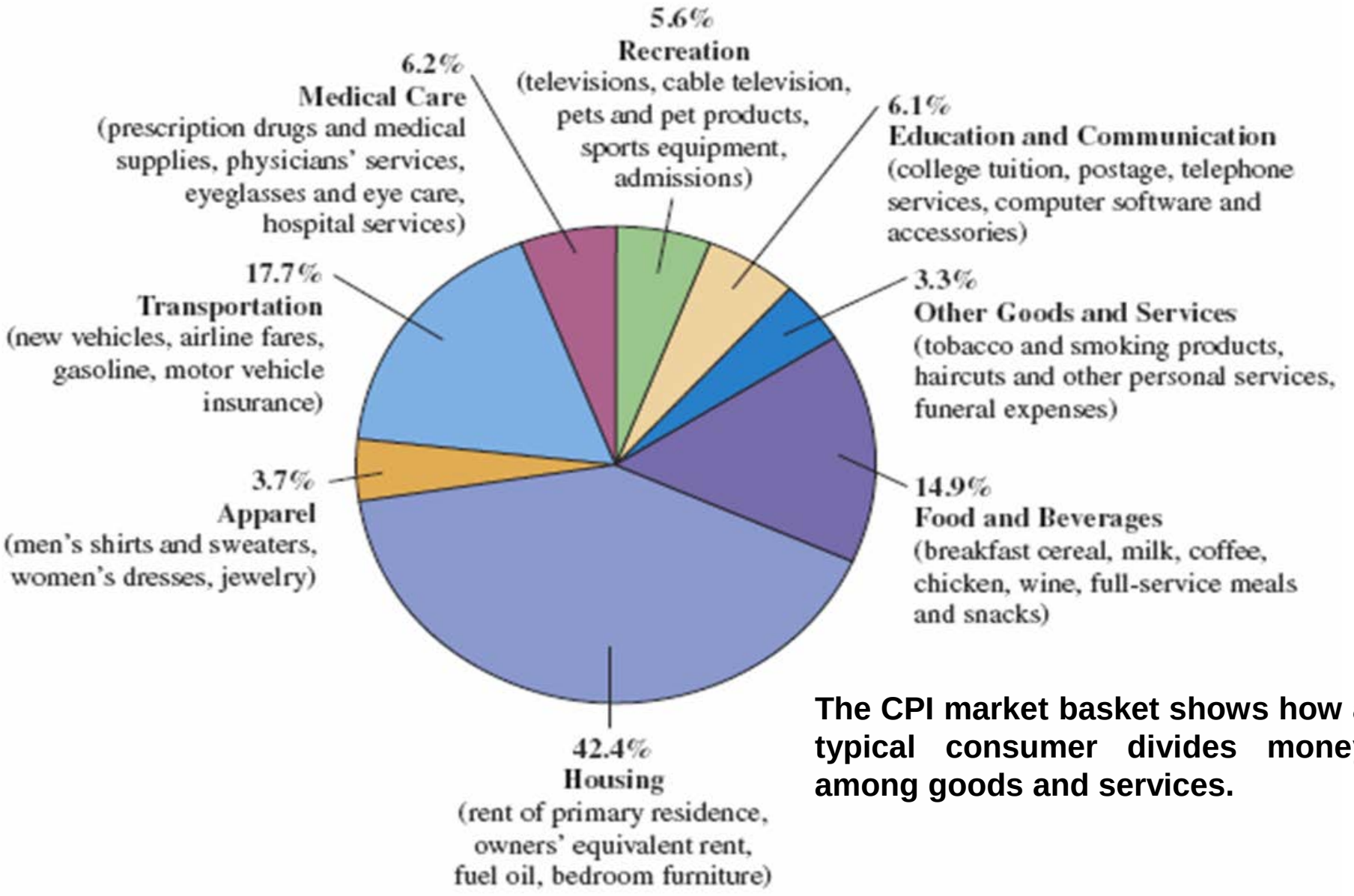
Price Index

The Consumer Price Index

- **consumer price index (CPI)** A price index computed using a bundle that represents the "market basket" purchased by the typical urban consumer.
- To construct CPI, the government agency will collect the data on prices and quantities of goods and services that the typical consumer buys.
- CPI measures inflation on **consumer** goods and services.

Copyright © 2017 Pearson Education, Ltd.

FIGURE 7.1 The CPI Market Basket



The CPI market basket shows how a typical consumer divides money among goods and services.

Copyright © 2017 Pearson Education, Ltd.

TABLE 7.4 The CPI, 1950–2014

Percentage change for a given year in the table is a measure of inflation in that year.

Year	Percentage Change in CPI	CPI
2007	2.8	207.3
2008	3.9	215.3
2009	-0.4	214.5
2010	1.7	218.1
2011		224.9
2012		229.6
2013	1.5	233
2014	1.6	236.7

Sources: U.S. Bureau of Labor Statistics.

