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The Department of Economic Theory

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Economic Theory

Curriculum and Instructional Kit

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This curriculum and instructional kit contains materials that display the following symptoms: development of economic thinking of students, forming at them base economic knowledge on the basis of studying of achievements of domestic and world economic thought; revealing of features of development of economy of Belarus at the present stage; creation of a methodological basis for development of the courses of study "Microeconomic" and "Macroeconomic".

The curriculum and instructional kit is intended for the organization of independent work of the students on the course of study "Economic Theory", carrying out practical lessons, diagnostics of level and quality of the knowledge gained by them according to the economic theory.

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It is recommended the interfaculty methodical commission of economic and accounting faculties, the report № 2 from 21.10.2014.

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INTRODUCTION

Curriculum and Instructional Kit on the course of study "Economic theory" is intended for the management in the activity to students of not economic fields of study. Its distinctive features, in comparison with the previous type of methodical recommendations are: the updated contents, aktsentation on competence-based approach in training, considerable strengthening of a role and a share of independent work of the student, use modern the innovation of pedagogical technologies. Within joint cooperation of the teacher and the student of the recommendation information and acquisitions focused on practice, the necessary in life of abilities act as peculiar "navigator" of getting of knowledge.

The purpose of the course of study: development of economic thinking of students, forming at them base economic knowledge on the basis of studying of achievements of domestic and world economic thought; revealing of features of development of economy of Belarus at the present stage; creation of a methodological basis for development of the courses of study "Microeconomic" and "Macroeconomic".

The tasks of the course of study: development of skills of the analysis of the economic information; mastering of fundamental problems of economic development, the basic economic categories; studying of principles of functioning of the economic systems determining behavior of economic actors; research of the major forms of adjustment of economy; forming of understanding of main principles of functioning of subjects of managing and commodity markets.

As a result of studying the course the student should know: the basic economic categories and laws; the major tendencies of development of economic events and processes; motives of behavior of consumers and commodity producers; mechanisms of functioning of monetary and financial systems; features of course of economic processes in Belarus; to analyze and systematize the economic information; to use tools of the economic analysis at studying of

economic policy and to estimate the concrete situations which have developed as a result of its realization; to generalize experience of other countries in the field of economic adjustment; to apply the received knowledge at accepting of production decisions in the future professional activity; competently to state and prove the point of view at discussion of economic problems; to solve tasks and tests with a view of deeper development of a material.

The tests placed in a grant, practical tasks are made by the author of methodical recommendations on the basis literature which is recommended to students as the main literature for preparation for practical lessons, for passing an examination on the course of study:

Basic:

1. Economic Themes: учебно-методическое пособие / Л.В. Довгер [и др.]. – Минск: БГЭУ, 2000 Ч.1. – 2000. – 91 с.;

2. *Довгер, Л.В.* Economic Themes: Учебно-методическое пособие / Л.В. Довгер [и др.]. – Минск: БГЭУ, 2000 Ч.2. – 2000. – 196 с.;

3. *Whitney, J.O.* The economics of trust: liberating profits and restoring corporate vitality / J.O. Whitney. – New York: McGraw-Hill, 1996. – 236 p.;

4. *Slavin, S.L.* Microeconomics / S.L. Slavin. – Burr Ridge: Irwin, 1994. – 473 p.;

5. *Bingham, R.C.* Economic concepts: a programmed approach / R.C. Bingham. – New York: McGraw-Hill, 1993. – 448 p.;

6. *Yohe, G.W.* Economics: study guide to accompany Samuelson-Nordhaus / G.W. Yohe. – New York: McGraw-Hill, 1992. – 470 p.;

7. *Samuelson, P.A.* Economics / P.A. Samuelson, W. Nordhaus. – New York: McGraw-Hill, 1992. – 784 p.;

8. *Parkin, M.* Economics / M. Parkin. – Massachusetts: Addison-Wesley, 1990. – 1020 p.

9. *Parkin, M.* Macroeconomics / M. Parkin. – Massachusetts: Addison-Wesley, 1990. – 557 p.

Additional:

1. Economics and Plant Management: учебно-методическое пособие для студентов экономических специальностей / сост.: Л. Б. Батина [и др.] УО "Белорусский государственный технологический университет". – Минск: БГТУ, 2012. – 157 с.;

2. Chernobyl's Legacy: Health, Environmental and Socio-economic impacts and Recommendations to the Governments of Belarus, the Russian Federation and Ukraine: the Chernobyl Forum: 2003–2005. – Vienna: IAEA, 2006. – 57 p.;

3. Economic Considerations: English through content: applied economics / Thomas Kral editor. – Washington, DC: Office of English Language Programs, 2006. – VIII, 136 p.;

4. *Пивовар, А.Г.* Большой англо-русский финансово-экономический словарь: Около 80000 слов и выражений / Под ред. В.И. Осипова. – М.: Экзамен, 2000. – 1062 с.;

5. *Lind, D.A.* Basic statistics for business and economics / D.A. Lind, R.D. Mason. – Burr Ridge: Irwin, 1994. – 504 p.;

6. *McConnell, C.R.* Contemporary labor economics / C.R. McConnell. – New York: McGraw-Hill, 1992. – 600 p.;

7. *Ekelund, R.B. Jr.* A history of economic theory and method / R.B. Ekelund Jr., R.F. Hebert. – New York: McGraw-Hill, 1990. – 688 p.;

8. *Spechler, M.C.* Perspectives in economics thought / M.C. Spechler. – New York: McGraw-Hill, 1990. – 278 p.;

9. Advanced lectures in quantitative economics / ed. by Fr. van der Ploeg. – London: Academic press, 1990. – 628 p.;

10. *Hazlitt, H.* Economics in one lesson / H. Hazlitt. – New York: Three Rivers Press, 1979. – 218 p.

The contents and forms of independent work of students are defined in each case by the teacher conducting a lecture and practical lessons.

PLAN AND ORGANIZATIONAL STRUCTURE OF LESSONS FROM THE COURSE OF STUDY

| Contens | Hours in total | Including | |
|---|-------------------|-----------|----------------------|
| | | lectures | practical lessons |
| <i>Modul I. The main regularities of functioning of the economy</i> | | | |
| Theme 1. Economic theory: subject and method | 4 | 2 | 2 |
| Theme 2. Needs and resources. The problem of choice in the economy | 4 | 2 | 2 |
| Theme 3. Economic systems | 4 | 2 | 2 |
| Theme 4. Market economy and its model | 4 | 2 | 2 |
| <i>Modul II. Fundamentals of Microeconomic</i> | | | |
| Theme 5. Demand, supply and market equilibrium | 4 | 2 | 2 |
| Theme 6. Demand and supply elasticity | 4 | 2 | 2 |
| Theme 7. Bases of behavior of subjects of market economy | 10 | 6 | 4 |
| <i>Modul III. Bases of the theory of Macroeconomic and international economy</i> | | | |
| Theme 8. Main macroeconomic indicators | 4 | 2 | 2 |
| Theme 9. Monetary market. The monetary and credit system | 8 | 4 | 4 |
| Theme 10. The financial sector of economic and bases of its functioning | 4 | 2 | 2 |
| Theme 11. The macroeconomic equilibrium: the model of aggregate demand and the aggregate supply (AD-AS model) | 4 | 2 | 2 |
| Theme 12. The macroeconomic instability | 6 | 4 | 2 |
| Theme 13. World economy and current trends of its development | 4 | 2 | 2 |
| Theme 14. The balance of payments. The rate of exchange | 4 | 2 | 2 |
| Total | 68 | 36 | 32 |

THEORETICAL PART

MODULE I THE MAIN REGULARITIES OF FUNCTIONING OF THE ECONOMY

Theme 1 ECONOMIC THEORY: THE NATURE AND METHOD

1.1 Scarcity and Choice.

From our definition of economics, it is easy to see why economists view the world through the lens of scarcity. Since human and property resources are scarce (limited), it follows that the goods and services we produce must also be limited.

Scarcity limits our options and necessitates that we make choices. Because we “can’t have it all,” we must decide what we will have, and what we must forgo.

Limited resources have given economics its core: the idea that “there is no free lunch.” You may get treated to lunch, making it “free” to you, but there is a cost to someone - ultimately to society. Scarce inputs of land, equipment, farm labour, the labour of cooks and waiters, and managerial talent are required. Because these resources could be used in other production activities, they and the other goods and services they could have produced are sacrificed in making the lunch available.

Economists call these sacrifices *opportunity costs*. To get more of one thing, you forgo the opportunity of getting something else. So, the cost of that which you get is the value of that which is sacrificed to obtain it.

1.2 Rational Behaviour.

Economics is grounded on the assumption of “rational self-interest.” Individuals pursue actions that will allow them to achieve their greatest satisfaction. Rational behaviour implies that individuals will make different choices under different circumstances. For example, Jones may decide to buy Coca-Cola in bulk at a warehouse

store rather than at a convenience store where it is much more expensive.

That will leave him with extra money to buy something else that provides satisfaction. Yet, while driving home from work, he may stop at the convenience store to buy a single can of Coca-Cola.

Rational self-interest also implies that individuals will make different choices. High school graduate Alvarez may decide to attend college or university to major in business. Baker may opt to take a job at a warehouse and buy a new car. Chin may accept a signing bonus and join the Armed Forces. All three choices reflect the pursuit of self-interest and are rational, but they are based on different preferences and circumstances.

Of course, rational decisions may change as costs and benefits change. Jones may switch to Pepsi when it is on sale. And, after taking a few business courses, Alvarez may decide to change her major to social work.

Rational self-interest is not the same as selfishness. People make personal sacrifices to help family members or friends, and they contribute to charities because they derive pleasure from doing so. Parents help pay for their children's education for the same reason. These self-interested, but unselfish, acts help maximize the givers' satisfaction as much as any personal purchase of goods or services. Self-interest behaviour is simply behaviour that enables a person to achieve personal satisfaction, however that may be derived.

1.3 Marginal Analysis: Benefits and Costs.

The economic perspective focuses largely on **marginal analysis** = comparisons of *marginal benefits* and *marginal costs*. (Used this way, "marginal" means "extra," "additional," or "a change in.") Most choices or decisions involve changes in the status quo (the existing state of affairs). Should you attend school for another year or not? Should you study an extra hour for an exam? Should you add fries to your fastfood order? Similarly, should a business expand or reduce its output? Should government increase or decrease health care funding?

Each option involves marginal benefits and, because of scarce resources, marginal costs. In making choices rationally, the decision maker must compare those two amounts. Example: You and your friend are shopping for an engagement ring. Should you buy a 1/4-carat diamond, a 1/2-carat diamond, a 3/4-carat diamond, or a larger one? The marginal cost of the larger diamond is the added expense beyond the smaller diamond. The marginal benefit is the greater lifetime pleasure (utility) from the larger stone. If the marginal benefit of the larger diamond exceeds its marginal cost, you should buy the larger stone. But if the marginal cost is more than the marginal benefit, you should buy the smaller diamond instead.

In a world of scarcity, the decision to obtain the marginal benefit associated with some specific option always includes the marginal cost of forgoing something else. The money spent on the larger diamond means forgoing something else. Again, there is no free lunch!

One surprising implication of decisions based on marginal analysis is that there can be too much of a good thing. Although certain goods and services seem inherently desirable - education, health care, a pristine environment - we can in fact have too much of them. “Too much” occurs when we keep obtaining them beyond the point where their marginal cost (the value of the forgone options) equals their marginal benefit. Then we are sacrificing alternative products that are more valuable *at the margin* – the place where we consider the very last units of each. Society can have too much health care and you can have too many fries.

1.4 Economic Methodology.

Like the physical and life sciences, as well as other social science, economics relies on the scientific method. It consists of a number of elements:

- The observation of facts (real world data);
- Based on those facts, the formulation of possible explanations of cause and effect (hypotheses).

- The testing of these explanations by comparing the outcomes of specific events to the outcomes predicted by the hypotheses.

- The acceptance, rejection, or modification of the hypotheses, based on these comparisons.

