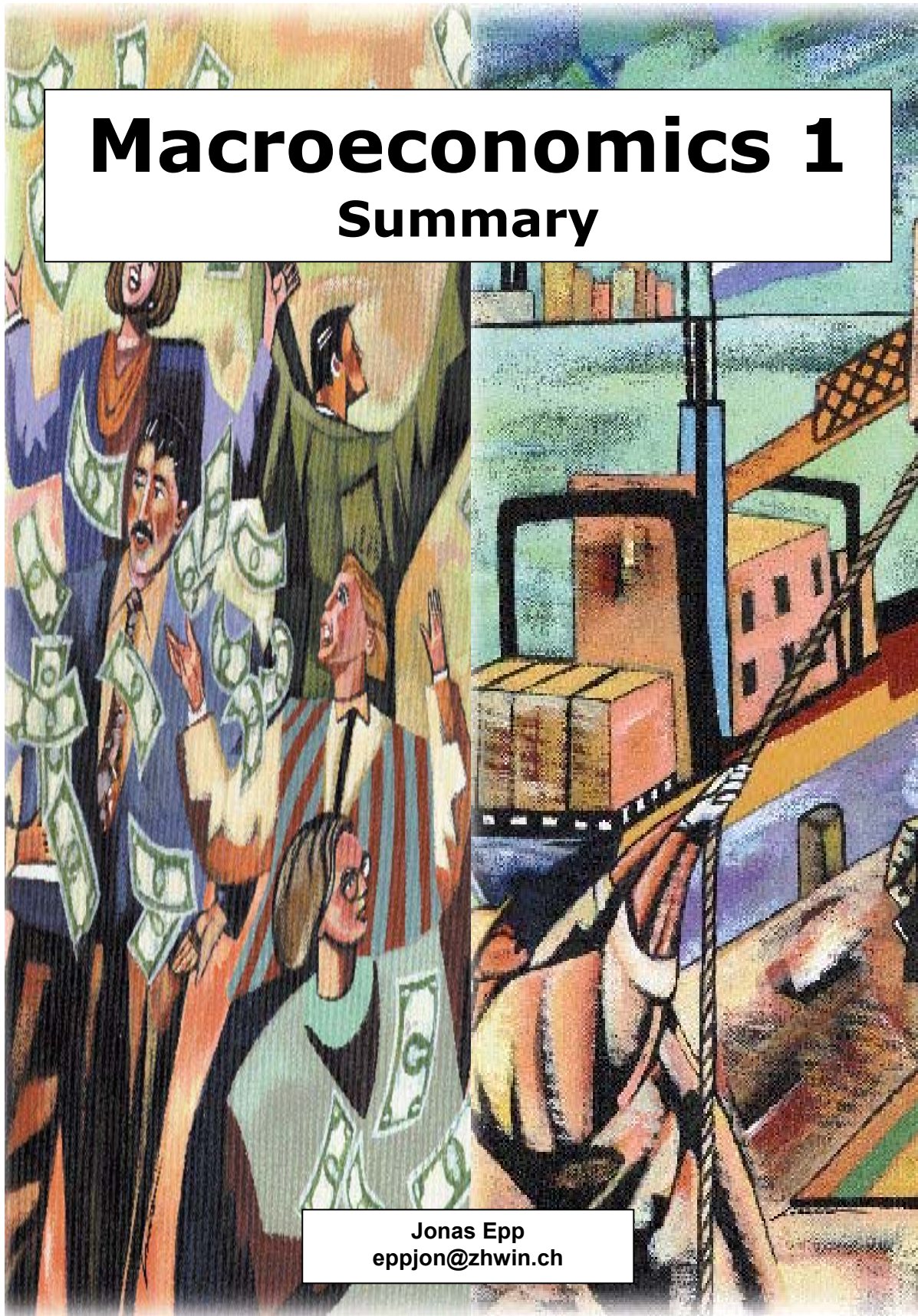


Macroeconomics 1

Summary



Jonas Epp
eppjon@zhwin.ch

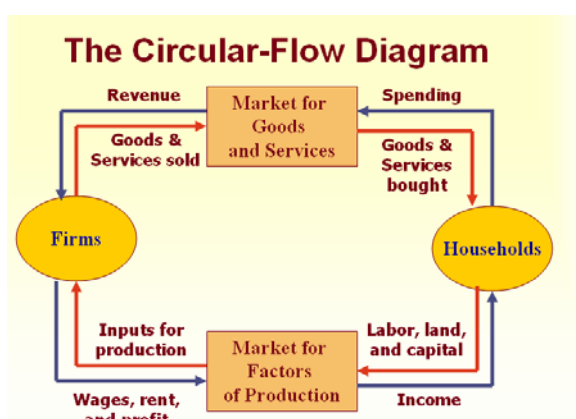
Table of Contents

What is Macroeconomics?	2
Chapter 18 Introduction	3
The demand for labor	3
The supply of labor	5
Equilibrium in the Labor Market	5
Other Factors of Production: Land and Capital	6
Summary	7
Chapter 19 Introduction	8
Some determinants of equilibrium wages	8
The Economics of Discrimination	10
Summary	11
Chapter 20 Introduction	12
The Measurement of Inequality	12
Political Philosophy of Redistributing Income	14
Policies to Reduce Poverty	15
Summary	16
Chapter 23 Introduction	17
The Economy's Income and Expenditure	17
Gross Domestic Product	17
Other Measures of Income	18
The Components of GDP	19
Real versus Nominal GDP	20
Summary:	21
Chapter 24 Introduction	22
The Consumer Price Index	22
Correcting economic variables for the effects of inflation	24
Summary	25
Chapter 25 Introduction	26
Economic Growth Around the World	26
Economic Growth and Public Policy	28
Summary	30
Chapter 26 Introduction	31
Financial Institutions	31
Saving and Investment in the National Income Accounts	32
The Market for Loanable Funds	33
Summary	35
Chapter 28 Introduction	36
Identifying unemployment	36
Job Search Unemployment	38
Minimum-Wage Laws	39
Unions and Collective Bargaining	39
Theory of Efficiency Wages	40
Summary	40
Chapter 29 Introduction	41
The meaning of money	41
The Federal Reserve System	42
Banks and the money supply	42
Summary	44
Chapter 30 Introduction	45
The Classical Theory of Inflation	45
The Costs of Inflation	47
Summary	48

What is Macroeconomics?

- Entire economy
- Macro Phenomena:

	Phenomena	Measured by	Goals of economic policy
1	Inflation	Inflation rate	Stability of prices
2	Unemployment	Unemployment rate	Full employment
3	Production or incomes and growth	GDP, GNP, national income	Steady, sustainable growth
4	Business cycles	Changes in GDP	Low volatility
5	Distribution of wealth and incomes	Trade balance (import, export)	Balanced trade
6	International trade	Lorenz curve	Equity, social justice



Microeconomics: Firms + Households

Macroeconomics: Market for Goods and services + Market for factors of production.

■ = Flow of money

■ = Flow of work?? No!!
Households provide labor, land and capital. Firms use or change them into goods and services.

In Macroeconomics we distinguish 4 main economic sectors:

- Private households
- Business firms
- Government
- All other countries (rest of the world)

The 3 main economic activities are;

- Production
- Exchange/trade
- consumption

Chapter 18 Introduction

When you finish school, your income will be determined largely by what kind of job you take. If you become a computer programmer, you will earn more than if you become a gas station attendant. What determines how much goes to workers? Why do some workers earn higher wages than others, some landowner's higher rental income than others, and some capital owner greater profit than others? Why, in particular, do computer programmers earn more than gas station attendants?

The answer to these questions, like most in economics, hinge on supply and demand. The supply and demand for labour, land and capital determine the prices paid to workers, landowners and capital owners. To understand why some people have higher incomes than others, therefore, we need to look more deeply at the markets for the services they provide.

Factors of production

Factors of production (labor, land, capital) are the inputs used to produce goods and services.

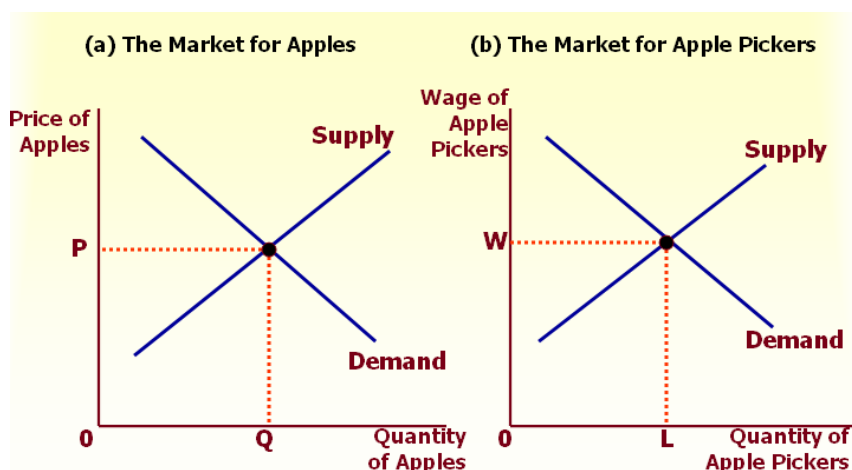
The market for the factors of production

The demand for a factor of production is a derived demand.

- A firm's demand for a factor of production is *derived* from its decision to supply a good in another market.

The demand for labour

Labor markets, like other markets in the economy, are governed by the forces of supply and demand. Most labor services, rather than being final goods ready to be enjoyed by costumers, are inputs into the productions of other goods.



The production function and the marginal product of labour

Economists use the term **production function** to describe the relationship between the quantity of the inputs used in production and the quantity of output from production. Here the inputs are the apple picker and the output is the apples.

The **marginal product of labour** is the increase in the amount of output from an additional unit of labour.