Copyright © 2017 Pearson Education, Ltd.

Price Index

The Producer Price Index

- **producer price index (PPI)** Measures of prices that producers receive for products at all stages in the production process.
- Some PPIs detect price increases early in the production process. As a result, PPI can be a leading indicator of CPI.

Copyright © 2017 Pearson Education, Ltd.

The Costs of Inflation

- During inflations, most prices—including input prices like wages—tend to rise together, and input prices determine both the incomes of workers and the incomes of owners of capital and land.
- That is, although goods become more expensive, people also receive higher incomes.
- **So inflation by itself does not necessarily reduce one's purchasing power.**

Copyright © 2017 Pearson Education, Ltd.

The Costs of Inflation

- Purchasing power (PP) refers to how many goods we can buy with a given amount of money.
- Normally, inflation does not reduce PP because inflation raises both wage and prices of goods.
- But if our wages are FIXED due to “employment contracts”, then inflation will reduce our PP.
- This is because given the FIXED amount of income, we can buy LESS goods due to their HIGHER prices.

Copyright © 2017 Pearson Education, Ltd.

The Costs of Inflation

Inflation May Change the Distribution of Income

- The effects of anticipated inflation on the distribution of income are likely to be fairly small, since people will adjust to the anticipated inflation.
- Unanticipated inflation may have large effects.

- But do normal people anticipate inflation?
  - It is believed that people have "**Money Illusion**".

Copyright © 2017 Pearson Education, Ltd.

Money Illusion

Money illusion is an economic theory stating that many people have an illusory picture of their wealth and income based on nominal monetary terms, rather than real terms.

nominal value is measured in terms of money/currency.

- A nominal value has not been adjusted for inflation.

real value is measured in terms of goods or services.

- A real value has been adjusted for inflation.

Copyright © 2017 Pearson Education, Ltd.

The Costs of Inflation

- Actual inflation that is higher (lower) than anticipated benefits borrowers (lenders).

Example

You borrow 100$ from your friend in 2018 and promise to return 100$ in 2019. Assume that 100$ can buy 5 apples in 2018. Then, there is unanticipated inflation; in 2019, 100$ can only buy 4 apples.

Now, your friend is worse off, but you are better off.

This is why lenders (e.g. banks) will charge higher interest rate when they anticipate inflation.

Copyright © 2017 Pearson Education, Ltd.

Fisher Equation

- The lenders can use Fisher Equation when deciding the interest rate they should charge.
- Fisher Equation: $i = r + \pi$
- i denotes nominal interest rate, which is the rate that banks use.
- r denotes real interest rate, which is often assumed to be constant.
- π denotes inflation rate.

Copyright © 2017 Pearson Education, Ltd.

Fisher Equation

- Fisher Equation is a simple rule that financial institutions widely use to calculate returns on investments.
- When inflation rate is high, banks will set higher nominal interest rate.
- Otherwise, real interest rate ($r = i - \pi$) may become negative, and no one will deposit money in the bank.
- Negative real interest rate means that the value of money in the bank is deteriorating over time.

Copyright © 2017 Pearson Education, Ltd.

Fisher Equation - Example

- Suppose we have 100$ deposit, and apple price is 5$/unit.
- Consider 3 cases.

Case 1 where i = 0% and π = 0%

- We can buy 100/5 = 20 apples after a year.
- r = 0%, i.e. we do not lose or gain from deposit.

Case 2 where i = 10% and π = 10%

- We can buy 110/5.5 = 20 apples after a year.
- r = 0%, i.e. we do not lose or gain from deposit.

Copyright © 2017 Pearson Education, Ltd.

Fisher Equation - Example

Case 3 where i = 0% and π = 10%

- We can buy 100/5.5 = 18 apples after a year.
- r = -10%, i.e. we lose from depositing money.

- The example shows that when real interest rate is negative, we should not deposit money in the bank because the purchasing power is falling over time.

Copyright © 2017 Pearson Education, Ltd.

The Costs of Inflation

Administrative Costs and Inefficiencies

- There may be costs associated even with anticipated inflation, such as costs from changing menus / price lists frequently. **(menu cost)**
- Interest rates tend to rise with anticipated inflation. When interest rates are high, the opportunity cost of holding cash outside banks is high. **(shoe leather cost)**
- Therefore, there is a need for price stability.

Copyright © 2017 Pearson Education, Ltd.

Main Cause of Inflation

Printing money (increasing money supply) often causes inflation, but this is necessary.

Yet, printing too much money is dangerous, as it causes hyperinflation.

As the economy and its population grow, more and more people will need money for their transactions.

Thus, with FIXED money supply, there will NOT be enough cash for everyone.

Copyright © 2017 Pearson Education, Ltd.

Main Cause of Inflation

What if the government does not print more money?