- The continued testing of the hypotheses against the facts. As favourable results accumulate, the hypotheses evolve into a *theory*, sometimes referred to as a *model*.

A very well-tested and widely accepted theory is referred to as a *law* or *principle*.

Laws, principles, and models enable the economist, like the natural scientist, to understand and explain economic phenomena and to predict the various outcomes of particular actions. But as we will soon see, economic laws and principles are usually less certain than the laws of physics or chemistry.

1.5 Deriving Theories.

Economists develop models of the behaviour of individuals (consumers, workers) and institutions (business, government) engaged in the production, exchange, and consumption of goods and services. They start by gathering facts about economic activity and economic outcomes. Because the world is cluttered with innumerable interrelated facts, economists, like all scientists, must select the useful information. They must determine which facts are relevant to the problem under consideration. But even when this sorting process is complete, the relevant information may at first seem random and unrelated.

The economist draws on the facts to establish cause - effect hypotheses about economic behaviour. Then the hypotheses are tested against real world observation and data. Through this process, the economist tries to discover hypotheses that rise to the level of theories and principles (or laws) - well-tested and widely accepted generalizations about how individuals and institutions behave. The process of deriving theories and principles is called theoretical economics (see the lower box in Figure 1.1). *The role of economic*

theorizing is to systematically arrange facts, interpret them, and generalize from them. Theories and principles bring order and meaning to facts by arranging them in cause-and-effect order.

Observe that the arrow from “theories” to “facts” in Figure 1-1 moves in both directions. Some understanding of factual, real-world evidence is required to formulate meaningful hypotheses. And hypotheses are tested through gathering and organizing factual data to see if the hypotheses can be verified.

Economic theories and principles *are statements about economic behaviour that enable prediction of the probable effects of certain actions.* Good theories are those that do a good job of explaining and predicting. They are supported by facts concerning how individuals and institutions actually behave in producing, exchanging, and consuming goods and services. But these facts may change over time, so economists must continually check theories against the shifting economic environment.

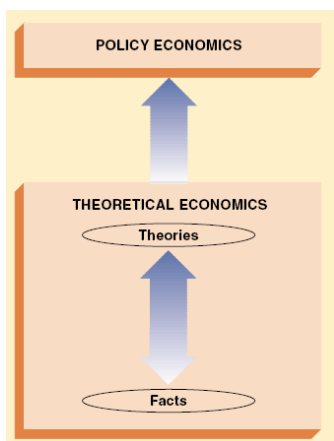


Figure 1.1 – The relationship between facts, theories, and policies in economics

Several other points relating to economic principles are important to know.

1.6 Policy Economics.

Applied economics, or **policy economics** is the application of theories and data to formulate *policies* that aim to resolve a specific economic problem or further an economic goal. Economic theories are the foundation of economic policy, as shown in the upper part of Figure 1-1. Economic policy normally is applied to problems after they arise. However, if economic analysis can predict some undesirable event, such as unemployment, inflation, or an increase in poverty, then it may be possible to avoid or moderate that event through economic policy. For example, you may read in the newspaper that the Bank of Canada has reduced interest rates to increase spending and prevent a recession.

1.7 Formulating economic policy.

Here are the basic steps in policy-making:

- *State the goal.* The first step is to make a clear statement of the economic goal.

If we say that we want “full employment,” do we mean that everyone between, say, 16 and 65 years of age should have a job? Or do we mean that everyone who *wants* to work should have a job? Should we allow for some unemployment caused by inevitable changes in the structure of industry and workers voluntarily changing jobs? The goal must be specific.

- *Determine the policy options.* The next step is to formulate alternative policies designed to achieve the goal, and determine the possible effects of each policy. This requires a detailed assessment of the economic impact, benefits, costs, and political feasibility of the alternative policies. For example, to achieve full employment, should government use fiscal policy (which involves changing government spending and taxes), monetary policy (which entails altering the supply of money), an education and training policy that enhances worker employability, or a policy of wage subsidies to firms that hire disadvantaged workers?

- *Implement and evaluate the policy that was selected.* After implementing the policy, we need to evaluate how well it worked.

Only through unbiased evaluation can we improve on economic policy. Did a specific change in taxes or the money supply alter the level of employment to the extent predicted? Did deregulation of a particular industry (for example, banking) yield the predicted beneficial results? If not, why not? What were the harmful side effects, if any? How might the policy be altered to make it work better?

1.8 Economic goals.

If economic policies are designed to achieve specific economic goals, then we need to recognize a number of goals that are widely accepted in Canada and many other countries. They include:

- *Economic growth* Produce more and better goods and services, or, more simply, develop a higher standard of living.

- *Full employment* Provide suitable jobs for all citizens who are willing and able to work.

- *Economic efficiency* Achieve the maximum fulfillment of wants using the available productive resources.

- *Price-level stability* Avoid large upswings and downswings in the general price level; that is, avoid inflation and deflation.

- *Economic freedom* Guarantee that businesses, workers, and consumers have a high degree of freedom of choice in their economic activities.

- *Equitable distribution of income* Ensure that no group of citizens faces poverty while most others enjoy abundance.

- *Economic security* Provide for those who are chronically ill, disabled, laid off, aged, or otherwise unable to earn minimal levels of income.

- *Balance of trade* Seek a reasonable overall balance with the rest of the world in international trade and financial transactions.

Although most of us might accept these goals as generally stated, we might also disagree substantially on their specific meanings. What are “large” changes in the price level? What is a “high degree” of economic freedom? What is an “equitable” distribution of income? How can we measure precisely such abstract

goals as “economic freedom”? These objectives are often the subject of spirited public debate.

Also, some of these goals are complementary; when one is achieved, some other one will also be realized. For example, achieving full employment means eliminating unemployment, which is a basic cause of inequitable income distribution. But other goals may conflict or even be mutually exclusive. They may entail tradeoffs, meaning that to achieve one we must sacrifice another. For example, efforts to equalize the distribution of income may weaken incentives to work, invest, innovate, and take business risks, all of which promote economic growth. Taxing high-income people heavily and transferring the tax revenues to low-income people is one way to equalize the distribution of income. But then the incentives to high-income individuals may diminish because higher taxes reduce their rewards for working. Similarly, low-income individuals may be less motivated to work when government stands ready to subsidize them.

When goals conflict, society must develop a system to prioritize the objectives it seeks. If more economic freedom is accompanied by less economic security and more economic security allows less economic freedom, society must assess the tradeoffs and decide on the optimal (best) balance between them.

1.9 Macroeconomics and Microeconomics.

Economists derive and apply principles about economic behaviour at two levels.

Macroeconomics examines either the economy as a whole or its basic subdivisions or aggregates such as the government, household, and business sectors. An aggregate is a collection of specific economic units treated as if they were one unit. Therefore, we might lump together the millions of consumers in the Canadian economy and treat them as if they were one huge unit called “consumers.”

In using aggregates, macroeconomics seeks to obtain an overview, or general outline, of the structure of the economy and the relationships of its major aggregates.

Macroeconomics speaks of such economic measures as *total* output, *total* employment, *total* income, *aggregate* expenditures, and the *general* level of prices in analysing various economic problems. Very little attention is given to specific units making up the various aggregates. Macroeconomics examines the beach, not the sand, rocks, and shells.

Microeconomics looks at specific economic units. At this level of analysis, we observe the details of an economic unit, or very small segment of the economy, under the figurative microscope. In microeconomics we talk of an individual industry, firm, or household. We measure the price of a *specific* product, the number of workers employed by a *single* firm, the revenue or income of a *particular* firm or household, or the expenditures of a *specific* firm, government entity, or family. In microeconomics, we examine the sand, rocks, and shells, not the beach.

The macro-micro distinction does not mean that economics is so highly compartmentalized that every topic can be readily labelled as either macro or micro; many topics and subdivisions of economics are rooted in both. Example: While the problem of unemployment is usually treated as a macroeconomic topic (because unemployment relates to *aggregate* spending), economists recognize that the decisions made by *individual* workers in searching for jobs and the way *specific* product and labour markets operate are also critical in determining the unemployment rate.

1.10 Positive and Normative Economics.

Both macroeconomics and microeconomics involve facts, theories, and policies.

Each contains elements of *positive* economics and *normative* economics. Positive economics focuses on facts and cause-and-effect relationships. Positive economics avoids value judgments, tries to establish scientific statements about economic behaviour, and deals

with what the economy is actually like. Such factually based analysis is critical to good policy analysis.

In contrast normative economics incorporates value judgments about what the economy should be like. Normative economics looks at the desirability of certain aspects of the economy. It underlies expressions of support for particular economic policies.

Positive economics concerns *what is*, while normative economics embodies subjective feelings about *what ought to be*. Here are some examples. Positive statement:

“The unemployment rate in several European nations is higher than that in Canada.”

Normative statement: “European nations ought to undertake policies to reduce their unemployment rates.” A second positive statement: “Other things equal, if tuition is substantially increased, college and university enrolment will fall.” Normative statement:

“College and university tuition should be lowered so that more students can obtain an education.” Whenever words such as “ought” or “should” appear in a sentence, there is a strong chance you are encountering a normative statement.

Most of the disagreement among economists involves normative, value-based policy questions. Of course, there is often some disagreement about which theories or models best represent the economy and its parts. But economists agree on a full range of economic principles. Most economic controversy thus reflects differing opinions or value judgments about what society should be like.

1.11 The basic scientific schools and modern trends of development of economic theory.

Economics is the social science that analyzes the production, distribution, and consumption of goods and services. The term economics comes from the Ancient Greek οἰκονομία (oikonomia, "management of a household, administration") from οἶκος (oikos, "house") + νόμος (nomos, "custom" or "law"), hence "rules of the house(hold)". Political economy was the earlier name

for the subject, but economists in the late 19th century suggested "economics" as a shorter term for "economic science" that also avoided a narrow political-interest connotation and as similar in form to "mathematics", "ethics", and so forth.

Economics is the science that concerns itself with economies, from how societies produce goods and services, to how they consume them. It has influenced world finance at many important junctions throughout history and is a vital part of our everyday lives. The assumptions that guide the study of economics, have changed dramatically throughout history. In this article, we'll look at the history of how economic thought has changed over time, and the major participants in its development.

The Father of Economics

Adam Smith is widely credited for creating the field of economics, however, he was inspired by French writers, who shared his hatred of mercantilism. In fact, the first methodical study of how economies work, was undertaken by these French physiocrats. Smith took many of their ideas and expanded them into a thesis about how economies should work, as opposed to how they do work.

Smith believed that competition was self-regulating and that governments should take no part in business through tariffs, taxes or any other means, unless it was to protect free-market competition. Many economic theories today are, at least in part, a reaction to Smith's pivotal work in the field.

Adam Smith is often touted as the world's first free-market capitalist. While that designation is probably a bit overstated, Smith's place in history as the father of modern economics and a major proponent of laissez-faire economic policies is quite secure. Read on to learn about how this Scottish philosopher argued against mercantilism to become the father of modern free trade.

The recorded history of Smith's life begins on June 16, 1723, at his baptism in Scotland. His birthday is undocumented. Smith attended the University of Glasgow at age 14, later transferring to Balliol College in Oxford, England. He spent years teaching and tutoring, publishing some of his lectures in "The Theory of Moral

Sentiments" in 1759. The material was well received and laid the foundation for the publication of "An Inquiry Into the Nature and Causes of the Wealth of Nations" (1776), which would cement his place in history.

"An Inquiry Into the Nature and Causes of the Wealth of Nations," also shortened as "The Wealth of Nations," documented industrial development in Europe. While critics note that Smith didn't invent many of the ideas that he wrote about, he was the first person to compile and publish them in a format designed to explain them to the average reader of the day. As a result, he is responsible for popularizing many of the ideas that underpin the school of thought that became known as classical economics.

Other economists built on Smith's work to solidify classical economic theory, which would become the dominant school of economic thought through the Great Depression.