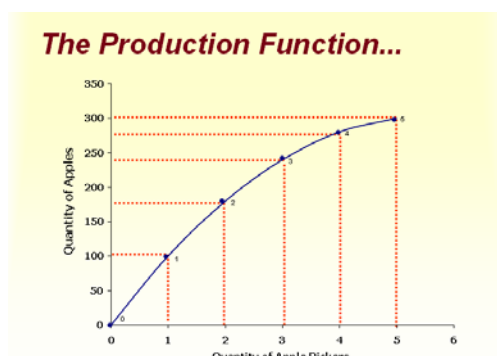
$$\text{MPL} = \Delta Q / \Delta L$$

$$\text{MPL} = (Q_2 - Q_1) / (L_2 - L_1)$$

Exemple :

**How the Competitive Firm Decides
How Much Labor to Hire**

Labor L	Output Q	Marginal Product of Labor MPL $MPL = \Delta Q / \Delta L$	Value of the Marginal Product of Labor VMPL = P x MPL	Wage W	Marginal Profit $\Delta Profit = VMPL - W$
0	0				
1	100	100	\$1,000	\$500	\$500
2	180	80	\$800	\$500	\$300
3	240	60	\$600	\$500	\$100
4	280	40	\$400	\$500	-\$100
5	300	20	\$200	\$500	-\$300



Diminishing marginal product

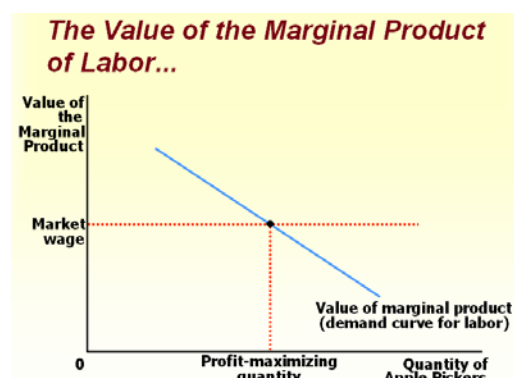
- As the number of workers increases, the marginal product of labor declines.
- As more and more workers are hired, each additional worker contributes less to production than the prior one.
- The production function becomes flatter as the number of workers rises

The Value of the Marginal Product of Labour

The value of the marginal product is the marginal product of the input multiplied by the market price of the output. It diminishes as the number of workers rises because the market price of the good is constant.

$$VMPL = MPL \times P$$

Value of the marginal product



To maximize profit, the competitive, profit-maximizing firm hires workers up to the point where the value of marginal product of labor equals the wage. The value-of-marginal-product curve is the **labor demand curve** for a competitive, profit-maximizing firm.

$$VMPL = Wage$$

Input demand and output supply

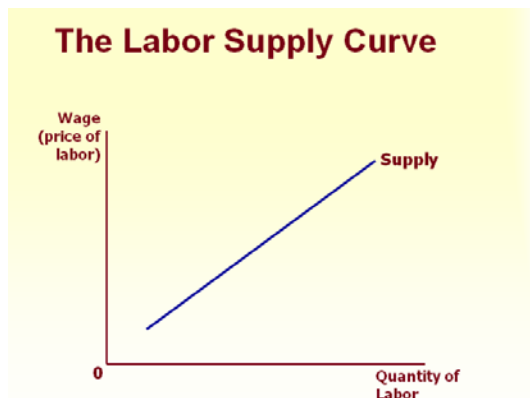
When a competitive firm hires labor up to the point at which the value of the marginal product equals the wage, it also produces up to the point at which the price equals the marginal cost.

What causes the labour demand curve to shift?

- Output Price
- Technological Change
- Supply of Other factors
(e.g. A fall in the supply of ladders, for instance, will reduce the marginal product of apple pickers and thus the demand for apple pickers)

The supply of labour

The labour supply curve

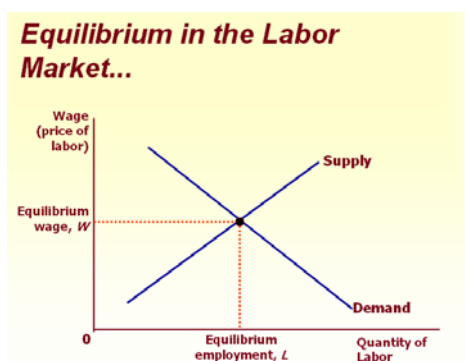


- The labor supply curve reflects how workers' decisions about the labor-leisure tradeoff respond to changes in opportunity cost.
- An upward-sloping labor supply curve means that an increase in the wages induces workers to increase the quantity of labor they supply.

What Causes the Labour Supply Curve to Shift?

- Changes in Tastes
(e.g. Today, family size are smaller, and more mothers choose to work. The result is an increase in the supply of labor.)
- Changes in Alternative Opportunities
(e.g. Wages increase for pear pickers...)
- Immigration

Equilibrium in the Labour Market

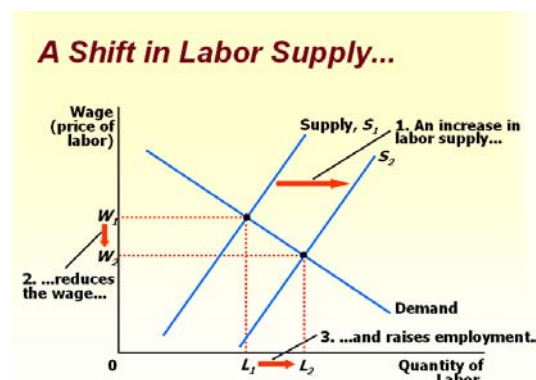


- The wage adjusts to balance the supply and demand for labor.
- The wage equals the value of the marginal product of labor.

Important lesson:

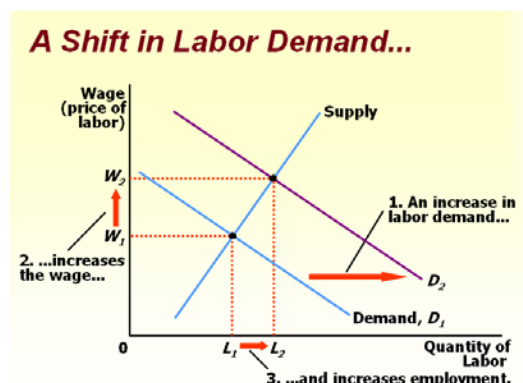
Any event that changes the supply or demand for labor must change the equilibrium wage and the value of the marginal product by the same amount, because these must be equal.

A shift in Labor supply



- **An increase in the supply of labor :**
 - Results in a surplus of labor.
 - Puts downward pressure on wages.
 - Makes it profitable for firms to hire more workers.
 - Results in diminishing marginal product.
 - Lowers the value of the marginal product.
 - Gives a new equilibrium

A shift in labour demand



- **An increase in the demand for labor :**
 - Makes it profitable for firms to hire more workers.
 - Puts upward pressure on wages.
 - Raises the value of the marginal product (because price rises).
 - Gives a new equilibrium.

Three Determinants of Productivity

- **Physical Capital**
 - When workers work with a larger quantity of equipment and structures, they produce more
- **Human Capital**
 - When workers are more educated, they produce more.
- **Technological Knowledge**
 - When workers have access to more sophisticated technologies, they produce more.

Other Factors of Production: Land and Capital

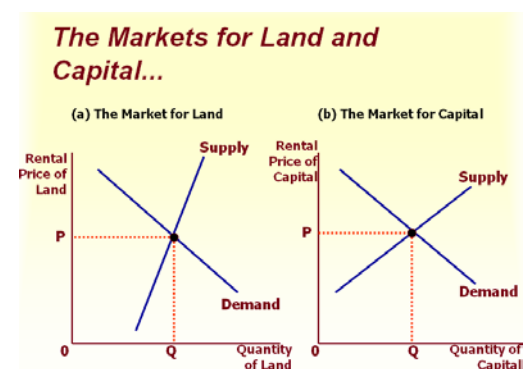
Economists use the term **capital** (e.g. For a apple firm, the capital stock includes the ladders used to climb the trees, the trucks used to transport the apples, the buildings used to store the apples and even the trees themselves) to refer to the stock of equipment and structures used for production.

- The economy's capital represents the accumulation of goods produced in the past that are being used in the present to produce new goods and services.

Prices of Land and Capital

- The **purchase price** is what a person pays to own a factor of production indefinitely.
- The **rental price** is what a person pays to use a factor of production for a limited period of time.

Equilibrium in Markets for Land and Capital



- The rental price of land and the rental price of capital are determined by supply and demand.
 - The firm increases the quantity hired until the value of the factor's marginal product equals the factor's price.
 - Thus, the demand curve for each factor reflects the marginal productivity of that factor.

Linkages Among the Factors of Production

- **Factors of production are used together:**
 - The marginal product of any one factor depends on the quantities of all factors that are available.
- **A change in the supply of one factor alters the earnings of all the factors.**
- **A change in earnings of any factor can be found by analyzing the impact of the event on the value of the marginal product of that factor.**

→ See examples in the script

Summary

- The three most important factors of production are labor, land, and capital.
- The demand for factors, such as labor, is a derived demand that comes from firms that use the factors to produce goods and services.
- Competitive, profit-maximizing firms hire each factor up to the point at which the value of the marginal product of the factor equals its price.
- The supply of labor arises from individuals' tradeoff between work and leisure.
- An upward-sloping labor supply curve means that people respond to an increase in the wage by enjoying less leisure and working more hours.
- The price paid to each factor adjusts to balance the supply and demand for that factor.
- Because factor demand reflects the value of the marginal product of that factor, in equilibrium each factor is compensated according to its marginal contribution to the production of goods and services.
- Because factors of production are used together, the marginal product of any one factor depends on the quantities of all factors that are available.
- As a result, a change in the supply of one factor alters the equilibrium earnings of all the factors.

Chapter 19 Introduction

In the United States today, the typical physician earns about \$ 200'000 a year, the typical police officer about \$ 50'000, and the typical farm worker about \$ 20'000. These examples illustrate the large differences in earnings that are so common in our economy. In Chapter 18 we saw that wages are governed by labour supply and labour demand. Labour demand, in turn, reflects the marginal productivity of labour. In equilibrium, each worker is paid the value of his or her marginal contribution to the economy's production of goods and services.

Some determinants of equilibrium wages

Compensating differentials

- **Compensating differentials** refer to differences in wages that arises from nonmonetary characteristics of different jobs.
 - Coal miners are paid more than others with similar levels of education.
 - Night shift workers are paid more than day shift workers.
 - Professors are paid less than lawyers and doctors.

Human Capital

- Human capital is the accumulation of investments in people.
- The most important type of human capital is **education**.
- Education represents an expenditure of resources at one point in time to raise productivity in the future.
- Job tenure (experience)

→ Idea is that education makes you more productive.

Average Annual earnings by Educational Attainment:

	1978	1998
Men		
High school, no college	\$31,847	\$28,742
College graduates	\$52,761	\$62,588
Percent extra for college grads	+ 66 percent	+ 118 percent
Women		
High school, no college	\$14,953	\$17,898
College graduates	\$23,170	\$35,431
Percent extra for college grads	+ 55 percent	+ 98 percent

Why has the gap in earnings between skilled and unskilled workers risen in recent years?

- International trade has altered the relative demand for skilled and unskilled labor.
- Changes in technology have altered the relative demand for skilled and unskilled labor.

Ability, Effort, Chance and Beauty

Why do baseball players in the major leagues get paid more than those in the minor leagues? To a large extent, players in the major leagues earn more just because they have greater natural ability.

Natural ability is important for workers in all occupations. Because people differ in their physical and mental attributes. Some people are strong, others weak. Some people are smart, others less so. These and many other personal characteristics determine how productive workers are and, therefore, play a role in determining the wages they earn.

Effort is closely related to ability. Some people work hard, others are lazy. We should not be surprised to find that those who work hard are more productive and earn higher wages.

Chance (choosing the right profession at the right time)

When labour economists study wages, they relate a worker's wage to those variables that can be measured – years of schooling, years of experience, age, and job characteristics. Although all of these measured variables affect a worker's wage as theory predicts, **they account for less than half of the variation in wages in our economy.**

Beauty (Brad Pitt):

- costumers preferences
- signal for abilities
- direct discrimination

An alternative view of education: signalling

Firms use educational attainment as a way of sorting between high-ability and low-ability workers.

- It is rational for firms to interpret a college degree as a **signal** of ability.
- In the signaling theory of education, schooling has **no real productivity** benefit, but the worker signals his innate productivity to employers by his willingness to spend years at school.

There are now two views of education: **the human-capital theory** and **the signaling theory.**

- According to **the human-capital view**, increasing educational levels for all workers would raise all worker's productivity and thereby their wages.
- According to **the signaling view**, education does not enhance productivity, so raising all workers' education levels would not affect wages.