When money becomes scarce, people will hoard money, knowing that its purchasing power will increase in the future.

This is the case of BitCoin where its supply is fixed.

The Govt does not want people to hoard money (as a form of investment), but rather the Govt wants us to use money as the mean of exchange, so printing money is necessary.

Copyright © 2017 Pearson Education, Ltd.

Long-Run Growth

Apart from low unemployment and stable price, the policy makers concern growth.

- **output growth** The growth rate of the output of the entire economy.
- **per-capita output growth** The growth rate of output per person in the economy.
- **productivity growth** The growth rate of output per worker.

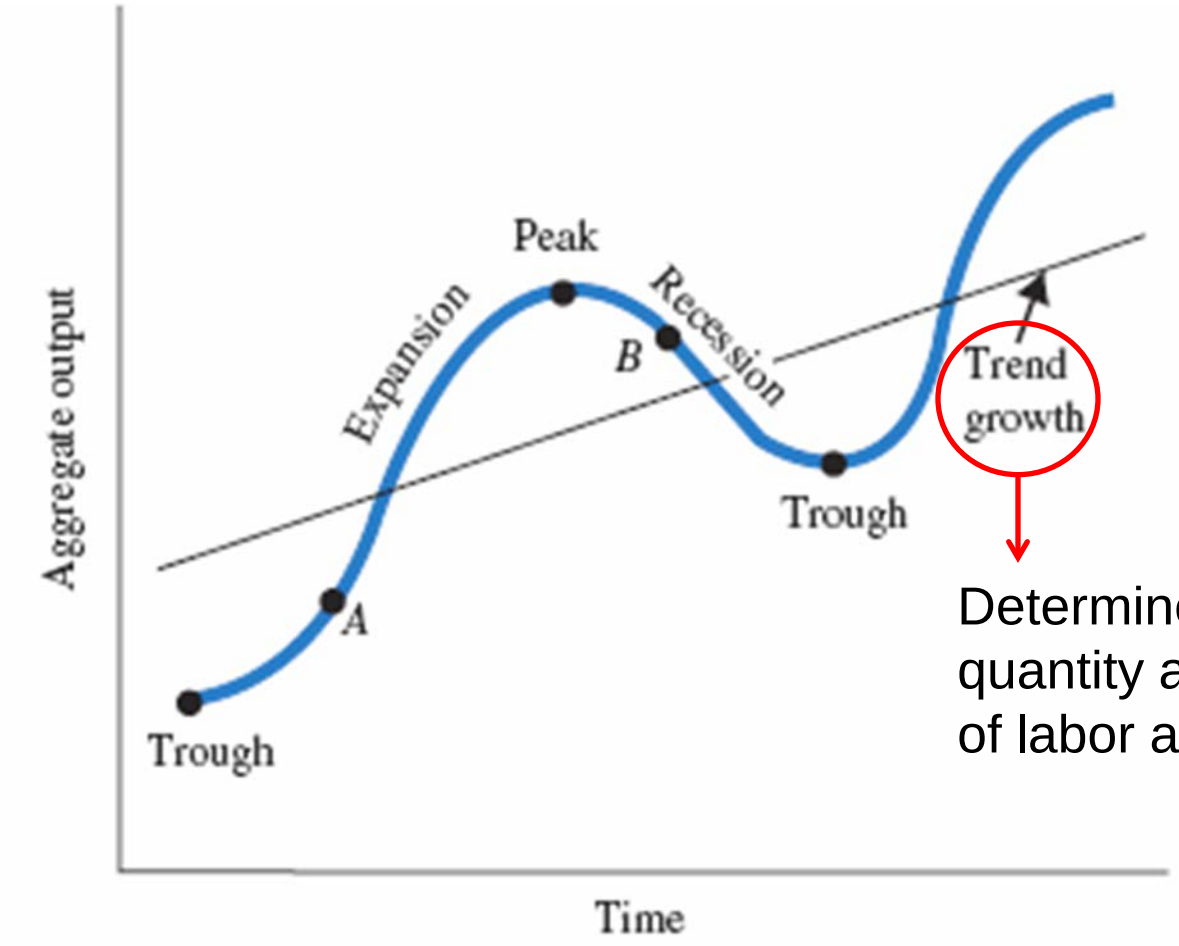
Copyright © 2017 Pearson Education, Ltd.

Long-Run Growth

- **Per-capita output** is a measure of welfare, and it can increase because **productivity** increases.
- Consider a simplified economy where capital and labor are needed to produced output. To increase output, the government can adopt the following approaches.
  - increase **quality** of capital and labor by education, training, research and development, etc.
  - increase **quantity** of capital and labor by population growth, employing more capitals and labor, etc.

Copyright © 2017 Pearson Education, Ltd.

Long-Run Growth



Determined by quantity and quality of labor and capital.

Copyright © 2017 Pearson Education, Ltd.