Laissez-faire philosophies, such as minimizing the role of government intervention and taxation in the free markets, and the idea that an "invisible hand" guides supply and demand are among the key ideas Smith's writing is responsible for promoting. These ideas reflect the concept that each person, by looking out for him or herself, inadvertently helps to create the best outcome for all. "It is not from the benevolence of the butcher, the brewer, or the baker, that we can expect our dinner, but from their regard to their own interest," Smith wrote.

Jean-Baptiste Say

Jean-Baptiste Say was an influential advocate of Adam Smith's teaching in French government circles, but his best-known contribution was what came to be known as "Say's Law of Markets." Later paraphrased as "supply creates its own demand," Say's law stated that, although there could be an imbalance between the supply and the demand for particular products, no such imbalance could exist in the economy as a whole. It was based upon the postulate that money plays no part in the functioning of the economy beyond its role as a medium of exchange. (The claim that money is nothing but a medium of exchange, is another way of saying that people use

money only for buying things (including stocks and bonds). Say justified that postulate by arguing that it would be foolish to hold money out of circulation because that would mean needlessly going without things (or without dividends or interest). Say's Law remained part of mainstream classical economics until John Maynard Keynes drew attention to the speculative and precautionary motives for holding money.

Thomas Malthus

In his influential Essay on the Principle of Population, Thomas Malthus postulated that the population would grow at a geometric rate (2, 4, 8, 16...) while food production could only increase arithmetically (1, 2, 3, 4 ...) and concluded that the food supply would eventually be insufficient to support the population. This theory led him to oppose the introduction of the UK's Poor Law, and to advocate the protection of agriculture. In other respects, he followed Adam Smith in opposing government intervention in commerce. Evidence in support of his postulates was lacking at the time, and they have since been found to be mistaken, mainly because they took no account of the benefits of technical change.

David Ricardo

With minor reservations, David Ricardo accepted and extended Adam Smith's economics. In his major work, The Principles of Political Economy and Taxation, he accepted the concept of a value-determined "natural price", although he considered value to be determined by labour value added, rather than cost. Following Adam Smith's lead, he also developed the wage fund concept that the amount available for the payment of wages is fixed at any particular level of capital investment, so that an increase in the supply of labour would lead to a reduction in wage rates. He pioneered a definition of rent as the difference between the produce of a unit of labour on the land in question, and its produce on the least productive land in use. In a further extension to Adam Smith's work, he explored the incidence of taxation on wages, profits, houses, and rent, identifying in each case (but with the exception of rent) its harm to the economy. Probably his most influential contribution,

however, was his development of his "Law of Comparative advantage" that challenged the belief that the trading of a product is possible only with those with a lesser ability to produce it. Ricardo produced a logical demonstration that there can be mutually beneficial trade between two countries, one of which is better able than the other to produce all of the commodities that are traded.

Karl Marx

Karl Marx adapted Ricardo's concept of labour value and put it to an entirely different use. In his analysis, as in Ricardo's, labour consumption determines value. This, Marx termed exchange value. But Marx regarded each labourer as a product, whose exchange value is determined by the labour inputs required to feed, clothe, and train him. He reasoned that what the employer receives is the labourer's use value, which is determined by the utility of his products. Marx noted that a labourer's use value normally exceeds his exchange value, and he termed the difference surplus value, which was the employer's profit. Like Adam Smith and his classical predecessors, Marx was preoccupied with the subject of economic growth but, unlike them, he saw technical progress as a major contributor.

Marx was probably the first economist to make a systematic attempt to explain the fluctuations in economic activity known as the business cycle. He considered that if technical progress were to slow down, the only way to maintain growth would be to invest more and more in machinery and buildings, as a result of which the rate of profit on new investment would fall, leading to a further reduction in growth. Also, in his view, any departure from the conditions necessary for steady growth would lead to the accumulation of unwanted stocks of goods, producing a downturn in economic activity - until price-cutting, in order to get rid of surpluses, put the process into reverse.

In his major work, *Das Kapital* Marx puts his findings in an historical, concludes that economic conditions shape history, and forecasts a breakdown of the capitalist system and its replacement by socialism.

Other contributors

Among the many lesser contributors to classical economic theory, the best-known was John Stuart Mill. His *Principles of Political Economy*, although intended by the author merely to bring together the works of others, offered some fresh insights into increasing returns to scale and their consequences for the development of monopolies, and anticipated (though not in these terms) the neoclassical concepts of elasticity and the determination of price by the interaction of supply and demand.

Written during the classical period, but without recognition at the time, was the *Theory of the Firm* by the French economist and mathematician Antoine Augustin Cournot. Cournot used differential calculus to demonstrate the profit-maximising requirement of equality between marginal cost and marginal revenue, thus anticipating some of the more important developments of neoclassical economics.

Neoclassical Economics

The neoclassical approach

The term "neoclassical" is commonly applied to all of the continuing developments in economic thinking that followed the replacement of value-based concepts by the concept of markets that are governed by the interaction of supply and demand. In that sense, the term denotes a period rather than a consistent approach - although it is a period that overlaps the competing approaches of Keynesianism and monetarism. It is nevertheless a period in which most economists have deduced their findings from the same hypothetical postulates - including the assumption of competitive markets in which consumers maximise utility and producers maximise profits. Within that framework of postulates, neoclassical economists have explored a variety of aspects of economic activity in a variety of different ways.

Marginal analysis

The neoclassical period is also marked by an expansion in the number of people applying their minds to the problems of economics, as a result of which there have frequently been similar contributions from a number of different thinkers. That was true of the innovative

concepts of marginal analysis, that are attributable to the contributions of William Stanley Jevons, Carl Menger and Léon Walras. Their contributions have been brought together by Alfred Marshall in his *Principles of Economics*, which provides the reader with an accessible and readable (and non-mathematical) account of those and other contributions. The concept of utility, was given more prominence, and it was demonstrated logically (and mathematically) that a rational consumer would continue to buy additional units of a product until its marginal utility (the increase in utility obtainable from one additional unit of the product) became level with its price; and that a rational supplier would continue to offer additional units of a product until its marginal cost became level with the marginal revenue that he would get from selling it. The American economist, John Bates Clark, subsequently applied the concept to a market in which a rational employer would continue to hire labour until its marginal product became level with the prevailing wage rate.

Equilibrium and the Price Mechanism

The concept of "market equilibrium" is central to the neoclassical model. Léon Walras¹⁴ thought of it as the achievement of an imaginary auctioneer who adjusts a notional opening price in response to a succession of bids by buyers and sellers, and permits transactions to take place only when a price is reached at which buyers are willing to buy all that is offered for sale. That is the process of price determination by supply and demand which marks the abandonment of the concept of value-determined price, and which is examined in detail in Alfred Marshall's *Economics* and in Milton Friedman's *Price Theory*. Walras, and subsequently the Italian economist Vilfredo Pareto¹⁶, later developed the concept of a general equilibrium in which supply is equal to demand in every market in a closed economy. The normal assumption of neoclassical economics is that of a stable equilibrium to which the economy will automatically return after a disturbance. In such an economy, unemployment does not persist because any excess in the supply of labour, relative to its demand, is corrected by a reduction in wages.

Welfare and Efficiency

The most politically influential of the contributions of the neoclassical economists was probably their development of the concept of welfare. In accordance with the precepts of representative government, they assumed the criterion for the success of an economic system to be the welfare of the individual, and they introduced the concept of economic efficiency as a measure of that success. Vilfredo Pareto took the lead in defining efficiency as a state in which no-one could be made better off without making someone worse off. The three types of efficiency were identified as productive efficiency (the production of good at minimum cost), allocative efficiency (the provision of the mix of goods that consumers want) and distributive efficiency (the distribution of the goods in such a way as to maximise individual welfare). That work laid the foundations for the subsequent development of the theory of welfare economics by Sir John Hicks and others. (The subject of economic welfare is discussed extensively in Arthur Pigou's *Economics of Welfare*, and the theorems of welfare economics are summarised in William Baumol's *Economic Theory and Operations Analysis*)

Competition

The theorems of welfare economics establish a presumption that allocative efficiency - that is to say that resources will be optimally allocated as between the production of alternative products - will be achieved under the hypothetical conditions of perfect competition. (Those conditions include the requirement that for each product there is no supplier large enough to influence prices, that all producers supply identical products, and that all consumers are well informed and behave rationally.) Despite the unreasonableness of those requirements, most economists advocate a presumption that restrictions upon competition will result in a reduction in efficiency. Those theoretical developments were the foundation for antitrust and other forms of competition policy, the economics and politics of which have been developed by George Stigler.

The theory of the firm

The tools of welfare economics were also used to develop the theory of the firm by Nicholas Kaldor of the London School of

Economics in his *Equilibrium of the Firm* and Ronald Coase in his "The Nature of the Firm. (Those theoretical developments have been summarised in William Baumol's *Economic Theory and Operations Analysis*. An empirical study of the way firms actually behave is provided by Cyert and March's *Behavioral Theory of the Firm*)

Economic growth

There has been succession of attempts to create models of economic growth that identify the contributions of such factors as investment, productivity, innovation and institutional environment; and that explain the differences in growth experienced by different regions of the world. In the simple model proposed by Malthus in 1850, growth could not exceed population growth, but it was not long before it became evident that it was doing so. The Harrod-Domar model, and its successors, assume that there would be sufficient economic growth to enable some to go into growth-enhancing investments. In a later development, the 1956 Solow model introduced the influence of the substitution of capital for labour that results from investment in improved capital equipment. Solow also pioneered the technique of growth accounting, which he used to estimate relative contributions to historical growth in the United States; and he identified an unexplained residual which he termed total factor productivity, the growth of which he attributed to technological change. Technological change was exogenous to the Solow model, in that it was not the consequence of factors that were represented in the model. As a result of subsequent research, notably that of Paul Romer and Robert Lucas, some of the factors believed to influence technological change, such as expenditure on R&D and training, have since been embodied in the growth models, which are termed endogenous growth models. The most recent work on the subject has sought to identify the contributions to economic growth of institutional factors such as quality of governance, trust, and ethnic diversity; and to explore its links with geographical factors and globalisation.

Keynesian macroeconomics

The contribution of John Maynard Keynes

The most important contribution to economic thought by John Maynard Keynes was his examination of the factors determining the levels of national income and employment, and the causes of economic fluctuations. His major (and hard to read) work, the *General Theory of Employment, Interest and Money*, contains a sustained attack on much of the thinking of classical economics - mainly on the grounds that their postulates were unrealistic. His first target was Say's law of markets with its denial of the possibility of a general deficiency of demand. He challenged its implicit assumption that money is no more than a medium of exchange by drawing attention to the speculative motive for holding money. Secondly, he attacked the classical economists' contention that it was the interest rate that reconciled savings plans with investment plans, claiming that the level of savings was largely determined by the level of national income. Thirdly, he rejected the classical economists' assumption that any tendency for unemployment to rise would be corrected by a reduction in the general level of wages, substituting the contention that "wages are sticky downward". Having substituted his assumptions for those of his predecessors, he advanced the thesis that a deficiency of demand could occur if there was an excess of planned savings over planned investment, because such an excess could be removed only by a reduction in national income. The implication of that thesis was that the economy could settle down into a condition of high unemployment, lacking the self-righting mechanism envisaged by the classical economists.