The superstar phenomenon

Superstars arise in markets that exhibit the following characteristics:

- Every customer in the market wants to enjoy the good supplied by the **best** producer and not to see a mediocre player!
- The good is produced with a technology that makes it possible for the best producer to supply every customer at a **low cost.**

Moreover, it is possible for everyone to enjoy the comedy of e.g. Robin Williams. Because it is easy to make multiple copies of a film, Robin Williams can provide his service to millions of people simultaneously.

Above-equilibrium wages:

Minimum-wages laws, unions, and efficiency wages

Minimum-wages laws raise wages above the level they would earn in an unregulated labour market. In particular, pushing a wage above the equilibrium level raises the quantity of labour supplied and reduces the quantity of labour demanded. The result is a surplus of labour, or **unemployment**.

Unions bargain with employers over wages and working condition. Studies suggest that union workers earn about 10 to 20 percent more than similar non-union workers.

The theory of **efficiency wages** holds that a firm can find it profitable to pay high wages because doing so increases the productivity of its workers. High wages may:

- reduce worker turnover.
- Increase worker effort.
- Raise the quality of workers that apply for jobs at the firm.

The Economics of Discrimination

Discrimination occurs when the marketplace offers different opportunities to similar individuals who differ only by race, ethnic group, sex, age, or other personal characteristics. Although discrimination is an emotionally charged topic, economists try to study the topic objectively in order to separate myth from reality.

Measuring Labor-Market Discrimination

- Discrimination is often measured by looking at the average wages of different groups (Job characteristics).
- Even in a labor market free of discrimination, different people have different wages (e.g. black and white's)
- People differ in **the amount of human capital** they have and in the **kinds of work** they are willing and able to do.
- Simply observing differences in wages among broad groups – white and black, men and women – says little about the prevalence of discrimination.
- Because the differences in average wages among groups in part reflect differences in human capital and job characteristics, they do not by themselves say anything about how much discrimination there is in the labor market.

→ Remaining differences, e.g. between the sexes are **direct discrimination** (around 5%)

Discrimination by employers

Firms that do not discriminate will have lower labor costs when they hire the employees discriminated against. And nondiscriminatory firms will tend to replace firms that discriminate.

As a result:

- Competitive markets tend to limit the impact of discrimination on wages.
- Firms that do not discriminate will be more profitable than those firms that do discriminate.
- Firms that do not discriminate tend to replace those that do.
- In this way, competitive markets have a natural remedy for employer discrimination.

Discrimination by Customers and Governments

Although the profit motive is a strong force acting to eliminate discriminatory wage differentials, there are limits to its corrective abilities.

- Customer preferences
- Government policies

Customer preferences: If customers have discriminatory preferences, a competitive market is consistent with a discriminatory wage differential. This will happen when customers are willing to pay to maintain the discriminatory practice.

Government policies: When the government mandates discriminatory practices or requires firms to discriminate, this may also lead to discriminatory wage differentials.

Summary

- Workers earn different wages for many reasons.
- To some extent, wage differentials compensate workers for job attributes.
- Workers with more human capital get paid more than workers with less human capital.
- The return to accumulating human capital is high and has increased over the past decade.
- There is much variation in earnings that cannot be explained by things economists can measure.
- The unexplained variation in earnings is largely attributable to natural ability, effort, and chance.
- Some economists argue that more-educated workers earn higher wages because workers with high natural ability use education as a way to signal their high ability to employers
- Wages are sometimes pushed above the equilibrium level because of minimum-wage laws, unions, and efficiency wages.
- Some differences in earnings are attributable to discrimination on the basis of race, sex, or other factors.
- When measuring the amount of discrimination, one must correct for differences in human capital and job characteristics.
- Competitive markets tend to limit the impact of discrimination on wages.
- Discrimination can persist in competitive markets if customers are willing to pay more to discriminatory firms, or if the government passes laws requiring firms to discriminate

Chapter 20 Introduction

“A person’s earnings depend on the supply and demand for that person’s labor, which in turn depend on natural ability, human capital, compensating differentials, discrimination, and so on.”

The Measurement of Inequality

- How much inequality is there in our society?
- How many people live in poverty?
- What problems arise in measuring the amount of inequality?
- How often do people move among income classes?

The Distribution of Income in the United States: 1998

Annual Family Income	Percent of Families
Under \$15,000	11.7%
\$15,000-\$24,999	12.3
\$25,000-\$34,999	12.7
\$35,000-\$49,999	16.8
\$50,000-\$74,999	21.5
\$75,000-\$99,999	11.7
\$100,000 and over	13.3

U.S. Income Inequality

Imagine that you. . .

- . . . lined up all of the families in the economy according to their annual income.
- . . . divided the families into five equal groups (bottom fifth, second fifth, etc.)
- . . . computed the share of total income that each group of families received.

Income Inequality in the United States

Year	Bottom Fifth	Second Fifth	Middle Fifth	Fourth Fifth	Top Fifth	Top 5%
1998	4.2%	9.9%	15.7%	23.0%	47.3%	20.7%
1990	4.6	10.8	16.6	23.8	44.3	17.4
1980	5.2	11.5	17.5	24.3	41.5	15.3
1970	5.5	12.2	17.6	23.8	40.9	15.6
1960	4.8	12.2	17.8	24.0	41.3	15.9
1950	4.5	12.0	17.4	23.4	42.7	17.3
1935	4.1	9.2	14.1	20.9	51.7	26.5

From 1935-1970, the distribution of income gradually became more equal. In more recent years, this trend has reversed itself.

Reasons for Recent Increase in Income Inequality

The following have tended to reduce the demand for unskilled labor and raise the demand for skilled labor:

- Increases in international trade with low-wage countries
- Changes in technology
- The wages of unskilled workers have fallen relative to the wages of skilled workers.
- This has resulted in increased inequality in family incomes.

The Poverty Rate

The **poverty rate** is the percentage of the population whose family income falls below an absolute level called the **poverty line**.



The Poverty Line and Income Inequality

- As economic growth pushes the entire income distribution upward, more families are pushed above the poverty line because the poverty line is an absolute rather than a relative standard.
- Despite continued economic growth in average income, the poverty rate has not declined.
- Although economic growth has raised the income of the typical family, the increase in inequality has prevented the poorest families from sharing in this greater economic prosperity.

Three Facts About Poverty

- Poverty is correlated with race.
- Poverty is correlated with age.
- Poverty is correlated with family composition.

Problems in Measuring Inequality

Data on income distribution and the poverty rate give an incomplete picture of inequality in living standards because of the following:

- **In-kind transfers**
- **The economic life cycle**
- **Transitory versus permanent income**

In-Kind Transfers

Transfers to the poor given in the form of goods and services rather than cash are called in-kind transfers.

- Measurements of the distribution of income and the poverty rate are based on families' money income.
- The failure to include in-kind transfers as part of income greatly affects the measured poverty rate.

The Economic Life Cycle

The regular pattern of income variation over a person's life is called the life cycle.

- A young worker has a low income at the beginning of his or her career.
- Income rises as the worker gains maturity and experience.
- Income peaks at about age 50.
- Income falls sharply at retirement, around age 65.

Transitory versus Permanent Income

Incomes vary because of random and transitory forces.

- Acts of nature that reduce income
- Temporary layoffs due to illness or economic conditions, etc.
- A family's ability to buy goods and services depends largely on its permanent income, which is its normal, or average, income.
- Permanent income excludes transitory changes in income.

Economic Mobility

- The movement of people among income classes is called economic mobility.
- Economic mobility is substantial in the U.S. economy.

Sources of Economic Mobility

Movements up and down the income ladder can be due to:

- Good or bad luck.
- Hard work or laziness.
- Persistence of economic success from generation to generation.

Political Philosophy of Redistributing Income

What should the government do about economic inequality?

- Economic analysis alone cannot give us the answer.
- The question is a normative one facing policymakers.

Three Political Philosophies

- Utilitarianism
- Liberalism
- Libertarianism

Utilitarianism

Utilitarianism is the view that government should redistribute income to maximize the total **utility** of everyone in society.

The utilitarian case for redistributing income is based on the assumption of **diminishing marginal utility**.

- An extra dollar of income to a poor person provides that person with more utility, or well-being, than does an extra dollar to a rich person.

Liberalism

Liberalism is the view that income should be redistributed in such a way so that the poorest in society always receive an adequate level of income as a form of social insurance (John Rawls).

- Public policy should be based on the **maximin criterion**, which seeks to maximize the utility or well-being of the worst-off person in society.
- That is, rather than maximizing the sum of everyone's utility, one should **maximize the minimum utility**.

Libertarianism

Libertarianism is the view that government should enforce individual rights to ensure that everyone has the same opportunity to use his or her talents to achieve success, but should not redistribute income.

Libertarians argue that equality of opportunity is more important than equality of income.

Policies to Reduce Poverty

- Minimum-wage laws
- Welfare
- Negative income tax
- In-kind transfers

Minimum-Wage Laws

- Advocates view the minimum wage as a way of helping the working poor.
- Critics view the minimum wage as hurting those it is intended to help.
- The magnitude of the effects of the minimum wage depends on the elasticity of the demand for labor.
- Advocates argue that the demand for unskilled labor is relatively inelastic, so that a high minimum wage depresses employment only slightly.
- Critics argue that labor demand is more elastic, especially in the long run when firms can adjust employment more fully.

Welfare

- The government attempts to raise the living standards of the poor through the welfare system.
- **Welfare** is a broad term that encompasses various government programs that supplement the incomes of the needy.
- Temporary Assistance for Needy Families
- Supplemental Security Income (SSI)

Negative Income Tax

A negative income tax collects tax revenue from high-income households and gives transfers to low-income households.

- High-income families would pay a tax based on their incomes.
- Low-income families would receive a subsidy – a “negative tax.”
- Poor families would receive financial assistance without having to demonstrate need.

In-Kind Transfers

- **In-kind transfers** are transfers to the poor given in the form of goods and services rather than cash.
- Food stamps and Medicaid are examples.
- Advocates of in-kind transfers argue that such transfers ensure that the poor get what they most need.
- Advocates of cash payments argue that in-kind-transfers are inefficient and disrespectful.

Antipoverty Programs and Work Incentives

Many policies aimed at helping the poor can have the unintended effect of discouraging the poor from escaping poverty on their own.

- An antipoverty program can affect work incentives:
 - A family needs \$15,000 to maintain a reasonable standard of living.
 - The government promises to guarantee every family a \$15,000 income.
 - Any person making under \$15,000 has no incentive to work due to the effective marginal tax rate of 100 percent.

Workfare refers to a system that would require any person collecting benefits to accept a government-provided job.

Summary

- Data on the distribution of income show wide disparity in our society.
- The richest fifth of the families earns about ten times as much as the poorest fifth.
- It is difficult to gauge the degree of inequality using data on the distribution of income in a single year.
- Political philosophers differ in their views about the role government should play in redistributing income.
- Utilitarians would choose the distribution of income to maximize the sum of the utility of everyone in society.
- Liberals would determine the distribution of income as if we were behind a “veil of ignorance” that prevented us from knowing our own stations in life.
- Libertarians would have the government enforce individual rights but not be concerned about inequality in the resulting distribution of income.
- Various policies aimed to help the poor include: minimum-wage laws, welfare, negative income taxes, and in-kind transfers.
- Although each of these policies helps some families escape poverty, they also have unintended side effects.

Chapter 23 Introduction

The statistic might measure the total income of everyone in the economy (GDP), the rate at which average prices are rising (inflation), the percentage of the labour force that is out of work (unemployment). All this have to do with the measuring of the nation's income.