Neo-Keynesianism

Shortly after the publication of Keynes' *General Theory*, John Hicks published an article entitled "Mr Keynes and the Classics", in which he produced a synthesis between the Keynesian and neoclassical models. Its main feature is the IS/LM diagram with its intersecting curves, one of which (Investment/Savings) relates the demand for savings to the interest rate, and the other (Liquidity/Money Supply) relates the demand for money to the interest rate - and in which the point of intersection of the two curves represents an equilibrium level of demand. (The IS/LM diagram

subsequently came to be known as the Hicks-Hansen diagram in recognition of prior work by the American economist Alvin Hansen . The important feature of the synthesised model is that it can be made to depict behaviour in accordance with either the Keynesian model or the neoclassical model, depending upon what is assumed concerning the slopes of the two curves. In doing so it introduced a fundamental departure in the methodology of economics - a change from an exclusive reliance upon logical deduction from a priori postulates, to the increasing use of the inductive process of testing hypotheses against empirical evidence, that was made possible at the time by the comparatively recent practice of systematically collecting economic statistics. The work of a large body of economists was subsequently devoted to testing such hypotheses, using the mathematical technique known as "econometrics". That work does not appear to have resolved the controversy concerning the usefulness of the two models (except that some economists now acknowledge that one or the other seems to have worked better from time to time and in some countries' economies)

Policy Implications

A Keynesian consensus dominated the economic policies of the developed countries for two or three decades following the second world war. Keynesian stabilisation policy required governments to counter downturns in demand by cutting taxes or increasing public expenditure. Since it takes some years for such actions to take effect, their timing had to be based upon forecasts using computerised economic forecasting models, but forecasting errors and misguided attempts to stimulate growth often had destabilising consequences. Measures that unwittingly stimulated demand at a time when an economy was operating at its full capacity, frequently gave rise to rising inflation - for which the only remedy appeared to be wage restraint - and the situation was sometimes exacerbated by the operation of foreign exchange policies. Opposition to those policy actions came from economists of the Austrian School, and from economists of the Chicago School whose thinking is described below.

Monetarism and the Chicago School.

The Chicago School.

The University of Chicago School of Economics has enjoyed a reputation for economic excellence since its foundation in 1892. However, the term Chicago School is usually taken to refer to the outlook and methodology of its economists during the period that started in the 1960s - including Milton Friedman, George Stigler, Ronald Coase, Robert Lucas, Cary Becker, Harry Johnson and Merton Miller, and to some like-minded economists in other universities. It is best known for its advocacy of monetarism but its economists have also made contributions on a wide range of other topics, including international trade, rational expectations and institutional economics. Their methodology embodies an approach, which philosophers term instrumentalist, that gives the predictive value of a theory priority over the representativeness of its assumptions.

Monetarism.

The quantity theory of money, which is often attributed to the economist Irving Fisher, but which undoubtedly had earlier origins, equated the volume of money in circulation multiplied by a notional "velocity of circulation". to the volume of physical output multiplied by its unit price (usually written as $MV = PT$). If the velocity of circulation were roughly constant, that would imply an association between inflation and growth in the money supply. Milton Friedman found that to have been the case during various periods in United States history³⁰, and that periods of monetary expansion had been followed by periods of inflation, although with long and variable time-lags. That led him to argue that Keynesian demand management would be ineffective in the long run because it would be accompanied by a damaging rise in the money supply; and that stability of demand and prices could better be achieved by control of the money supply. The controversy that followed was mainly concerned with the nature of the transmission mechanism (the question whether an excess of money would bid up the prices of

goods, or whether it would be invested in interest-bearing bonds without affecting the prices of goods).

A theory connecting the money supply and the balance of payments had previously been put forward by Harry Johnson when he was a professor of economics at Manchester University. The conventional view had been that the exchange rate is determined by the balance between the supply and demand of exports and imports, but Harry Johnson treated it as the relative price of the moneys in circulation in the two countries. One of the implications of his theory is that if the exchange rate is fixed, the money supply cannot be controlled - which was a consideration that influenced the Chicago School's campaign to put an end to the system of fixed exchange rates then in operation. Another is that if the money supply is held constant, the balance of payments is self-correcting.

Expectations.

Milton Friedman also attacked the thinking behind the Phillips curve (which had reflected the observation that inflation tended to fall when there was a rise in unemployment) on the grounds that it failed to take account of expectations. He proposed its replacement by the expectations-augmented Phillips curve, and used that construction to counter fears that a reduction in growth of the money supply would lead to a sustained increase in unemployment. To do so, he introduced the concept of the non-accelerating-inflation rate of unemployment (NAIRU), which is usually referred to as its natural rate, and which is the unemployment rate at which the expected inflation rate is the same as its actual rate. He argued that if a reduction in money supply growth caused unemployment to rise above its natural rate, the expected inflation rate would fall, setting in motion a sequence of events that would cause unemployment to revert to its natural rate. Conversely, a reduction in unemployment accompanying an increase in the money supply would cause an increase in expected inflation, prompting wage demands which would lead to an increase in actual inflation - a process which could continue indefinitely.

Applying the concept of "rational expectations" formulated by his former colleague, John Muth, to the operation of economic policy, Robert Lucas of the Chicago School put forward what has become known as the Lucas Critique . He argued that policy actions tend to change people's expectations so that the same policy action could have future consequences that differ from the consequences that it had in the past. That possibility has fundamental implications for the construction of forecasting models, and the Lucas critique also raises the possibility that public reactions could frustrate the achievement of policy objectives.

Policy implications and outcomes.

The Chicago School's prescription for stabilisation problem was confined to the control the money supply, and its prescription for the reduction of unemployment was to take measures to improve wage - and price flexibility. Concern for rising inflation, and the failure of attempts to control it by wage restraint, led to the widespread adoption of the first of those prescriptions in the late 1970s. In the United States, the Congress passed The Full Employment and Balanced Growth Act (known as the Humphrey-Hawkins Act) which required the Federal Reserve Bank to set one-year target ranges for money supply growth twice a year and to report the targets to Congress. In the United Kingdom, the Callaghan administration adopted a specific money supply objective: a practice that was enthusiastically adopted by its successor Thatcher administration. In both countries, attempts to keep the growth of the money supply within pre-set limits were generally unsuccessful (and in the United Kingdom, money supply growth actually increased) and were eventually abandoned. Some central bankers have said that they take account of long-term money supply trends, but none consider control of the money supply to be a practicable instrument of stabilisation policy. Consensus monetary policy since the late 1980s uses interest rates as a means of stabilising both prices and output, and the median inflation rate in 13 industrialised countries has fallen from around 15 per cent in the mid 1970s and early 1980s to around 2 per cent in 2005.

Institutional Economics.

The Institutionalist School.

The term Institutionalist refers to economists who argue that economic activity cannot properly be understood except in the context of the public and social structure in which it takes place. That approach to the can be traced back to the German Historical School, which included Friedrich List and Max Weber, who is best known for his *The Protestant Ethic and the Spirit of Capitalism*. But the term is more commonly applied to the views of a pre-war group of American economists whose leading member was Thorstein Veblen - the man who coined the term conspicuous consumption - and whose lasting contributions were the collection of economic statistics and the study of business cycles.

Modern institutional economics.

A major contributor to the theory of institutional economics has been Ronald Coase, who summarised his approach in his 1991 Nobel Prize lecture. Early in his career as an economist he had formulated what came to be known as the Coase Theorem which was the proposition that economic efficiency will be achieved provided that property rights are fully allocated and can freely be traded; a proposition which he developed further in his 1960 paper *The Problem of Social Cost*. The development of institutional economics by economists at the University of Chicago has taken them across the conventional borders of economics into the disciplines of law, sociology and politics. (An extreme example has been the publication of the best-selling *Freakonomics* that was jointly authored by the Chicago economist Steven Levitt and the New York journalist Stephen Dubner, and which applies economic thinking to such questions as cheating, drug dealing and the connection between crime and abortion.)

Mechanism design theory.

A recent extension to institutional economics is concerned with how well different institutions and allocation mechanisms achieve goals such as welfare and private profit. Contributions to that subject by Leonid Hurwicz of the University of Minnesota, Eric

Maskin of Princeton and Roger Myerson of Chicago earned them the 2007 Nobel Prize in Economics.

Public choice theory.

A different approach to the same questions had previously been put forward under the heading of public choice theory, the principle contribution to which had been James Buchanan and Gordon Tullock's major treatise, *The Calculus of Choice*. However, Buchanan and Tullock are best known for their analysis of the behaviour of politicians, civil servants and voters on the assumption that they are mainly motivated by personal gain, rather than a desire to serve the public interest.

International economics.

The gains from trade.

David Ricardo's law of comparative advantage - and its implication that trade restrictions are damaging to the interests of the country that imposes them - was the starting-point of the historical development of trade theory. The subsequent theoretical developments of "classical" trade theory have mainly been attempts to create mathematical models of inter-country trade. The best-known of those was the Heckscher-Ohlin Theory, which deduced from a range of highly restrictive assumptions that a country will export those commodities that are intensive in the factor of production in which it is most well-endowed. That theory was extended by Paul Samuelson to conclude that, in the absence of productivity differences, trading between two countries would tend to equalise wages and capital costs in those countries. However, doubt was cast upon the relevance of the Heckscher-Ohlin theory by Wassily Leontief's discovery that the United States, which is the world's most capital-intensive country, had been exporting labour-intensive commodities and importing capital-intensive commodities. The general conclusion has been that international trade is mainly driven by factors other than labour-intensity and capital-intensity. "Modern" trade theory depends mainly upon the econometric analysis of international trade statistics, and has produced a range of

findings concerning the influence of factors such as innovation and training.

Infant industries.

There was opposition in the early nineteenth century to the proposition that trade restrictions reduce welfare from a small group of economists, including Friedrich List of the German Historical School, who argued that free trade should not be permitted until the government had taken the measures necessary to establish the country's "productive powers". That was the precursor of the argument for infant-industry protection that was politically influential in the early twentieth century and which led to the introduction of the Smoot-Hartley system of industrial tariffs in the United States. It has been given recent expression in Ha-Joon Chang's book *Kicking Away the Ladder* which suggests that industrial successes in Britain and the United States (and later in creating an automobile industry in South Korea) were attributable to the fact that they were protected from overseas competition until they were large enough to benefit from economies of scale. The mainstream reaction among economists concedes that the case for free trade does not take account of the benefits of scale economies, and that welfare gains from temporary trade restrictions might in principle be possible if a government were sufficiently successful in "picking winners" but that tax incentives and subsidies are more effective than tariffs.

Globalisation.

Globalisation is seen by most economists as contributing to economic welfare by promoting competition and the division of labour. But there are exceptions. Professor Joseph Stiglitz of the Columbia Business School has advanced the infant industry case for protection in developing countries and criticised the conditions imposed for help by the International Monetary Fund. And Professor Dani Rodrik of Harvard⁴⁹ has noted that the benefits of globalisation are unevenly spread, leading to income inequalities that, in his view, lead to damaging losses of social capital, and to the migration of labour causing social stresses in receiving countries

Financial economics.

Overview.

Economists and professional investors gave little attention to financial economics until the adoption in the 1970s of models based upon the efficient markets hypothesis. That hypothesis was the basis of risk analysis using the assumption that price variations on the markets for financial assets could be treated as random variations, which could be represented by established probability distributions. The international financial industry made use of the models to select investments that were predicted to give the best return for a stipulated level of risk. It was not until the 2008 financial crisis that it was widely recognised that the efficient market hypothesis was no more than a statement of a general tendency, and that additional risks could arise from statistically unpredictable patterns of investor conduct.

The finance market.

The study of financial economics had its origin in a 1900 thesis entitled *Theorie de la Speculation* by the French mathematician Louis Bachelier, according to which price fluctuations in a speculative market are analogous to the Brownian Movement of physics (the random walk of statistics theory), such that there is no combination of prices that offer the prospect of a certain gain. In 1933, the American economist Alfred Cowles developed a similar thesis, which he published in a paper entitled *Can Stock Market Forecasters Forecast?*. According to Cowles' efficient market hypothesis, all of the available information that was relevant to an asset's prospects would already be embodied in its price (so that the answer to his question was "no"). The hypothesis depended upon the assumptions that most traders behave rationally, and that the activities of the others are mutually cancelling. Those assumptions were widely accepted, and on their basis, financial markets were taken to be essentially stable. Hyman Minsky's 1986 financial instability hypothesis, which suggested that financial markets are apt to become unstable after a period of sustained economic growth, received little attention at the time. A number of mathematical models of finance markets based upon the efficient markets hypothesis were developed in the course of the 20th century and were

widely applied as guides to investment, but financial economics was then considered by most of the economics profession to be a specialised subject of little general interest, regarding the financial system as a collection of secondary markets whose internal characteristics do not affect the rest of the economy.

Portfolio and asset price theory.

A sequence of Nobel Prize-winning advances concerning the problem of getting the best return from an investment without exceeding a chosen level of risk, occurred during the period from the 1950s to the 1970s. The sequence started in the late 1950s, when James Tobin and Harry Markowitz laid the foundations of modern portfolio management. In his "Separation Theorem", Tobin proposed a two-stage process in which the required risk ceiling could be maintained by mixing risky and riskless assets, and Markowitz demonstrated the benefits of a diversified portfolio in which the prices of its assets would not rise and fall together, using the statistical concept of covariance. In 1970, William Sharpe applied that concept to the tendency of the price of an asset to rise and fall in concert with the all-share index, assigning the title "Beta" to its mathematical definition, and used it to derive a pricing method known as the Capital Asset Pricing Model, and in 1973, Fischer Black and Myron Scholes developed the Black-Scholes model which made use of the fact that the expected volatility of an asset is reflected in its price in the options market, which led to the development by Robert Merton of the "Contingency Claims Analysis" method of pricing assets.

Corporate finance.

During the same period there was a sequence of advances in the economics of corporate finance. It started with the demonstration by Franco Modigliani and Merton Miller that shareholders should be indifferent to the level of a corporation's debts provided that it was possible to repay them costlessly with money available at a riskless rate of interest. Other economists subsequently augmented the Modigliani-Miller theory with allowances for the effects of taxation and of information asymmetry.

Recent developments.

The Greenspan era.

Divergences of view about economic management persisted into the early 21st century, but a consensus developed among those responsible for the management of the major economies, along the lines of a speech by the then United States Federal Reserve Board Chairman, Alan Greenspan. The use of Keynesian fiscal policy to regulate output was considered to have proved ineffective and inflationary, and monetarist attempts to control the money supply were seen to have been unsuccessful. The new rôle of fiscal policy was the maintenance of fiscal stability, responsibility for the management of the economy had become the exclusive function of monetary policy, and monetary policy was confidently expected to prevent serious interruption to economic growth (the President of the American Economic Association had declared that "The central problem of depression-prevention has been solved, for all practical purposes"). The financial system was considered to be essentially stable, making financial regulation unnecessary.

The conclusion of the era was marked by Alan Greenspan's 2008 congressional testimony:

"In recent decades, a vast risk management and pricing system has evolved combining the best insights of mathematicians and finance experts supported by major advances in computer and communications technology. A Nobel prize was awarded for the discovery of the pricing model that underpins much of the advance in the derivatives markets. This modern risk management paradigm held sway for decades. The whole intellectual edifice, however, collapsed in the summer of last year".

The shortcomings of economic theory in that respect have been held to have played a major role in the the financial crisis of 2008.

Post-Great Recession thinking.

The financial crisis of 2008 and the resulting Great Recession prompted much re-thinking of economic theory. Professor Shin of Princeton University reported that the "race is on" to add a new perspective to macroeconomics by the incorporation into it of a new

theory of financial economics, and there was new thinking about the use of financial regulation to reduce the risk of fresh financial shocks. A re-examination of the role of fiscal policy had been triggered among economists and politicians by a 2008 proposal by Britain's Gordon Brown for a coordinated fiscal stimulus to counter the expected recessionary effects of the financial crisis. The idea was dismissed as ineffective by some economists, and as inflationary by others, and it was rejected by Germany's Angela Merkel and ridiculed by her finance minister as "crass Keynesianism". Although fiscal stimulus packages were implemented during the recession of 2009, they were not sustained by European governments to support the faltering recovery in 2010, and programmes of fiscal contraction were widely introduced in 2011. The main reason that was given for that reversal of fiscal policy was the fear that operators in the bond market would lose confidence in governments' ability to service the levels of public debt that their continuation would involve. The European Union's Fiscal Compact (which places mandatory restrictions upon the use of fiscal policy by its signatories) may gain political approval, but its economic consequences are likely to remain a matter of controversy. Unlike the European governments, the United States government has not introduced a major programme of fiscal contraction, and the Congress has not been able to agree on a plan for the reduction of the government's budget deficit. A controversy also remains unresolved concerning the merit of techniques known as quantitative easing by which central banks seek to increase the money supply in order to relieve credit crunches and stimulate economic activity.

The history of economic thought has taken an unexpected turn, and a new consensus on economic management has not yet emerged.

Modern economic thought is generally considered to have originated in the late eighteenth century with the work of David Hume and Adam Smith, the founders of classical economics. The nineteenth and twentieth centuries saw major developments in the methodology and scope of economic theory; and the early twenty-

first century has seen a rethinking of some previously accepted tenets.

Nineteenth - and early twentieth-century economists applied deductive reasoning to axioms considered to be self-evident and simplified assumptions which were thought to capture the essential features of economic activity. That methodology yielded concepts such as elasticity and utility, tools such as marginal analysis, and theorems such as the law of comparative advantage. An understanding of the relationships governing transactions between consumers and producers was considered to provide all that was necessary to explain the behaviour of the economic system.

The development, in the latter half of the 20th century, of systems of economic statistics enabled economists to use inductive reasoning to test theoretical findings against observed economic behaviour, and to develop new theories. By that time, the concept had emerged of the national economy as a complex interactive system, and analysis of that concept provided explanations of recessions, unemployment and inflation that were not previously available. The application of empirical data and inductive reasoning enabled those theories to be refined, and led to the development of forecasting models that could be used as tools of economic management.

The development of economic thought in the early 21st century has been stimulated by the financial crisis and Great Recession, and the questions that these events raised concerning the functioning of the global financial system and the part that it plays in the functioning of the economic system generally.

Theme 2 NEEDS AND RESOURCES. THE PROBLEM OF CHOICE IN THE ECONOMY

2.1 The Foundation of Economics.

Two fundamental facts together constitute the economic problem and provide a foundation for economics:

- Society's wants are virtually unlimited and insatiable.
- The resources for producing the goods and services to satisfy society's wants are limited or scarce.

All that follows depends directly on these two facts.

2.2 Unlimited Wants.

What do we mean by "wants"? We mean, first, the desires of consumers to obtain and use various goods and services that provide utility—that is, pleasure or satisfaction. These wants extend over a wide range of products, from *necessities* (food, shelter, and clothing) to *luxuries* (perfumes, yachts, race cars). Some wants—basic food, clothing, and shelter—have biological roots. Other wants—for example, the specific kinds of food, clothing, and shelter we seek—are rooted in the conventions and customs of society.

Over time, wants change and tend to multiply, fuelled by new products. Not long ago, we did not want personal computers, Internet service, digital recorders, lattes, or pagers because they simply did not exist. Also, the satisfaction of certain wants tends to trigger others: The acquisition of an Escort or Civic has been known to whet the appetite for a Porsche or a Mercedes.

Services, as well as products, satisfy our wants. Car repair work, the removal of an inflamed appendix, legal and accounting advice, and haircuts all satisfy human wants. Actually, we buy many goods, such as automobiles and washing machines, for the services they render. The differences between goods and services are often smaller than they appear to be.

Businesses and units of government also strive to satisfy economic goals. Businesses want factories, machinery, trucks, warehouses, and phone systems to help them to achieve their

production goals. Government, reflecting the collective wants of its citizens or goals of its own, seeks highways, schools, and military equipment.

All these wants are *insatiable*, or *unlimited*, meaning that our desires for goods and services cannot be completely satisfied. Our desires for a *particular* good or service can be satisfied; over a short period of time we can surely get enough toothpaste or pasta. And one appendectomy is plenty.

But goods *in general* are another story. We do not, and presumably cannot, get enough. Suppose all members of society were asked to list the goods and services they would buy if they had unlimited income. That list would probably never end.

In short, individuals and institutions have innumerable unfilled wants. *The objective of all economic activity is to fulfill wants.*

2.3 Scarce Resources

The second fundamental fact is that *resources are limited or scarce*. By **economic resources** we mean all natural, human, and manufactured resources that go into the production of goods and services. That includes all the factory and farm buildings and all the equipment, tools, and machinery used to produce manufactured goods and agricultural products; all transportation and communication facilities; all types of labour; and land and mineral resources. Economists classify all these resources as either *property* resources—land and raw materials and capital—or *human* resources—labour and entrepreneurial ability.

2.4 Resource categories.

Let's look at four specific categories of resources.

Land means much more to the economist than it does to most people. To the economist land includes all natural resources—all “gifts of nature”—that are used in the production process, such as arable land, forests, mineral and oil deposits, and water resources.

Capital (or *capital goods* or *investment goods*) includes all manufactured aids used in producing consumer goods and services—that is, all tools, machinery, and equipment, and factory, storage, transportation, and distribution facilities. The process of producing and purchasing capital goods is known as **investment**.

Capital goods differ from *consumer goods* in that consumer goods satisfy wants directly, while capital goods do so indirectly by aiding the production of consumer goods. Note that the term “capital” as used by economists does *not* refer to money, but to *real capital*—tools, machinery, and other productive equipment. Money produces nothing; it is *not* an economic resource. So-called “money capital” or “financial capital” is simply a means for purchasing real capital.

Labour is a broad term for all the physical and mental talents of individuals available and usable in producing goods and services. The services of a logger, retail clerk, machinist, teacher, professional football player, and nuclear physicist all fall under the general heading “labour.”

Finally, there is the special human resource, distinct from labour, that we label **entrepreneurial ability**. The entrepreneur performs several functions:

- The entrepreneur *takes the initiative* in combining the resources of land, capital, and labour to produce a good or a service. The entrepreneur is the driving force behind production and the agent who combines the other resources in what is hoped will be a successful business venture.

- The entrepreneur *makes basic business-policy decisions*—those non-routine decisions that set the course of a business enterprise.

- The entrepreneur is an *innovator*—the one who commercializes new products, new production techniques, or even new forms of business organization.

- The entrepreneur is a *risk bearer*. The entrepreneur in a market system has no guarantee of profit. The reward for the entrepreneur’s time, efforts, and abilities may be profits *or* losses.

The entrepreneur risks not only his or her invested funds but those of associates and stockholders as well.

Because these four resources—land, labour, capital, and entrepreneurial ability—are combined to *produce* goods and services, they are called the **factors of production**.

2.5 Full Employment: Using Available Resources.

To realize the best use of scarce resources, a society must achieve both full employment and full production. By **full employment** we mean the use of all available resources. No workers should be out of work if they are willing and able to work.

Nor should capital equipment or arable land sit idle. But note that we say all *available* resources should be employed. Each society has certain customs and practices that determine what resources are available for employment and what resources are not. For example, in most countries legislation and custom provide that children and the very aged should not be employed. Similarly, to maintain productivity, farmland should be allowed to lie fallow periodically. And we should conserve some resources—fishing stocks and forest, for instance—for use by future generations.

2.6 Full Production: Using Resources Efficiently.

The employment of all available resources is not enough to achieve efficiency, however.

Full production must also be realized. By **full production** we mean that all employed resources should be used so that they provide the maximum possible satisfaction of our material wants. If we fail to realize full production, our resources are *underemployed*.

Full production implies two kinds of efficiency—productive and allocative efficiency.

Productive efficiency is the production of *any particular mix of goods and services in the least costly way*. When we produce, say, compact discs at the lowest achievable unit cost, we are expending the smallest amount of resources to produce CDs and are therefore making available the largest amount of resources to produce other

desired products. Suppose society has only \$100 worth of resources available.

If we can produce a CD for only \$5 of those resources, then \$95 will be available to produce other goods. This is clearly better than producing the CD for \$10 and having only \$90 of resources available for alternative uses.

In contrast, *allocative efficiency* is the production of *that particular mix of goods and services most wanted by society*. For example, society wants resources allocated to compact discs and cassettes, not to 45 rpm records. We want personal computers (PCs), not manual typewriters. Furthermore, we do not want to devote *all* our resources to producing CDs and PCs; we want to assign some of them to producing automobiles and office buildings. Allocative efficiency requires that an economy produce the “right” mix of goods and services, with each item being produced at the lowest possible unit cost. It means apportioning limited resources among firms and industries in such a way that society obtains the combination of goods and services it wants the most.