Just to remember...

Microeconomics is the study of how individual households and firms make decisions and how they interact with one another in markets.

Macroeconomics is the study of the economy as a whole.

- Its goal is to explain the economic changes that affect many households, firms, and markets at once.

Macroeconomics answers questions like the following:

- Why is average income high in some countries and low in others?
- Why do prices rise rapidly in some time periods while they are more stable in others?
- Why do production and employment expand in some years and contract in others?

The Economy's Income and Expenditure

When judging whether the economy is doing well or poorly, it is natural to look at the total income that everyone in the economy is earning.

For an economy as a whole, **income must equal expenditure** because:

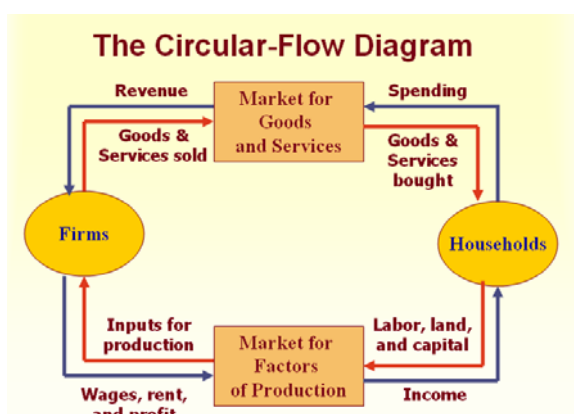
- Every transaction has a buyer and a seller.
- Every dollar of spending by some buyer is a dollar of income for some seller.

Gross Domestic Product

Gross domestic product (GDP) is a measure of the income and expenditures of an economy. It is the total market value of all final goods and services produced within a country in a given period of time.

The Circular-Flow Diagram

The equality of income and expenditure can be illustrated with the **circular-flow diagram**.



The Measurement of GDP

GDP is the market value of all final goods and services produced within a country in a given period of time.

- Output is valued at **market prices**.
- It records only the value of **final goods**, not **intermediate goods** (the value is counted only once).
- It includes both **tangible goods** (food, clothing, cars) and **intangible services** (haircuts, housecleaning, doctor visits).
- It includes goods and services **currently produced**, not transactions involving goods produced in the past.
- It measures the value of production **within the geographic confines of a country**.
- It measures the value of production that takes place **within a specific interval of time**, usually a year or a quarter (three months).

What is counted in GDP?

GDP includes all items produced in the economy and sold legally in markets.

What Is Not Counted in GDP?

GDP excludes most items that are produced and consumed at home and that never enter the marketplace. It excludes items produced and sold illicitly, such as **illegal drugs** or housework by women or men.

Other Measures of Income

- Gross National Product (GNP)
- Net National Product (NNP)
- National Income
- Personal Income
- Disposable Personal Income

Gross National Product

Gross national product (GNP) is the total income earned by a nation's permanent residents (called nationals).

It differs from GDP by including income that our citizens earn abroad and excluding income that foreigners earn here.

Net National Product (NNP)

- **Net National Product (NNP)** is the total income of the nation's residents (GNP) minus losses from depreciation.
- **Depreciation** is the wear and tear on the economy's stock of equipment and structures.

National Income

- **National Income** is the total income earned by a nation's residents in the production of goods and services.
- It differs from NNP by excluding **indirect business taxes** (such as sales taxes) and including business subsidies.

Personal Income

- **Personal income** is the income that households and noncorporate businesses receive.

- Unlike national income, it excludes **retained earnings**, which is income that corporations have earned but have not paid out to their owners.
- In addition, it includes household's **interest income** and government **transfers**.

Disposable Personal Income

- **Disposable personal** income is the income that household and noncorporate businesses have left after satisfying all their obligations to the government.
- It equals personal income minus **personal taxes** and certain non tax payments.

The Components of GDP

GDP (Y) is the sum of the following:

- Consumption (C)
- Investment (I)
- Government Purchases (G)
- Net Exports (NX)

$$Y = C + I + G + NX$$

The Components of GDP

Consumption (C):

- The spending by households on goods and services, with the exception of purchases of new housing.

Investment (I):

- The spending on capital equipment, inventories, and structures, including new housing.

Government Purchases (G):

- The spending on goods and services by local, state, and federal governments.
- Does not include transfer payments because they are not made in exchange for currently produced goods or services.

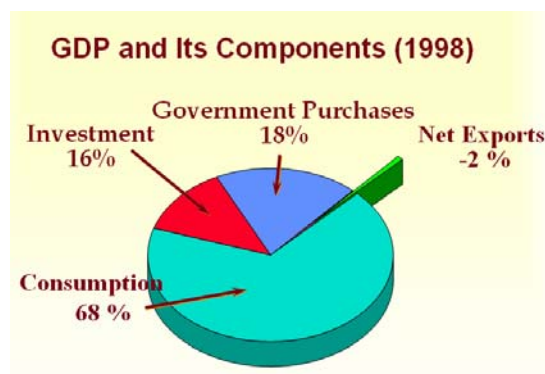
Net Exports (NX):

- Exports minus imports.

Example:

GDP and Its Components (1998)

	Total (in billions of dollars)	Per Person (in dollars)	% of Total
Gross domestic product, Y	\$8,511	\$31,522	100 percent
Consumption, C	5,808	21,511	68
Investment, I	1,367	5,063	16
Government purchases, G	1,487	5,507	18
Net exports, NX	-151	-559	-2



Real versus Nominal GDP

Nominal GDP values the production of goods and services at current prices.

Real GDP values the production of goods and services at constant prices.

An accurate view of the economy requires adjusting nominal to real GDP by using the GDP deflator.

GDP Deflator

The **GDP deflator** measures the current level of prices relative to the level of prices in the base year.

It tells us the rise in nominal GDP that is attributable to a rise in prices rather than a rise in the quantities produced.

The GDP deflator is calculated as follows:

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

Converting Nominal GDP to Real GDP

Nominal GDP is converted to real GDP as follows:

$$\text{Real GDP}_{20xx} = \frac{(\text{Nominal GDP}_{20xx})}{(\text{GDP deflator}_{20xx})} \times 100$$

Real and Nominal GDP

Year	Price of Hot dogs	Quantity of Hot dogs	Price of Hamburgers	Quantity of Hamburgers
2001	\$1	100	\$2	50
2002	\$2	150	\$3	100
2003	\$3	200	\$4	150

Calculating Nominal GDP:

2001	(\$1 per hot dog x 100 hot dogs) + (\$2 per hamburger x 50 hamburgers) = \$200
2002	(\$2 per hot dog x 150 hot dogs) + (\$3 per hamburger x 100 hamburgers) = \$600
2003	(\$3 per hot dog x 200 hot dogs) + (\$4 per hamburger x 150 hamburgers) = \$1200

Calculating Real GDP (base year 2001):

2001	(\$1 per hot dog x 100 hot dogs) + (\$2 per hamburger x 50 hamburgers) = \$200
2002	(\$1 per hot dog x 150 hot dogs) + (\$2 per hamburger x 100 hamburgers) = \$350
2003	(\$1 per hot dog x 200 hot dogs) + (\$2 per hamburger x 150 hamburgers) = \$500

Calculating the GDP Deflator:

2001	(\$200/\$200) x 100 = 100
2002	(\$600/\$350) x 100 = 171
2003	(\$1200/\$500) x 100 = 240

GDP and Economic Well-Being

- GDP is the best single measure of the economic well-being of a society.
- GDP per person tells us the income and expenditure of the **average person** in the economy.
- Higher GDP per person indicates a higher standard of living.
- GDP is not a perfect measure of the happiness or quality of life, however.
- Some things that contribute to well-being are not included in GDP.
 - The value of leisure.
 - The value of a clean environment.
 - The value of almost all activity that takes place outside of markets, such as the value of the time parents spend with their children and the value of volunteer work.

Summary:

- Because every transaction has a buyer and a seller, the total expenditure in the economy must equal the total income in the economy.
- Gross Domestic Product (GDP) measures an economy's total expenditure on newly produced goods and services and the total income earned from the production of these goods and services.
- GDP is the market value of all final goods and services produced within a country in a given period of time.
- GDP is divided among four components of expenditure: consumption, investment, government purchases, and net exports.
- Nominal GDP uses current prices to value the economy's production. Real GDP uses constant base-year prices to value the economy's production of goods and services.
- The GDP deflator--calculated from the ratio of nominal to real GDP--measures the level of prices in the economy.
- GDP is a good measure of economic well-being because people prefer higher to lower incomes.
- It is not a perfect measure of well-being because some things, such as leisure time and a clean environment, aren't measured by GDP.

Chapter 24 Introduction

This chapter examines how economists measure the overall cost of living.

Terms:

- **Inflation** refers to a situation in which the economy's overall price level is rising.
- The **inflation rate** is the percentage change in the price level from the previous period.

The Consumer Price Index

The **consumer price index (CPI)** is a measure of the overall cost of the goods and services bought by a typical consumer. The Bureau of Labor Statistics reports the CPI each month. It is used to monitor changes in the cost of living over time.

When the CPI rises, the typical family has to spend more dollars to maintain the same standard of living.

How the Consumer Price Index Is Calculated

Fix the Basket: Determine what prices are most important to the typical consumer.

- The Bureau of Labor Statistics (BLS) identifies a market basket of goods and services the typical consumer buys.
- The BLS conducts monthly consumer surveys to set the weights for the prices of those goods and services.

Find the Prices: Find the prices of each of the goods and services in the basket for each point in time.

Compute the Basket's Cost: Use the data on prices to calculate the cost of the basket of goods and services at different times.

Choose a Base Year and Compute the Index:

- Designate one year as the base year, making it the benchmark against which other years are compared.
- Compute the index by dividing the price of the basket in one year by the price in the base year and multiplying by 100.

Compute the inflation rate: The inflation rate is the percentage change in the price index from the preceding period.

The inflation rate is calculated as follows:

$$\text{Inflation Rate in Year 2} = \frac{\text{CPI in Year 2} - \text{CPI in Year 1}}{\text{CPI in Year 1}} \times 100$$

Calculating the Consumer Price Index and the Inflation Rate: An Example

Step 1: Survey Consumers to Determine a Fixed Basket of Goods

4 hot dogs, 2 hamburgers

Step 2: Find the Price of Each Good in Each Year

Year	Price of Hot dogs	Price of Hamburgers
2001	\$1	\$2
2002	\$2	\$3
2003	\$3	\$4

Step 3: Compute the Cost of the Basket of Goods in Each Year

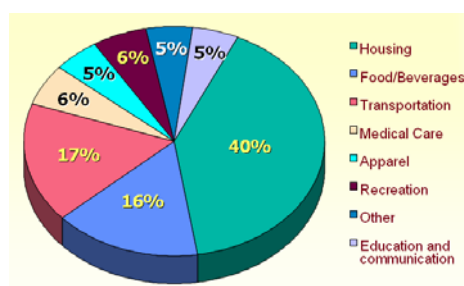
2001	$(\$1 \text{ per hot dog} \times 4 \text{ hot dogs}) + (\$2 \text{ per hamburger} \times 2 \text{ hamburgers}) = \8
2002	$(\$2 \text{ per hot dog} \times 4 \text{ hot dogs}) + (\$3 \text{ per hamburger} \times 2 \text{ hamburgers}) = \14
2003	$(\$3 \text{ per hot dog} \times 4 \text{ hot dogs}) + (\$4 \text{ per hamburger} \times 2 \text{ hamburgers}) = \20

Step 4: Choose One Year as the Base Year (2001) and Compute the Consumer Price Index in Each Year

2001	$(\$8/\$8) \times 100 = 100$
2002	$(\$14/\$8) \times 100 = 175$
2003	$(\$20/\$8) \times 100 = 250$

Step 5: Use the Consumer Price Index to Compute the Inflation Rate from Previous Year

2002	$(175-100)/100 \times 100 = 75\%$
2003	$(250-175)/175 \times 100 = 43\%$



Problems in Measuring the Cost of Living

The CPI is an accurate measure of the selected goods that make up the typical bundle, but it is not a perfect measure of the cost of living. Three problems with the index are widely acknowledged but difficult to solve.

- Substitution bias
- Introduction of new goods
- Unmeasured quality changes

Substitution Bias

The basket does not change to reflect consumer reaction to changes in relative prices.

- Consumers substitute toward goods that have become relatively less expensive.
- The index overstates the increase in cost of living by not considering consumer substitution.

Introduction of New Goods

The basket does not reflect the change in purchasing power brought on by the introduction of new products.

- New products result in greater variety, which in turn makes each dollar more valuable.
- Consumers need fewer dollars to maintain any given standard of living.

Unmeasured Quality Changes

If the quality of a good rises from one year to the next, the value of a dollar rises, even if the price of the good stays the same. If the quality of a good falls from one year to the next, the value of a dollar falls, even if the price of the good stays the same.

The substitution bias, introduction of new goods, and unmeasured quality changes cause the CPI to overstate the true cost of living. The issue is important because many government programs use the CPI to adjust for changes in the overall level of prices. The CPI overstates inflation by about 1 percentage point per year.

The GDP Deflator versus the Consumer Price Index

Economists and policymakers monitor both the GDP deflator and the consumer price index to gauge how quickly prices are rising. There are two important differences between the indexes that can cause them to diverge.

- The **GDP** deflator reflects the prices of all goods and services produced domestically, whereas...
- ...the **consumer price index** reflects the prices of all goods and services bought by consumers.
- The **consumer price index** compares the price of a *fixed basket* of goods and services to the price of the basket in the base year (only occasionally does the BLS change the basket)...
- ...whereas the **GDP** deflator compares the price of *currently produced* goods and services to the price of the same goods and services in the base year.

Correcting economic variables for the effects of inflation

Price indexes are used to correct for the effects of inflation when comparing dollar figures from different times.

Indexation

When some dollar amount is automatically corrected for inflation by law or contract the amount is said to be indexed for inflation.

Real and Nominal Interest Rates

Interest represents a payment in the future for a transfer of money in the past.

The **nominal interest rate** is the interest rate not corrected for inflation.

- It is the interest rate that a bank pays.

The **real interest rate** is the nominal interest rate that is corrected for inflation.

$$\text{Real interest rate} = (\text{Nominal interest rate} - \text{Inflation rate})$$

Example:

- You borrowed \$1,000 for one year.
- Nominal interest rate was 15%.
- During the year inflation was 10%.

$$\text{Real interest rate} = \text{Nominal interest rate} - \text{Inflation} \rightarrow 15\% - 10\% = 5\%$$

Summary

- The consumer price index shows the cost of a basket of goods and services relative to the cost of the same basket in the base year.
- The index is used to measure the overall level of prices in the economy.
- The percentage change in the CPI measures the inflation rate.
- The consumer price index is an imperfect measure of the cost of living for the following three reasons: substitution bias, the introduction of new goods, and unmeasured changes in quality.
- Because of measurement problems, the CPI overstates annual inflation by about 1 percentage point.
- The GDP deflator differs from the CPI because it includes goods and services produced rather than goods and services consumed.
- In addition, the CPI uses a fixed basket of goods, while the GDP deflator automatically changes the group of goods and services over time as the composition of GDP changes.
- Dollar figures from different points in time do not represent a valid comparison of purchasing power.
- Various laws and private contracts use price indexes to correct for the effects of inflation.
- The real interest rate equals the nominal interest rate minus the rate of inflation.

Chapter 25 Introduction

When you travel around the world, you see tremendous variation in the standard of living. The average person in a rich country, such as the United States, Japan, or Germany, has an income more than ten times as high as the average person in a poor country, such as India, Indonesia or Nigeria.

- A country's standard of living depends on its ability to produce goods and services.
- Within a country there are large changes in the standard of living over time.

Productivity refers to the amount of goods and services produced for each hour of a worker's time. A nation's standard of living is determined by the productivity of its workers.

Economic Growth Around the World

- Living standards, as measured by real GDP per person, vary significantly among nations.
- The poorest countries have average levels of income that have not been seen in the United States for many decades.

Compounding and the Rule of 70

- Annual growth rates that seem small become large when compounded for many years.
- Compounding refers to the accumulation of a growth rate over a period of time.
- According to the rule of 70, if some variable grows at a rate of x percent per year, then that variable doubles in approximately $70/x$ years.

Example:

\$5,000 invested at 7 percent interest per year, will double in size in 10 years

$$70/7 = 10$$

Productivity: Its role and determinants

Why Productivity Is So Important

- Productivity plays a key role in determining living standards for all nations in the world.
- Productivity refers to the quantity of goods and services that a worker can produce from each hour of work.
- To understand the large differences in living standards across countries. We must focus on the production of goods and services.

How Productivity is Determined

- The inputs used to produce goods and services are called the **factors of production**.
- The factors of production directly determine productivity.

The Factors of Production

- Physical capital
- Human capital
- Natural resources
- Technological knowledge

Capital is a produced factor of production. It is an input into the production process that in the past was an output from the production process.

Physical capital is the stock of equipment and structures that are used to produce goods and services.

- Tools used to build or repair automobiles.
- Tools used to build furniture.
- Office buildings, schools, etc.

Human capital is the economist's term for the knowledge and skills that workers acquire through education, training, and experience.

- Like physical capital, human capital raises a nation's ability to produce goods and services.

Natural resources are inputs used in production that are provided by nature, such as land, rivers, and mineral deposits.

- Renewable resources include trees and forests.
- Nonrenewable resources include petroleum and coal.

Natural resources can be important but are not necessary for an economy to be highly productive in producing goods and services.

Technological knowledge is the understanding of the best ways to produce goods and services. Human capital refers to the resources expended transmitting this understanding to the labor force.

The Production Function

Economists often use a production function to describe the relationship between the quantity of inputs used in production and the quantity of output from production.

$$Y = A F(L, K, H, N)$$

Y = quantity of output

A = available production technology

L = quantity of labor

K = quantity of physical capital

H = quantity of human capital

N = quantity of natural resources

F() is a function that shows how the inputs are combined.

A production function has constant returns to scale if, for any positive number x ,

$$xY = A F(xL, xK, xH, xN)$$

That is, a doubling of all inputs causes the amount of output to double as well.

Production functions with constant returns to scale have an interesting implication.

Setting $x = 1/L$,

$$Y/L = A F(1, K/L, H/L, N/L)$$

Where:

Y/L = output per worker

K/L = physical capital per worker

H/L = human capital per worker

N/L = natural resources per worker

The preceding equation says that productivity (Y/L) depends on physical capital per worker (K/L), human capital per worker (H/L), and natural resources per worker (N/L), as well as the state of technology, (A).

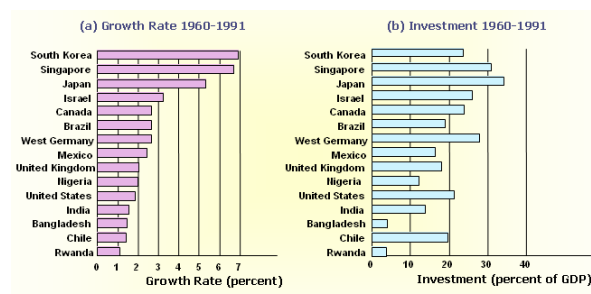
Economic Growth and Public Policy

Government Policies That Raise Productivity and Living Standards

- Encourage saving and investment.
- Encourage investment from abroad
- Encourage education and training.
- Establish secure property rights and maintain political stability.
- Promote free trade.
- Control population growth.
- Promote research and development.

The Importance of Saving and Investment

One way to raise future productivity is to invest more current resources in the production of capital.



The Importance of Saving and Investment

- As the stock of capital rises, the extra output produced from an additional unit of capital falls; this property is called diminishing returns.
- Because of diminishing returns, an increase in the saving rate leads to higher growth only for a while.

In the long run, the higher saving rate leads to a higher level of productivity and income, but *not* to higher growth in these areas.

The **catch-up effect** refers to the condition that, other things being equal, it is easier for a country to grow fast if it starts out relatively poor.

Investment from Abroad

Governments can increase capital accumulation and long-term economic growth by encouraging investment from foreign sources.

Investment from abroad takes several forms:

- **Foreign Direct Investment**
 - Capital investment owned and operated by a foreign entity.
- **Foreign Portfolio Investment**
 - Investments financed with foreign money but operated by domestic residents.

Education

For a country's long-run growth, education is at least as important as investment in physical capital.

- In the United States, each year of schooling raises a person's wage on average by about 10 percent.
- Thus, one way the government can enhance the standard of living is to provide schools and encourage the population to take advantage of them.

An educated person might generate new ideas about how best to produce goods and services, which in turn, might enter society's pool of knowledge and provide an **external benefit** to others.

One problem facing some poor countries is the **brain drain**--the emigration of many of the most highly educated workers to rich countries.

Property Rights and Political Stability

Property rights refer to the ability of people to exercise authority over the resources they own.

- An economy-wide respect for property rights is an important prerequisite for the price system to work.
- It is necessary for investors to feel that their investments are secure.

Free Trade

Trade is, in some ways, a type of technology. A country that eliminates trade restrictions will experience the same kind of economic growth that would occur after a major technological advance.

- Some countries engage in . . .
 - . . . inward-orientated trade policies, avoiding interaction with other countries.
 - . . . outward-orientated trade policies, encouraging interaction with other countries.

Control of Population Growth

Population is a key determinant of a country's labor force.

- Large populations tend to produce greater total GDP.
- However, GDP per person is a better measure of economic well-being, and high population growth **reduces** GDP per person.

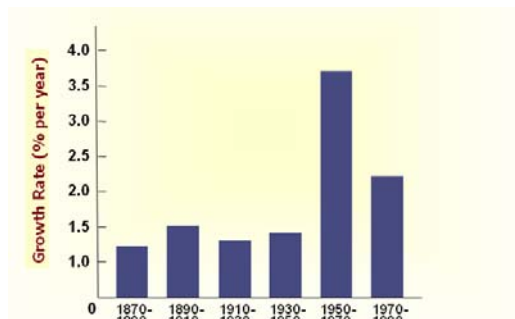
Research and Development

The advance of technological knowledge has led to higher standards of living.

- Most technological advance comes from private research by firms and individual inventors.
- Government can encourage the development of new technologies through research grants, tax breaks, and the patent system.

The Productivity Slowdown

The slowdown in productivity growth is a worldwide phenomenon. The slowdown cannot be traced to those factors of production that are most easily measured – technology may be the key.