2.7 Production Possibilities Table.

Because resources are scarce, a full-employment, full-production economy cannot have an unlimited output of goods and services. Consequently, society must choose which goods and services to produce and which to forgo. The necessity and consequences of those choices can best be understood through a *production possibilities model*. We examine the model first as a table, then as a graph.

Assumptios.

We begin our discussion of the production possibilities model with simplifying assumptions:

- *Full employment and productive efficiency* The economy is employing all its available resources (full employment) and is producing goods and services at least cost (productive efficiency).

- *Fixed resources* The available supplies of the factors of production are fixed in both quantity and quality. Nevertheless, they

can be reallocated, within limits, among different uses; for example, land can be used either for factory sites or for food production.

- *Fixed technology.* The state of technology does not change during our analysis. This assumption and the previous one imply that we are looking at an economy at a certain point in time or over a very short period of time.

- *Two goods.* The economy is producing only two goods: pizzas and industrial robots. Pizzas symbolize consumer goods, products that satisfy our wants *directly*; industrial robots symbolize *capital goods*, products that satisfy our wants *indirectly* by making possible more efficient production of consumer goods.

The need for choice.

Given our assumptions, we see that society must choose among alternatives. Fixed resources mean limited outputs of pizza and robots. And since all available resources are fully employed, to increase the production of robots we must shift resources away from the production of pizzas. The reverse is also true: To increase the production of pizzas, we must shift resources away from the production of robots. There is no such thing as a free pizza. This, recall, is the essence of the economic problem.

Production possibilities table lists the different combinations of two products that can be produced with a specific set of resources (and with full employment *and* productive efficiency). Table 2-1 is such a table for a pizza-robot economy; the data are, of course, hypothetical. At alternative A, this economy would be devoting all its available resources to the production of robots (capital goods); at alternative E, all resources would go to pizza production (consumer goods). Those alternatives are unrealistic extremes; an economy typically produces both capital goods and consumer goods, as in B, C, and D. As we move from alternative A to E, we increase the production of pizza at the expense of robot production.

Table 2.1 – Production possibilities of pizzas and robots with full employment and productive efficiency

| Type of product | A | B | C | D | E |
|------------------------------|----|---|---|---|---|
| Pizza (in hundred thousands) | 0 | 1 | 2 | 3 | 4 |
| Robots (in thousands) | 10 | 9 | 7 | 4 | 0 |

Because consumer goods satisfy our wants directly, any movement toward E looks tempting. In producing more pizzas, society increases the current satisfaction of its wants. But there is a cost: more pizzas mean fewer robots. This shift of resources to consumer goods catches up with society over time as the stock of capital goods dwindles, with the result that some potential for greater future production is lost.

By moving toward alternative E, society chooses “more now” at the expense of “much more later.” By moving toward A, society chooses to forgo current consumption, thereby freeing up resources that can be used to increase the production of capital goods. By building up its stock of capital, society will have greater future production and, therefore, greater future consumption. By moving toward A, society is choosing “more later” at the cost of “less now.”

Generalization: *At any point in time, an economy achieving full employment and productive efficiency must sacrifice some of one good to obtain more of another good.*

2.8 Production Possibilities Curve

The data presented in a production possibilities table can also be shown graphically.

We use a simple two-dimensional graph, arbitrarily representing the output of capital goods (here, robots) on the vertical axis and the output of consumer goods (here, pizzas) on the horizontal axis, as shown in *Figure 2.8.1*.

Each point on the production possibilities curve represents some maximum output of the two products. The curve is a production *frontier* because it shows the limit of attainable outputs. To obtain the various combinations of pizza and robots *on* the production possibilities curve, society must achieve both full employment and

productive efficiency. Points lying *inside* (to the left of) the curve are also attainable, but they are inefficient and therefore are not as desirable as points on the curve. Points inside the curve imply that the economy could have more of both robots and pizzas if it achieved full employment and productive efficiency. Points lying *outside* (to the right of) the production possibilities curve, like point W, would represent a greater output than the output at any point on the curve. Such points, however, are unattainable with the current supplies of resources and technology.

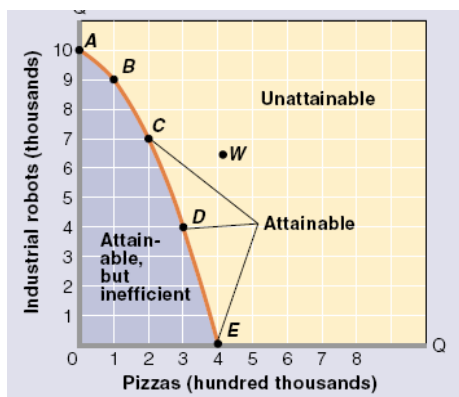


Figure 2.8.1 – The production possibilities curve

2.9 Law of Increasing Opportunity Cost.

Because resources are scarce relative to the virtually unlimited wants they can be used to satisfy, people must choose among alternatives. More pizzas mean fewer robots. The amount of other products that must be sacrificed to obtain one unit of a specific good is called the **opportunity cost** of that good. In our case, the number of robots that must be given up to get another unit of pizza is the *opportunity cost*, or simply the *cost*, of that unit of pizza.

In moving from alternative A to alternative B in Table 2.1, the cost of 1 additional unit of pizzas is 1 less unit of robots. But as we pursue the concept of cost through the additional production

possibilities—B to C, C to D, and D to E—an important economic principle is revealed: The opportunity cost of each additional unit of pizza is greater than the opportunity cost of the preceding one. When we move from A to B, just 1 unit of robots is sacrificed for 1 more unit of pizza; but in going from B to C we sacrifice 2 additional units of robots for 1 more unit of pizza; then 3 more of robots for 1 more of pizza; and finally 4 for 1. Conversely, confirm that as we move from E to A, the cost of an additional robot is $1/4$, $1/3$, $1/2$, and 1 unit of pizza, respectively, for the four successive moves.

Note two points about these opportunity costs:

- Here opportunity costs are being measured in *real* terms, that is, in actual goods rather than in money terms.

- We are discussing *marginal* (meaning “extra”) opportunity costs, rather than cumulative or total opportunity costs. For example, the marginal opportunity cost of the third unit of pizza in Table 2.1 is 3 units of robots (= $7 - 4$). But the *total* opportunity cost of 3 units of pizza is 6 units of robots (= 1 unit of robots for the first unit of pizza *plus* 2 units of robots for the second unit of pizza *plus* 3 units of robots for the third unit of pizza).

Our example illustrates the **law of increasing opportunity costs**: The more of a product that is produced, the greater is its opportunity cost (“marginal” being implied).

2.10 Shape of the curve.

The law of increasing opportunity costs is reflected in the shape of the production possibilities curve: The curve is bowed out from the origin of the graph. Figure 2.1 shows that when the economy moves from A to E, successively larger amounts of robots (1, 2, 3, and 4) are given up to acquire equal increments of pizza (1, 1, 1, and 1). This is shown in the slope of the production possibilities curve, which becomes steeper as we move from A to E. A curve that gets steeper as we move down it is “concave to the origin.”

2.11 Economic rationale.

What is the economic rationale for the law of increasing opportunity costs? Why does the sacrifice of robots increase as we produce more pizzas? The answer is that *resources are not completely adaptable to alternative uses*. Many resources are better at producing one good than at producing others. Fertile farmland is highly suited to producing the ingredients needed to make pizzas, while land rich in mineral deposits is highly suited to producing the materials needed to make robots. As we step up pizza production, resources that are less and less adaptable to making pizzas must be “pushed” into pizza production. If we start at *A* and move to *B*, we can shift the resources whose productivity of pizzas is greatest in relation to their productivity of robots. But as we move from *B* to *C*, *C* to *D*, and so on, resources highly productive of pizzas become increasingly scarce. To get more pizzas, resources whose productivity of robots is great in relation to their productivity of pizzas will be needed. It will take more and more of such resources, and hence greater sacrifices of robots, to achieve each increase of 1 unit in the production of pizzas. This lack of perfect flexibility, or interchangeability, on the part of resources is the cause of increasing opportunity costs.

2.12 Allocative Efficiency Revisited.

So far, we have assumed full employment and productive efficiency, both of which are necessary to realize *any point* on an economy’s production possibilities curve. We now turn to allocative efficiency, which requires that the economy produce at the most valued, or *optimal*, point on the production possibilities curve. Of all the attainable combinations of pizzas and robots on the curve in Figure 2.1, which is best? That is, what specific quantities of resources should be allocated to pizzas and what specific quantities to robots in order to maximize satisfaction?

Our discussion of the *economic perspective* in Theme 1 puts us on the right track. Recall that economic decisions centre on comparisons of marginal benefits and marginal costs. Any economic activity—for example, production or consumption—should be

expanded as long as marginal benefit exceeds marginal cost and should be reduced if marginal cost exceeds marginal benefit. The optimal amount of the activity occurs where $MB = MC$.

Consider pizzas. We already know from the law of increasing opportunity costs that the marginal cost (MC) of additional units of pizzas will rise as more units are produced. This can be shown by an upsloping MC curve, as in Figure 2.2. We also know that we obtain extra or marginal benefits (MB) from additional units of pizzas.

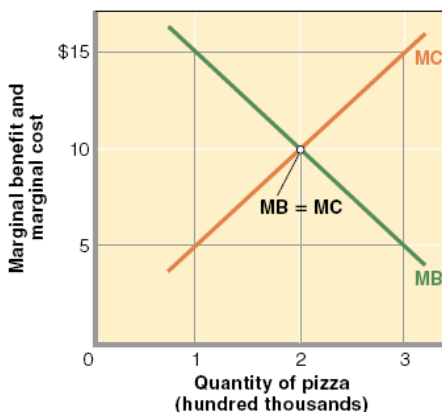


Figure 2.2 – Allocative efficiency: $MB=MC$

However, although material wants in the aggregate are insatiable, studies reveal that the second unit of a particular product yields less additional benefit to a person than the first. And a third provides even less MB than the second. So it is for society as a whole. We therefore can portray the marginal benefits from pizzas with a downsloping MB curve, as in Figure 2.2. Although total benefits rise when society consumes more pizzas, marginal benefits decline.

The optimal quantity of pizza production is indicated by the intersection of the MB and MC curves: 200,000 units in Figure 2.2. Why is this the optimal quantity? If only 100,000 pizzas were produced, the marginal benefit of pizzas would exceed its marginal

cost. In money terms, MB might be \$15, while MC is only \$5. This suggests that society would be *underallocating* resources to pizza production and that more of it should be produced.

How do we know? Because society values an additional pizza as being worth \$15, while the alternative products that those resources could produce are worth only \$5.

Society benefits whenever it can gain something valued \$15 by forgoing something valued only \$5. Society would use its resources more efficiently by allocating more resources to pizza. Each additional pizza up to 200,000 would provide such a gain, indicating that allocative efficiency would be improved by that production. But when $MB = MC$, the benefits of producing pizzas or alternative products with the available resources are equal. Allocative efficiency is achieved where $MB = MC$.

The production of 300,000 pizzas would represent an *overallocation* of resources to pizza production. Here the MC of pizzas is \$15 and its MB is only \$5. This means that 1 unit of pizza is worth only \$5 to society, while the alternative products that those resources could otherwise produce are valued at \$15. By producing 1 less unit, society loses a pizza worth \$5. But by reallocating the freed resources, it gains other products worth \$15. When society gains something worth \$15 by forgoing some thing worth only \$5, it is better off. In Figure 2-2, such net gains can be realized until pizza production has been reduced to 200,000.

Generalization: *Resources are being efficiently allocated to any product when the marginal benefit and marginal cost of its output are equal ($MB = MC$).* Suppose that by applying the above analysis to robots, we find their optimal ($MB = MC$) output is 7000.

This would mean that alternative C on our production possibilities curve—200,000 pizzas and 7000 robots – would result in allocative efficiency for our hypothetical economy.

2.13 Unemployment and Growing Economy.

Unemployment and Productive Inefficiency.