Summary

- Economic prosperity, as measured by real GDP per person, varies substantially around the world.
- The average income of the world's richest countries is more than ten times that in the world's poorest countries.
- The standard of living in an economy depends on the economy's ability to produce goods and services.
- Productivity depends on the amounts of physical capital, human capital, natural resources, and technological knowledge available to workers.
- Government policies can influence the economy's growth rate in many different ways.
- The accumulation of capital is subject to diminishing returns.
- Because of diminishing returns, higher saving leads to a higher growth for a period of time, but growth will eventually slow down.
- Also because of diminishing returns, the return to capital is especially high in poor countries.

Chapter 26 Introduction

Imagine that you have just graduated from college and you decide to start your own business-an economic forecasting firm. Before you make any money selling your forecasts, you have to incur substantial costs to set up your business. This chapter is dealing with exactly this situation, how to get money and how it is used.

The Financial System

The financial system consists of institutions that help to match one person's saving with another person's investment. It moves the economy's scarce resources from savers to borrowers.

Financial Institutions

Financial Markets

- Stock Market
- Bond Market

Financial markets are the institutions through which savers can **directly** provide funds to borrowers.

Financial Intermediaries

- Banks
- Mutual Funds

Financial intermediaries are financial institutions through which savers can **indirectly** provide funds to borrowers.

The Bond Market

A bond is a certificate of indebtedness that specifies obligations of the borrower to the holder of the bond.

Characteristics of a Bond

- **Term:** The length of time until the bond matures.
- **Credit Risk:** The probability that the borrower will fail to pay some of the interest or principal.
- **Tax Treatment:** The way in which the tax laws treat the interest on the bond.
 - Municipal bonds are federal tax exempt.

The Stock Market

Stock represents ownership in a firm and is therefore, a claim to the profits that the firm makes. The sale of stock to raise money is called equity financing. Compared to bonds, stocks offer both higher risk and potentially higher returns.

The most important stock exchanges in the United States are the New York Stock Exchange, the American Stock Exchange, and NASDAQ.

Most newspaper stock tables provide the following information:

- Price (of a share)
- Volume (number of shares sold)
- Dividend (profits paid to stockholders)
- Price-earnings ratio

Financial Intermediaries: Banks

- Banks take deposits from people who want to save and use the deposits to make loans to people who want to borrow.
- Banks pay depositors interest on their deposits and charge borrowers slightly higher interest on their loans.
- Banks help create a **medium of exchange** by allowing people to write checks against their deposits.
- A medium of exchange is an item that people can easily use to engage in transactions.
- This facilitates the purchases of goods and services.

Financial Intermediaries: Mutual Funds

A **mutual fund** is an institution that sells shares to the public and uses the proceeds to buy a selection, or portfolio, of various types of stocks, bonds, or both. They allow people with small amounts of money to easily diversify.

Other Financial Institutions

- Credit unions
- Pension funds
- Insurance companies
- Loan sharks

Saving and Investment in the National Income Accounts

Recall that GDP is both total income in an economy and total expenditure on the economy's output of goods and services:

$$Y = C + I + G + NX$$

Some Important Identities

Assume a closed economy – one that does not engage in international trade:

$$Y = C + I + G$$

Now, subtract C and G from both sides of the equation:

$$Y - C - G = I$$

The left side of the equation is the total income in the economy after paying for consumption and government purchases and is called **national saving**, or just **saving (S)**.

Substituting S for Y-C-G, the equation can be written as:

$$S = I$$

National saving, or saving, is equal to:

$$\begin{aligned} S &= I \\ S &= Y - C - G \\ S &= (Y - T - C) + (T - G) \end{aligned}$$

Private saving

Private saving is the amount of income that households have left after paying their taxes and paying for their consumption.

$$\text{Private saving} = (Y - T - C)$$

Public Saving

Public saving is the amount of tax revenue that the government has left after paying for its spending.

$$\text{Public saving} = (T - G)$$

Surplus and Deficit

- If $T > G$, the government runs a **budget surplus** because it receives more money than it spends.
- The surplus of $T - G$ represents **public saving**.
- If $G > T$, the government runs a **budget deficit** because it spends more money than it receives in tax revenue.

Saving and Investment

For the economy as a whole, saving must be equal to investment.

$$S = I$$

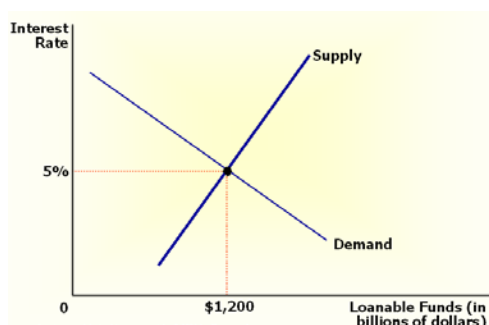
The Market for Loanable Funds

Financial markets coordinate the economy's saving and investment in the **market for loanable funds**.

Loanable funds refer to all income that people have chosen to save and lend out, rather than use for their own consumption.

Supply and Demand for Loanable Funds

- **The supply of loanable funds** comes from people who have extra income they want to save and lend out.
- **The demand for loanable funds** comes from households and firms that wish to borrow to make investments.
- The **interest rate** is the price of the loan.
- It represents the amount that borrowers pay for loans and the amount that lenders receive on their saving.
- The interest rate in the market for loanable funds is the **real** interest rate.
- Financial markets work much like other markets in the economy.
 - The equilibrium of the supply and demand for loanable funds determines the **real interest rate**.



Government Policies That Affect Saving and Investment

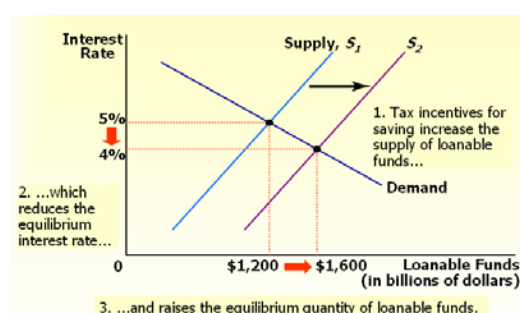
- Taxes and saving
- Taxes and investment
- Government budget deficits

Taxes and Saving

Taxes on interest income substantially reduce the future payoff from current saving and, as a result, reduce the incentive to save.

A tax decrease increases the incentive for households to save at any given interest rate.

- The supply of loanable funds curve shifts to the right.
- The equilibrium interest rate decreases.
- The quantity demanded for loanable funds increases.

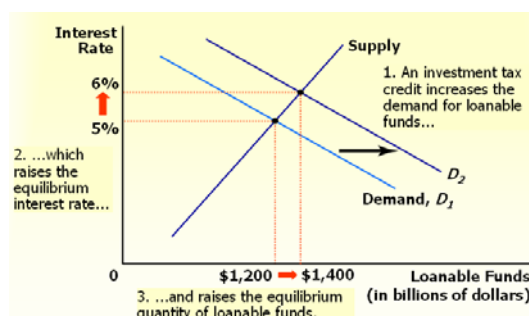


If a change in tax law encourages greater saving, the result will be lower interest rates and greater investment.

Taxes and Investment

An investment tax credit increases the incentive to borrow.

- Increases the demand for loanable funds.
- Shifts the demand curve to the right.
- Results in a higher interest rate and a greater quantity saved.



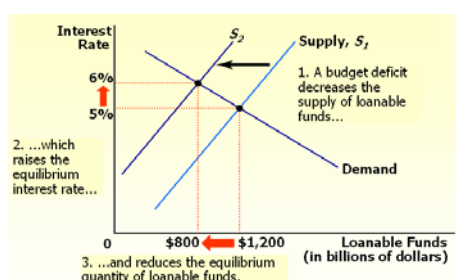
If a change in tax laws encourages greater investment, the result will be higher interest rates and greater saving.

Government Budget Deficits and Surpluses

- When the government spends more than it receives in tax revenues, the shortfall is called the budget deficit.
- The accumulation of past budget deficits is called the **government debt**.

Summary

- Government borrowing to finance its budget deficit reduces the supply of loanable funds available to finance investment by households and firms.
- This fall in investment is referred to as **crowding out**.
 - The deficit borrowing **crowds out** private borrowers who are trying to finance investments.
- A budget deficit decreases the supply of loanable funds.
 - Shifts the supply curve to the left.
 - Increases the equilibrium interest rate.
 - Reduces the equilibrium quantity of loanable funds.



When government reduces national saving by running a deficit, the interest rate rises and investment falls.

A budget surplus increases the supply of loanable funds, reduces the interest rate, and stimulates investment.

Summary

- The U.S. financial system is made up of financial institutions such as the bond market, the stock market, banks, and mutual funds.
- All these institutions act to direct the resources of households who want to save some of their income into the hands of households and firms who want to borrow.
- National income accounting identities reveal some important relationships among macroeconomic variables.
- In particular, in a closed economy, national saving must equal investment.
- Financial institutions attempt to match one person's saving with another person's investment.
- The interest rate is determined by the supply and demand for loanable funds.
- The supply of loanable funds comes from households who want to save some of their income.
- The demand for loanable funds comes from households and firms who want to borrow for investment.
- National saving equals private saving plus public saving.
- A government budget deficit represents negative public saving and, therefore, reduces national saving and the supply of loanable funds.
- When a government budget deficit crowds out investment, it reduces the growth of productivity and GDP.

Chapter 28 Introduction

Losing a job can be the most distressing economic event in a person's life. Most people rely on their labor earnings to maintain their standard of living, and many people get from their work not only income but also a sense of personal accomplishment.

Categories of Unemployment

The problem of unemployment is usually divided into two categories. The **long-run problem** and the **short-run problem**:

- The **natural rate** of unemployment
- The **cyclical rate** of unemployment

Natural Rate of Unemployment

The natural rate of unemployment is unemployment that does not go away on its own even in the long run. It is the amount of unemployment that the economy normally experiences.

Cyclical Unemployment

Cyclical unemployment refers to the year-to-year fluctuations in unemployment around its natural rate. It is associated with short-term ups and downs of the business cycle.

Identifying unemployment

Three Basic Questions:

- ❶ *How does government measure the economy's rate of unemployment?*
- ❷ *What problems arise in interpreting the unemployment data?*
- ❸ *How long are the unemployed typically without work?*

How is Unemployment Measured?

Unemployment is measured by the Bureau of Labor Statistics (BLS).

- It surveys 60,000 randomly selected households every month.
- The survey is called the Current Population Survey.

Based on the answers to the survey questions, the BLS places each adult into one of three categories:

- Employed
- Unemployed
- Not in the labor force

The BLS considers a person an adult if he or she is over 16 years old.

A person is considered **employed** if he or she has spent most of the previous week working at a paid job.

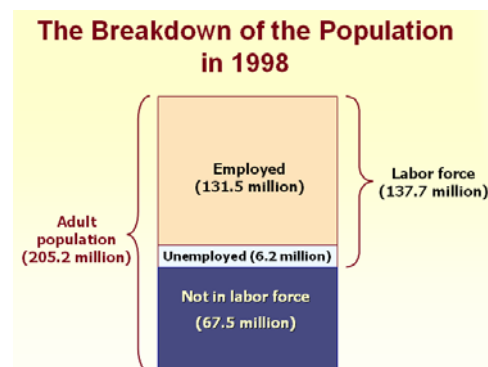
A person is **unemployed** if he or she is on temporary layoff, is looking for a job, or is waiting for the start date of a new job.