The first assumption was that our economy was achieving full employment and productive efficiency. Our analysis and conclusions change if some resources are idle (unemployment) or if least-cost production is not realized. The five alternatives in Table 2.1 represent maximum outputs; they illustrate the combinations of robots and pizzas that can be produced when the economy is operating at full capacity—with full employment and productive efficiency. With unemployment or inefficient production, the economy would produce less than each alternative shown in the table.

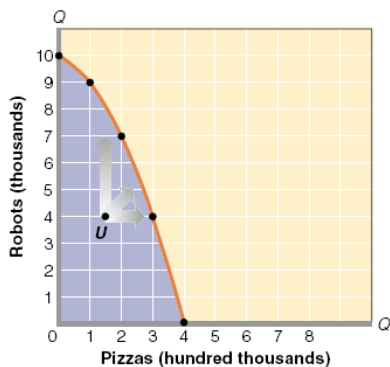


Figure 2.3 – Unemployment, productive inefficiency, and the production possibilities curve

Graphically, we represent situations of unemployment or productive inefficiency by points *inside* the original production possibilities curve (reproduced in Figure 2.3). Point *U* is one such point. Here the economy is falling short of the various maximum combinations of pizzas and robots represented by the points *on* the production possibilities curve. The arrows in Figure 2.3 indicate three possible paths back to full employment and least-cost production. A move toward full employment and productive efficiency would yield a greater output of one or both products.

A Growing Economy.

When we drop the assumptions that the quantity and quality of resources and technology are fixed, the production possibilities curve shifts positions—that is, the potential maximum output of the economy changes.

Increases in resource supplies.

Although resource supplies are fixed at any specific moment, they can and do change over time. For example, a nation’s growing population will bring about increases in the supplies of labour and entrepreneurial ability. Also, labour quality usually improves over time. Historically, the economy’s stock of capital has increased at a significant, though unsteady, rate. And although we are depleting some of our energy and mineral resources, new sources are being discovered. The development of irrigation programs, for example, adds to the supply of arable land.

Table 2.2 – Production possibilities of pizza and robots with full employment and productive efficiency

| Type of product | Production alternatives | | | | |
|------------------------------|-------------------------|----|----|----|----|
| | A' | B' | C' | D' | E' |
| Pizza (in hundred thousands) | 0 | 2 | 4 | 6 | 8 |
| Robots (in thousands) | 14 | 12 | 9 | 5 | 0 |

The net result of these increased supplies of the factors of production is the ability to produce more of both pizzas and robots. Thus, 20 years from now, the production possibilities in Table 2.2 may supersede those shown in Table 2.1. The greater abundance of resources will result in a greater potential output of one or both products at each alternative. Society will have achieved economic growth in the form of an expanded potential output. But such a favourable change in the production possibilities data does not *guarantee* that the economy will actually operate at a point on its new production possibilities curve. Some 15 million jobs will give Canada full employment now, but 10 or 20 years from now its labour force will be larger, and 15 million jobs will not be sufficient for full

employment. The production possibilities curve may shift, but at the future date the economy may fail to produce at a point on that new curve.

Advances in technology.

Our second assumption is that we have constant, unchanging technology. In reality, technology has progressed dramatically over time. An advancing technology brings both new and better goods *and* improved ways of producing them. For now, let's think of technological advances as being only improvements in capital facilities— more efficient machinery and equipment. These advances alter our previous discussion of the economic problem by improving productive efficiency, thereby allowing society to produce more goods with fixed resources. As with increases in resource supplies, technological advances make possible the production of more robots *and* more pizzas.

Thus, when either supplies of resources increase or an improvement in technology occurs, the production possibilities curve in Figure 2.3 shifts outward and to the right, as illustrated by curve *A', B', C', D', E'* in Figure 2.4. Such an outward shift of the production possibilities curve represents growth of economic capacity or, simply, **economic growth**: *the ability to produce a larger total output*. This growth is the result of (1) increases in supplies of resources, (2) improvements in resource quality, and (3) technological advances.

The consequence of growth is that our full-employment economy can enjoy a greater output of both robots and pizzas. *While a static, no-growth economy must sacrifice some of one product in order to get more of another, a dynamic, growing economy can have larger quantities of both products.*

Economic growth does not ordinarily mean proportionate increases in a nation's capacity to produce all its products. Note in Figure 2-4 that, at the maximums, the economy can produce twice as many pizzas as before but only 40 percent more robots. To reinforce your understanding of this concept, sketch in two new production possibilities curves: one showing the situation where a better

technique for producing robots has been developed while the technology for producing pizzas is unchanged, and the other illustrating an improved technology for pizzas while the technology for producing robots remains constant.

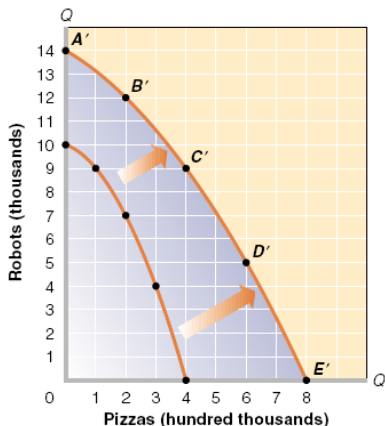


Figure 2.4 – Economic growth and the production possibilities curve

2.14 Present choices and future possibilities.

An economy's current position on its production possibilities curve is a basic determinant of the future location of that curve. Let's designate the two axes of the production possibilities curve as *goods for the future* and *goods for the present*, as in Figure 2.5. Goods for the future are such things as capital goods, research and education, and preventive medicine. They increase the quantity and quality of property resources, enlarge the stock of technological information, and improve the quality of human resources. As we have already seen, goods for the future, like industrial robots, are the ingredients of economic growth. Goods for the present are pure consumer goods, such as pizza, clothing, and soft drinks.

Now suppose there are two economies, Alta and Zorn, which are initially identical in every respect except one: Alta's current choice of positions on its production possibilities curve strongly favours present goods over future goods. Point A in Figure 2.5(a)

indicates that choice. It is located quite far down the curve to the right, indicating a high priority for goods for the present, at the expense of fewer goods for the future. Zorn, in contrast, makes a current choice that stresses larger amounts of future goods and smaller amounts of present goods, as shown by point Z in Figure 2.5(b).

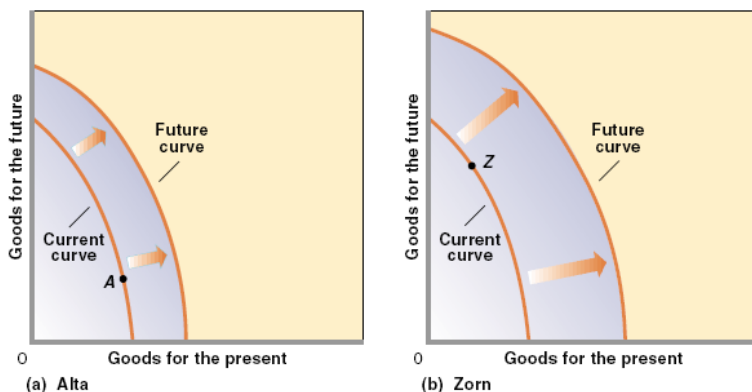


Figure 2.5 – An economy’s present position on its production possibilities curve determines the curve’s future location.

Other things equal, we can expect the future production possibilities curve of Zorn to be farther to the right than Alta’s curve. By currently choosing an output more favourable to technological advances and to increases in the quantity and quality of resources, Zorn will achieve greater economic growth than Alta. In terms of capital goods, Zorn is choosing to make larger current additions to its “national factory”—to invest more of its current output—than Alta. The payoff from this choice for Zorn is more rapid growth—greater future production capacity. The opportunity cost is fewer consumer goods in the present for Zorn to enjoy.

Is Zorn’s choice thus “better” than Alta’s? That, we cannot say. The different outcomes simply reflect different preferences and priorities in the two countries.

Theme 3 ECONOMIC SYSTEMS

3.1 The concept and structure of economic systems of society.

Use of the concept of system has a long history dating back to ancient times. Translated from the Greek word "system" means a kind of whole, consisting of parts related to each other and forming integrity.

To characterize any system usually distinguish its elements, the levels of organization, structure and function.

The main elements of the economic system are the socio-economic relations based on the prevailing economic system in each form of ownership of economic resources and results of economic activities, organizational forms of economic activity; economic mechanism.

Establishing links between the constituent elements of the system means definition of its structure. For a system characterized by features that are unable to meet any of the elements separately, but only as a whole.

An important feature of the economic system is the presence of the structure.

Economy is a complex multi-level, evolving system.

The economic system of society consists of small economies - households and businesses. Households - is a small system, which represents the resource owners and consumers in the family. Main function of the household - consumption of final products and services, produced by enterprises. The company - a small system in which create economic benefits and services with the necessary set resources. Groups of related businesses united in the industry. Industry - A larger system that combines all the companies producing certain products. Industries merged into larger systems - interdisciplinary.

Besides the economic system of society may also include other elements: socio-economic systems (economic, political, Economics and demographics, the nature of economic systems), techno-economic system of sectoral, inter sectoral, regional system).

All systems serving each other, united by a single structure Public organization and management, linked through of products, are in constant interaction.

Looking from the perspective of economic structure formation approach system acts as the internal organization of social production.

Therefore, it is at different levels are always shown through the people, their production activities. Consequently, the structure of ecotion of the attitude of people interact in the production process material and spiritual goods and services, ie peer production relations.

Economic system - a complex, ordered set of all economic relations and economic activities of society, Implemented yuschayasya in certain forms of production and social for relations and social institutions, whose aim is to satisfy needs of society in material goods and services.

One indication of the types of division of the economy may be its openness or closed. If the national economy and its links are actively included the system of international economic relations, such an economic system considered open. If the system is closed on internal resources production and limited domestic demand, if it is not available for new firms, it is a closed system.

Another sign of division in the types of systems are forms of regulation economic life. They may be traditional, the team (planning) and market. Accordingly, the economic system may be traditional, market and command. The economy may combine various elements systems, then we can talk about the confusion of the economy.

Another sign of division in the types of ecosystems is a form of property. It can be private or public, but in traditional society - community. The dominant form of ownership determines the form production and distribution.

The main types of economic systems:

Different economic systems of the world differ in their ideologies, as well as in its approach to solving problems of the economy.

Fundamental differences are: a) between private and public property on resources and b) between the use of a coordination mechanism market system and central planning. Should allocate The following economic systems: pure capitalism, the command economy, authoritarian capitalism, market socialism, the traditional economy.

Purpose of economists in any country is to achieve such combination of capitalism and socialism, which will ensure the viability and proper performance of the economy of the country as part of its historical cultural traditions.

In reality the economic system located somewhere between market and command economies.

To better understand how there was a modern economy, as humanity learned to find the answers to its principal issues, it is useful to look back and analyze the thousand-year history of development of economic systems civilization.

Depending on how decisions on major economic issues and the type ownership of economic resources, we can identify four major types of economic systems:

- 1) traditional;
- 2) market (capitalism);
- 3) team (socialism);
- 4) mixed.

3.2 Economic institutions.

The term "Economic Institutions" refers to two things:

1. Specific agencies or foundations, both government and private, devoted to collecting or studying economic data, or commissioned with the job of supplying a good or service that is important to the economy of a country. The Internal Revenue Service (the IRS—the government tax-collection agency), the U.S. Federal Reserve (the government producer of money), the National Bureau of

Economic Research (a private research agency) are all examples of economic institutions.

2. Well-established arrangements and structures that are part of the culture or society, e.g., competitive markets, the banking system, kids' allowances, customary tipping, and a system of property rights are examples of economic institutions.

Economists are interested not only in understanding specific existing institutional agencies, but also in the more exciting question of why some institutions evolve and others don't. Why do institutions differ in one country to the next? Why do some institutions take centuries to get started while other spring up in a few years? Why do some institutions evolve spontaneously in general society? When does government get involved in supervising societal institutions? Does the wording of a Constitution or the structure of a country's legal or religious background influence the economic institutions that arise in a country?