A person who fits neither of these categories, such as a full-time student, homemaker, or retiree, is **not in the labor force**.

The BLS defines the labor force as the sum of the employed and the unemployed.

The unemployment rate is calculated as the percentage of the labor force that is unemployed.

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



The **labor-force participation** rate is the percentage of the adult population that is in the labor force.

$$\text{Labor - force participation rate} = \frac{\text{Labor force}}{\text{Adult population}} \times 100$$



Labor-Force Experiences of Various Demographic Groups (1998)

Demographic Group	Unemployment Rate	Labor-Force Participation Rate
Adults (20+)		
White, male	3.2	77.2
White, female	3.4	59.7
Black, male	7.4	72.5
Black, female	7.9	64.8
Teenagers (16-19)		
White, male	14.1	56.6
White, female	10.9	55.4
Black, male	30.1	40.7
Black, female	25.3	42.5

Does the Unemployment Rate Measure What We Want It To??

- It is difficult to distinguish between a person who is unemployed and a person who is not in the labor force.
- **Discouraged workers**, people who would like to work but have given up looking for jobs after an unsuccessful search, don't show up in unemployment statistics.
- Other people may claim to be unemployed in order to receive financial assistance, even though they aren't looking for work.

How Long Are the Unemployed without Work?

- Most spells of unemployment are short.
- Most unemployment observed at any given time is long-term.
- Most of the economy's unemployment problem is attributable to relatively few workers who are jobless for long periods of time.

Why Are There Always Some People Unemployed?

In an ideal labor market, wages would adjust to balance the supply and demand for labor, ensuring that all workers would be fully employed.

Frictional unemployment refers to the unemployment that results from the time that it takes to match workers with jobs. In other words, it takes time for workers to search for the jobs that are best suited for them.

Structural unemployment results when wages are, for some reason, set above the level that brings supply and demand into equilibrium. It is often thought to explain longer spells of unemployment.

Job Search Unemployment

Job search is the process by which workers find appropriate jobs given their tastes and skills.

Job search unemployment results from the fact that it takes time for qualified individuals to be matched with appropriate jobs.

This unemployment is different from the other types of unemployment.

- It is not caused by a wage rate higher than equilibrium.
- It is caused by the time spent searching for the “right” job.

Why some frictional unemployment is inevitable

Search unemployment is inevitable because the economy is always changing.

Changes in the composition of demand among industries or regions are called **sectoral shifts**. It takes time for workers to search for and find jobs in new sectors.

Public Policy and Job Search

Government programs can affect the time it takes unemployed workers to find new jobs.

These programs include the following:

- Government-run employment agencies
- Public training programs
- Unemployment insurance

Government-run employment agencies give out information about job vacancies in order to match workers and jobs more quickly.

Public training programs aim to ease the transition of workers from declining to growing industries and to help disadvantaged groups escape poverty.

Unemployment insurance is a government program that partially protects workers' incomes when they become unemployed.

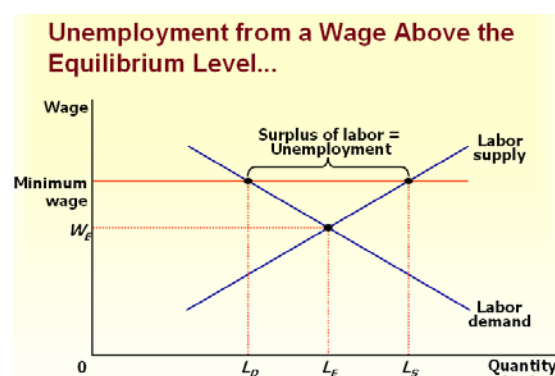
- Offers workers partial protection against job losses.
- Offers partial payment of former wages for a limited time to those who are laid off.
- Unemployment insurance increases the amount of search unemployment.
- It reduces the search efforts of the unemployed.
- It may improve the chances of workers being matched with the right jobs.

Three Possible Reasons for an Above-Equilibrium Wage

- Minimum-wage laws
- Unions
- Efficiency wages

Minimum-Wage Laws

When the minimum wage is set above the level that balances supply and demand, it creates unemployment.



Unions and Collective Bargaining

- A union is a worker association that bargains with employers over wages and working conditions.
- In the 1940s and 1950s, when unions were at their peak, about a third of the U.S. labor force was unionized.
- A union is a type of cartel attempting to exert its market power.

The process by which unions and firms agree on the terms of employment is called **collective bargaining**.

A **strike** will be organized if the union and the firm cannot reach an agreement. A **strike** refers to when the union organizes a withdrawal of labor from the firm.

A strike makes some workers better off and other workers worse off. Workers in unions (insiders) reap the benefits of collective bargaining, while workers not in the union (outsiders) bear some of the costs.

By acting as a cartel with ability to strike or otherwise impose high costs on employers, unions usually achieve above equilibrium wages for their members. Union workers earn 10 to 20 percent more than nonunion workers.

Are Unions Good or Bad for the Economy?

Critics argue that unions cause the allocation of labor to be inefficient and inequitable.

- Wages above the competitive level reduce the quantity of labor demanded and cause unemployment.
- Some workers benefit at the expense of other workers.
- Advocates of unions contend that unions are a necessary antidote to the market power of firms that hire workers.
- They claim that unions are important for helping firms respond efficiently to workers' concerns.

Theory of Efficiency Wages

Efficiency wages are above-equilibrium wages paid by firms in order to increase worker productivity.

The theory of **efficiency wages** states that firms operate more efficiently if wages are above the equilibrium level.

A firm may prefer higher than equilibrium wages for the following reasons:

- **Worker Health:** Better paid workers eat a better diet and thus are more productive.
- **Worker Turnover:** A higher paid worker is less likely to look for another job.
- **Worker Effort:** Higher wages motivate workers to put forward their best effort.
- **Worker Quality:** Higher wages attract a better pool of workers to apply for jobs.

Summary

- The unemployment rate is the percentage of those who would like to work but don't have jobs.
- The Bureau of Labor Statistics calculates this statistic monthly.
- The unemployment rate is an imperfect measure of joblessness.
- In the U.S. economy, most people who become unemployed find work within a short period of time.
- Most unemployment observed at any given time is attributable to a few people who are unemployed for long periods of time.
- One reason for unemployment is the time it takes for workers to search for jobs that best suit their tastes and skills.
- A second reason why our economy always has some unemployment is minimum-wage laws.
- Minimum-wage laws raise the quantity of labor supplied and reduce the quantity demanded.
- A third reason for unemployment is the market power of unions.
- A fourth reason for unemployment is suggested by the theory of efficiency wages.
- High wages can improve worker health, lower worker turnover, increase worker effort, and raise worker quality.

Chapter 29 Introduction

In an economy there is always the problem, how much money is needed to create an sustainable an stable environment. This chapter is exactly dealing with this.

The meaning of money

Money is the set of assets in an economy that people regularly use to buy goods and services from other people.

The functions of money

Money has three functions in the economy:

- Medium of exchange
- Unit of account
- Store of value

Medium of Exchange

- A *medium of exchange* is an item that buyers give to sellers when they want to purchase goods and services.
- A medium of exchange is anything that is readily acceptable as payment.

Unit of Account

- A *unit of account* is the yardstick (Masstab) people use to post prices and record debts.

Store of Value

- A *store of value* is an item that people can use to transfer purchasing power from the present to the future.

Liquidity

- *Liquidity* is the ease with which an asset can be converted into the economy's medium of exchange.

The kinds of money

Commodity money takes the form of a commodity with intrinsic value.

- Examples: Gold, silver, cigarettes.

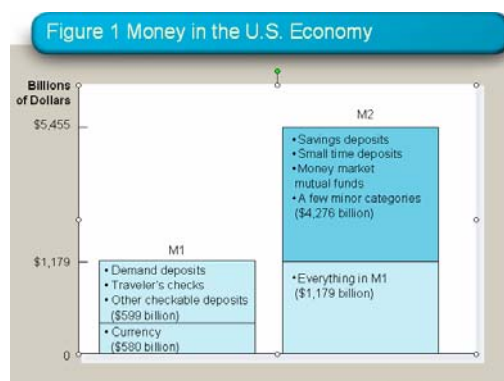
Fiat money (Rechengeld/ Papiergeld) is used as money because of government decree.

- It does not have intrinsic value.
- Examples: Coins, currency, check deposits.

Money in the U.S economy

Currency is the paper bills and coins in the hands of the public.

Demand deposits are balances in bank accounts that depositors can access on demand by writing a check.



The Federal Reserve System

The **Federal Reserve (Fed)** serves as the nation's central bank.

- It is designed to oversee the banking system.
- It regulates the quantity of money in the economy.

The Fed was created in 1914 after a series of bank failures convinced Congress that the United States needed a **central bank** to ensure the health of the nation's banking system.

Fed's organization

Monetary policy is conducted by the Federal Open Market Committee.

- Monetary policy is the setting of the money supply by policymakers in the central bank
- The money supply refers to the quantity of money available in the economy.

The federal open market committee

Three Primary Functions of the Fed

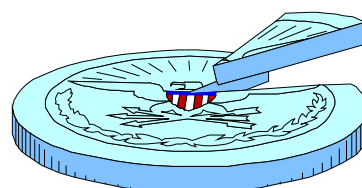
- Regulates banks to ensure they follow federal laws intended to promote safe and sound banking practices.
- Acts as a banker's bank, making loans to banks and as a lender of last resort.
- Conducts **monetary policy** by controlling the money supply.

Open-Market Operations

- The **money supply** is the quantity of money available in the economy.
- The primary way in which the Fed changes the money supply is through open-market operations.
 - The Fed purchases and sells U.S. government bonds
- To increase the money supply, the Fed *buys* government bonds from the public.
- To decrease the money supply, the Fed *sells* government bonds to the public.

Banks and the money supply

Banks can influence the quantity of demand deposits in the economy and the money supply.



Reserves are deposits that banks have received but have not loaned out.

In a **fractional-reserve banking** system, banks hold a fraction of the money deposited as reserves and lend out the rest.

The **reserve ratio** is the fraction of deposits that banks hold as reserves.[^]

Money creation with fractional-reserve banking

When a bank makes a loan from its reserves, then the money supply increases.

The money supply is affected by the amount deposited in banks and the amount that banks loan.

- Deposits into a bank are recorded as both assets and liabilities.
- The fraction of total deposits that a bank has to keep as reserves is called the reserve ratio.

Money Creation with Fractional-Reserve Banking			
• This T-Account shows a bank that...			
		First National Bank	
		Assets	Liabilities
• accepts deposits,		Reserves	Deposits
• keeps a portion as reserves,		\$10.00	\$100.00
• and lends out the rest.		Loans	
• It assumes a reserve ratio of 10%		\$90.00	
		Total Assets	Total Liabilities
		\$100.00	\$100.00

- Loans become an asset to the bank.

When one bank loans money, that money is generally deposited into another bank. This creates more deposits and more reserves to be lent out. When a bank makes a loan from its reserves, then the money supply increases.

The money multiplier

How much money is eventually created in this economy?

The **money multiplier** is the amount of money the banking system generates with each dollar of reserves.

The Money Multiplier			
First National Bank		Second National Bank	
Assets	Liabilities	Assets	Liabilities
Reserves \$10.00	Deposits \$100.00	Reserves \$9.00	Deposits \$99.00
Loans \$90.00		Loans \$81.00	
Total Assets \$100.00	Total Liabilities \$100.00	Total Assets \$90.00	Total Liabilities \$99.00
Money Supply = \$190.00!			

The money multiplier is the reciprocal of the reserve ratio: $M = 1/R$

- With a reserve requirement, $R = 20\%$ or $1/5$,
- The multiplier is 5.

The Fed's tool of monetary control

The Fed has three tools in its monetary toolbox:

- Open-market operations
- Changing the reserve requirement
- Changing the discount rate

Open-Market Operations

The Fed conducts **open-market operations** when it buys government bonds from or sells government bonds to the public:

- When the Fed buys government bonds, the money supply increases.
- The money supply decreases when the Fed sells government bonds.

Reserve Requirements

- The Fed also influences the money supply with **reserve requirements**.
- Reserve requirements are regulations on the minimum amount of reserves that banks must hold against deposits.

Changing the Reserve Requirement

The **reserve requirement** is the amount (%) of a bank's total reserves that may not be loaned out.

- Increasing the reserve requirement decreases the money supply.
- Decreasing the reserve requirement increases the money supply.

Changing the Discount Rate

The **discount rate** is the interest rate the Fed charges banks for loans.

- Increasing the discount rate decreases the money supply.
- Decreasing the discount rate increases the money supply.

Problems in controlling the money supply

The Fed's control of the money supply is not precise.

The Fed must wrestle with two problems that arise due to fractional-reserve banking.

- The Fed does not control the amount of money that households choose to hold as deposits in banks.
- The Fed does not control the amount of money that bankers choose to lend.

Summary

- The term money refers to assets that people regularly use to buy goods and services.
- Money serves three functions in an economy: as a medium of exchange, a unit of account, and a store of value.
- Commodity money is money that has intrinsic value.
- Fiat money is money without intrinsic value.
- The Federal Reserve, the central bank of the United States, regulates the U.S. monetary system.
- It controls the money supply through open-market operations or by changing reserve requirements or the discount rate.
- When banks loan out their deposits, they increase the quantity of money in the economy.
- Because the Fed cannot control the amount bankers choose to lend or the amount households choose to deposit in banks, the Fed's control of the money supply is imperfect.

Chapter 30 Introduction

You are today probably not surprised at the increase in the price of for example an ice cream. In our economy, most prices tend to rise over time. This increase in the overall level of prices is called *inflation*. This chapter will look at the effects of inflation.

Inflation

Inflation is an increase in the overall level of prices.

Inflation: Historical Aspects

- Over the past sixty years, prices have risen on average about 5 percent per year.
- Deflation, meaning decreasing average prices, occurred in the U.S. in the nineteenth century.
- Hyperinflation refers to high rates of inflation such as Germany experienced in the 1920s.
- In the 1970s prices rose by 7 percent per year.
- During the 1990s, prices rose at an average rate of 2 percent per year.

The Classical Theory of Inflation

The **quantity theory of money** is used to explain the long-run determinants of the price level and the inflation rate. Inflation is an economy-wide phenomenon that concerns the value of the economy's medium of exchange. When the overall price level rises, the value of money falls.

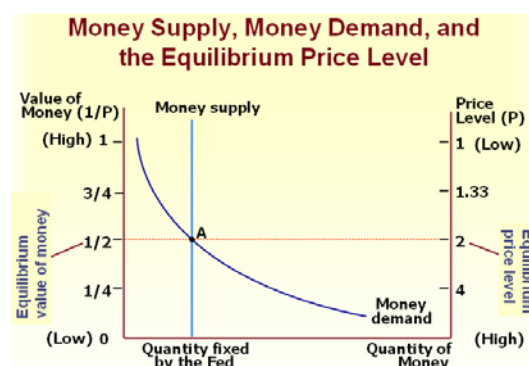
The Level of Prices and the Value of Money

The first insight about inflation is that it is more about the value of money than about the value of goods. Furthermore, money is an economy-wide phenomenon that concerns, first and foremost, the value of the economy's medium of exchange → money. A rise in the price level means a lower value of money because each dollar in your wallet now buys a smaller quantity of good and services. In other words, if P is the price of goods and services measured in terms of money, $1/P$ is the value of money measured in terms of goods and services.

Money Supply, Money Demand, and Monetary Equilibrium

The **money supply** is a policy variable that is controlled by the Fed. Through instruments such as open-market operations, the Fed directly controls the quantity of money supplied. On the other hand **money demand** has several determinants, including interest rates and the average level of prices in the economy.

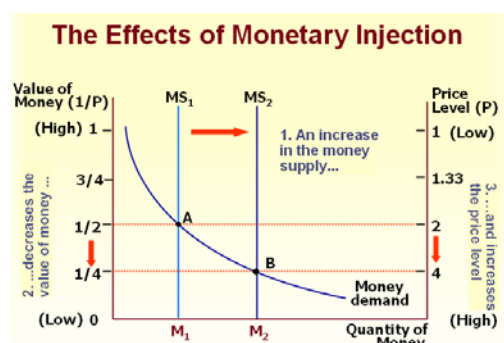
Then, people hold money because it is the medium of exchange. The amount of money people choose to hold depends on the prices of goods and services.



In the long run, the overall level of prices adjusts to the level at which the demand for money equals the supply.

The Quantity Theory of Money

How the price level is determined and why it might change over time is called the **quantity theory of money**. The quantity of money available in the economy determines the value of money. That's why the primary cause of inflation is the growth in the quantity of money.



The Classical Dichotomy and Monetary Neutrality

- **Nominal variables** are variables measured in monetary units.
- **Real variables** are variables measured in physical units.

According to Hume and others, real economic variables do not change with changes in the money supply. **According to the classical dichotomy, different forces influence real and nominal variables.** Changes in the money supply affect nominal variables but not real variables.

The irrelevance of monetary changes for real variables is called **monetary neutrality**.

Velocity and the Quantity Equation

The **velocity of money** refers to the speed at which the typical dollar bill travels around the economy from wallet to wallet.

$$V = (P \times Y)/M$$

Where: V = velocity
 P = the price level
 Y = the quantity of output
 M = the quantity of money

Rewriting the equation gives the quantity equation:

$$M \times V = P \times Y$$

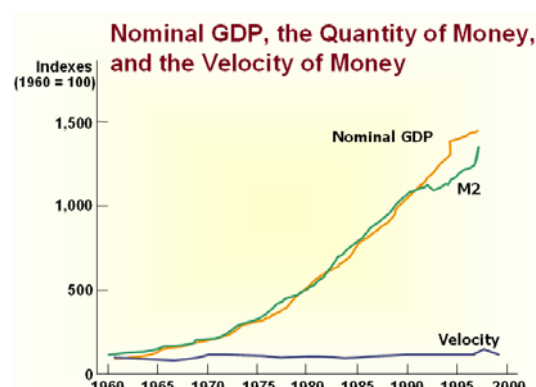
The **quantity equation** relates the quantity of money (**M**) to the nominal value of output (**P x Y**).

The quantity equation shows that an increase in the quantity of money in an economy must be reflected in one of three other variables:

- the **price level** must rise,
- the **quantity of output** must rise, or
- the **velocity of money** must fall.

The Equilibrium Price Level, Inflation Rate, and the Quantity Theory of Money

1. The velocity of money is relatively stable over time.
2. When the Fed changes the quantity of money, it causes proportionate changes in the nominal value of output ($P \times Y$).
3. Because money is neutral, money does not affect output.
4. When the Fed alters the money supply and induces parallel changes in the nominal value of output, these changes are also reflected in changes in the price level.
5. When the Fed increases the money supply rapidly, the result is a high rate of inflation.



Hyperinflation

Hyperinflation is inflation that exceeds 50 percent per month. Hyperinflation occurs in some countries because the government prints too much money to pay for its spending.

Hyperinflation and the Inflation Tax

When the government raises revenue by printing money, it is said to levy an **inflation tax**. An inflation tax is like a tax on everyone who holds money. The inflation ends when the government institutes fiscal reforms such as cuts in government spending.

The Fisher Effect

According to the **Fisher effect**, when the rate of inflation rises, the nominal interest rate rises by the same amount. The real interest rate stays the same.

$$\text{Nominal interest rate} = \text{Real interest rate} + \text{Inflation rate}$$

The Costs of Inflation

A Fall in Purchasing Power?

Inflation *does not* in itself reduce people's real purchasing power.

The Costs of Inflation

- Shoeleather costs
- Menu costs
- Relative price variability
- Tax distortions
- Confusion and inconvenience
- Arbitrary redistribution of wealth

Shoeleather Costs

Shoeleather costs are the resources wasted when inflation encourages people to reduce their money holdings. Inflation reduces the real value of money, so people have an incentive to minimize their cash holdings. Then actually less cash requires more frequent trips to the bank to withdraw money from interest-bearing accounts. That's why the actual cost of reducing your money holdings is the time and convenience you must sacrifice to keep less money on hand. Also, extra trips to the bank take time away from productive activities.

Menu Costs

Menu costs are the costs of adjusting prices. During inflationary times, it is necessary to update price lists and other posted prices. This is a resource-consuming process that takes away from other productive activities.

Relative-Price Variability

Inflation distorts relative prices. Consumer decisions are distorted, and markets are less able to allocate resources to their best use.

Inflation-Induced Tax Distortion

Inflation exaggerates the size of capital gains and increases the tax burden on this type of income. With progressive taxation, capital gains are taxed more heavily.

The income tax treats the nominal interest earned on savings as income, even though part of the nominal interest rate merely compensates for inflation. The after-tax real interest rate falls, making saving less attractive.

Confusion and Inconvenience

When the Fed increases the money supply and creates inflation, it erodes the real value of the unit of account. Inflation causes dollars at different times to have different real values. Therefore, with rising prices, it is more difficult to compare real revenues, costs, and profits over time.

Arbitrary Redistribution of Wealth

Unexpected inflation **redistributes wealth** among the population in a way that has nothing to do with either merit or need. These redistributions occur because many loans in the economy are specified in terms of the unit of account – money.

Summary

- The overall level of prices in an economy adjusts to bring money supply and money demand into balance.
- When the central bank increases the supply of money, it causes the price level to rise.
- Persistent growth in the quantity of money supplied leads to continuing inflation.
- The principle of money neutrality asserts that changes in the quantity of money influence nominal variables but not real variables.
- A government can pay for its spending simply by printing more money.
- This can result in an “inflation tax” and hyperinflation.
- According to the Fisher effect, when the inflation rate rises, the nominal interest rate rises by the same amount, and the real interest rate stays the same.
- Many people think that inflation makes them poorer because it raises the cost of what they buy.
- This view is a fallacy because inflation also raises nominal incomes.
- Economists have identified six costs of inflation:
 - Shoeleather costs
 - Menu costs

- Increased variability of relative prices
- Unintended tax liability changes
- Confusion and inconvenience
- Arbitrary redistributions of wealth

Sources:

- **Homepage:** <http://www.swcollege.com/econ/mankiw/testing.html>
- **Script:** Macroeconomics 1, Worksheet and Exercises 2. Academic Year 2004/05, B. Feldmann, S.Graf, A. Jans, R. Schleiniger, T. Slembeck, translated by Rolf Schmid Winterthur, September 2004
- **Textbook:** Principles of economics, third edition, 2004, N. Gregory Mankiw
- Own notes; Jonas Epp eppjon@zhwin.ch