Institution:

1. an organization, establishment, foundation, society, or the like, devoted to the promotion of a particular cause or program, esp. one of a public, educational, or charitable character: This college is the best institution of its kind....

4.Sociology. a well-established and structured pattern of behavior or of relationships that is accepted as a fundamental part of a culture, as marriage: the institution of the family....

Law and Economics, from the Concise Encyclopedia of Economics.

A legal system should provide clear definitions of property rights. That is, for any asset, it is important that parties be able to determine unambiguously who owns the asset and exactly what set of rights this ownership entails. Ideally, efficiency implies that, in a dispute regarding the ownership of a right, the right should go to the party who values it the most. But if exchanges of rights are allowed, the efficiency of the initial allocation is of secondary importance. The Coase theorem--the most fundamental result in the economic study of law--states that if rights are transferable and if transactions costs are

not too large, then the exact definition of property rights is not important because parties can trade rights, and rights will move to their highest-valued uses.

Free Market, from the Concise Encyclopedia of Economics

The market, then, is not simply an array, but a highly complex, interacting latticework of exchanges. In primitive societies, exchanges are all barter or direct exchange. Two people trade two directly useful goods, such as horses for cows or Mickey Mantles for Babe Ruths. But as a society develops, a step-by-step process of mutual benefit creates a situation in which one or two broadly useful and valuable commodities are chosen on the market as a medium of indirect exchange. This money-commodity, generally but not always gold or silver, is then demanded not only for its own sake, but even more to facilitate a reexchange for another desired commodity. It is much easier to pay steelworkers not in steel bars, but in money, with which the workers can then buy whatever they desire. They are willing to accept money because they know from experience and insight that everyone else in the society will also accept that money in payment.

3.3 Major Types of Economic Systems.

Economic systems may broadly be classified into three categories: Capitalism, Socialism and Mixed economy. A number of other types also emerged but all of them came close to any one of the above three types of economic systems. Let us now discuss the features, strengths and weaknesses of each one of these economic systems.

Traditional economic system.

Traditional economic system - the most ancient system.

For example, if the tribe for several generations were grown, for example, barley, it will continue to be inclined to do the same. Questions such as: Is it this? What else is growing?

Which method is more rational organization of production? - Is simply not come to anyone's head.

Of course, the tradition is also change, but very slowly and only in Because of the substantial changes in the external conditions of life of the tribe or nation.

In these conditions the stability of the tradition of economic life can persist for very long. In , for example, to this day can be found elements of the traditional economic system in the organization of the life of peoples

North. With regard to the ownership of economic resources, then traditional system, it was most often the collective, that is, hunting lands, arable lands and grasslands owned by the tribe or community.

Over time, the basic elements of the traditional economic system no longer arrange mankind. Experience has shown that the factors of production used more efficiently if they are owned by the individual individuals or families, rather than collective property. None of richest countries in the world foundation of society is not a collective property. But in many of the poorest countries remains a property preserved. This is no accident.

For example, the rapid development of agriculture of had only beginning of XX century. when the reform Stolypin destroyed collective (communal) land ownership, replacing individual land families. Then came to power in 1917. Communists actually restore communal land tenure, declaring the land "of public property ".

Constructing their agriculture on a collective property, the USSR and failed after 70 years of XX century. bring plenty of food.

Moreover, by early 80-ies, the food situation has become so bad that the CPSU was forced to take a special "Food program, which, incidentally, also has not been implemented, although the money development of the agricultural sector have been spent enormous.

On the contrary, agriculture European countries, USA and Canada, based on private ownership of land and capital, to solve the task of creating abundance of food possible. And so successful that farmers of countries managed a large proportion of its production exported to other regions of the world.

Practice has shown that markets and firms to better address the problem of distribution limited resources and increase production of vital goods than councils of elders - the bodies, taking the fundamental economic decisions in the traditional system.

That is why the traditional economic system over time has ceased to be basis of organization of life in most countries. Its elements left the background and only fragments remained in the form of different customs and traditions of secondary importance. In most countries of the world leading role play different ways of organizing economic cooperation between people.

Capitalism.

Capitalism is an economic system based on the principle of free enterprise. Individual ownership of resources is an important feature. With control and command over resources, individuals can conduct any type of business. The object in such a system is to maximize private gains. Any type of enterprise or production of any commodity or service is permitted, so long it is wanted by the society. In such a system the market forces determine the resource allocation and price. That is, the demand and supply forces together determine what to produce, how to produce and for whom to produce. Price mechanism is the nucleus of the capitalistic society. The price mechanism clearly reflects the wants of the people. Once this is known, the producers would allocate the resources to manufacture and sell the products in great demand. While doing so, there is no control or regulation over production. In other words, oligopoly environment prevails. But each producer differentiates his product that he would be able to stay in the market. Technology and innovation ensure the stability and growth of organizations. As a result only efficient organization would survive. The resources would be fully utilized. The system is so flexible that it can adjust itself for any economic condition. The workers get equal opportunities and those with skills would be able to command better wages and salaries. On the whole capitalism offers scope for growth of efficient individuals and organizations.

But capitalism has a number of weaknesses. The important ones are discussed below.

Economic inequality is invariably found in capitalistic societies. Individuals and organizations with ownership of resources and hold over the market for their product or service, would be able to maximize their gains. Those who have no such property would remain poor and become poorer. So it is said that under capitalism, rich becomes richer and poor becomes poorer. The inequality in wealth and income widens over a period under capitalism.

The scope for the emergence of monopolies in capitalistic societies is very high. Organizations by virtue of their economic power would be able to easily eliminate rivals and competitors in the market. There is also possibility of such monopolies influencing the government in policy making and intervention.

Though it is said that capitalism would always lead to ideal allocation of resources and fuller utilization of resources, in reality the experience is that resources are held by individuals and organizations and under utilization is the result. Sometimes, products which are not really national priority are produced and forced on the public, through advertisements and sales promotion techniques.

Though it is expected that in capitalistic societies the output would increase to optimal level. In practice this is never found. Producers always restrict output to maintain a high price and also maximize profit. So excess capacity would exist in many industries.

In a capitalistic society the divide between the haves and have-nots widen that over a period. Existence of poverty among the sophisticated sections of people is also seen. This results in built up of frustration in the society. Over a period this might lead to revolution and social upheaval.

Socialism.

Socialism refers to an economic system in which the following features predominant:

The resources are owned by the state or state owned institutions. Production takes place in the interest of the society and not for maximizing profits of individuals or organizations.

Government decides the type of productive efforts to be permitted. In other words, in a socialist country, government can adopt licensing system and other types of regulations to prevent the emergence of monopolist and exploitative tendencies. Maximization of community welfare is the objective than profit maximization. Another very important feature is the government ensures equitable distribution of national product. Public distribution system assumes enormous significance in such an economic system. On the whole, the socialistic society differs from capitalist society in every sense. In the broad spectrum of economic systems, socialism and capitalism occupy two extremes. In the world today, pure capitalistic society is not seen in any country. Even in USA, government interference in various economic activities is found. For example, in the field of national defense, atomic energy, space technology, social security, etc., the presence of government is almost complete. Government also retains the right to interfere in the market system, whenever there is deliberate and intentional attempt to monopolize the resource ownership or the market. Similarly, in the erstwhile Soviet Union, socialistic principles were followed. But even here, there were instances of private ownership of property, enterprises, etc., were reported. That is why it is very difficult to come across pure capitalistic or socialistic societies.

The merits of socialism includes:

Collective ownership eliminate emergence and existence of monopolies.

Resources utilization is planned and achieved in the interest of the society.

Government with its control over the resources is able to use resources fully utilized and avoid wastage and production of unnecessary goods.

As equality in distribution is the fundamental feature of socialism, there is no scope for widening inequalities and the government takes steps to narrow the gap between the rich and the poor through various measures.

However, socialistic states suffer from the following limitations:

Excessive dependence on government decisions often result in delay in offering any public service.

Bureaucratic control becomes an integral part of the socialistic principles. As a result the benefits and its direction of flow is determined by the bureaucrats.

Government by undertaking excessive responsibility on its shoulders, abets inefficiency and corruption in the society.

No incentive and motivation for individual excellence or achievements is possible in such a society and so innovations and inventions do not really take place in large scale in such a society.

With governmental presence in every walk of life, efficiency and productivity suffer.

Lack of support for individual liberty kills initiatives.

Mixed Economy.

There was no reference to the mixed economic system in Economic literature in the past. Economists were mainly familiar and advocated the Laissez faire or free enterprise system, as several countries could develop fast following the free enterprise system, in which there was no or little government intervention. The entire economic system operated with the price mechanism at its center point. The producers produced what the consumers wanted and this provided very little scope for the government to intervene in the system. The Classical economists and their ardent supporters believed that the invisible hand will direct the economy and with private initiative and enterprise, every country should be able to record a faster growth as proved in the case of UK, USA, Europe, Australia, and other countries.

But over a period under the leadership of Karl Marx, a new economic system was developed called socialism, in which there is no scope for any private enterprise as everything owned and controlled by the government. The government decided the type of developmental activities and the requirements of the society and used the available resources in the provision of these requirements.

Several countries like USSR, Communist China, Vietnam, Cuba and others preferred this socialist system in which government is made the custodian of the society. The main reason for the emergence of this new economic system was the failure of capitalism during the 1929 depression to revive every economy from depression. Keynes himself thought that capitalism without some of its evils could certainly help economic recovery. Hence, a time came when economists felt that cent per cent free enterprise or cent per cent government governed economic development cannot work satisfactorily. A compromise between these extremes was thought of as an ideal economic system. The new system called 'mixed economic system' contained the merits of both the capitalism and socialism and appeared to be full of promise. This mixed economic system is adopted by India as indicated by the First Industrial Policy Resolution 1948.

The main characteristics of mixed economy are:

Co-existence of public and private sectors: In a mixed economy, one will find the existence of both the private and public sectors. In such a system, the government will undertake the responsibility to build and develop certain sector activities and leave the other activities for the private initiative. The government clearly earmarked the industries to be completely under the state control, the industries which are to owned and controlled by the state as well as the private sector and industries which are completely left for the private sector.

State participation in economic development: This is the second feature of mixed economy, according to which the state reserves its right to design and decide the type of development to be achieved. In such a set up, the government strives to promote the welfare of the country by ensuring social order, social justice and establishing all the necessary institutions which are required to achieve the desired pattern of growth and development.

Distribution of ownership and control of resources: This is the next feature of mixed economy. In this system, the government itself enters the field of production so that the available resources are

fully utilized. This will also help to avoid concentration of wealth in the hands of a few and enable distribution of ownership and control of productive activities. As a result there is no scope for exploitation of any group, say labor, by any other group. In this way the weaker section of the community is well protected and taken care of.

Directing the investment in socially desirable projects and channels: Mixed economy facilitates the flow of investment into channels which confers the society with several benefits. For example, the Indian government has invested huge amount in several projects to develop the infrastructural facilities. This forms the basis for the development of other sectors. The investment in these infrastructural areas will not come forth from the private sector as the return is nil. Hence, the government in a mixed economic set up provides the thrust by developing the necessary background and strength which will encourage the private sector to invest in profitable opportunities. In this way the government plays a key role in a mixed economic system.

Scope for achieving balanced economic development: The private sector would establish its enterprises only in urban or sub-urban areas and that too in already well developed states. This will mean other areas will have no scope for development. But in a mixed economy, the government will itself undertake the initiative to set up industries in backward areas and encourage the private initiative to set up industries in such areas by offering several concessions and exemptions.

Ultimate control and regulation in the hands of government: This feature of mixed economy clearly spells out that in every activity affecting the economy, the government will be the ultimate authority. Though the private sector is assigned its role to perform, the government will still monitor and control the way in which the private initiative is performing its role.

Co-operation in the field of economic development: According to this feature of mixed economy, the government formulates the design for development and invites the private sector to participate in the development. It clearly spells out the guidelines

which would govern such cooperative efforts and the limits of freedom granted to the private sector. Hence, there is scope for the development of private sector, though only according to the design developed by the government.

Planning Process under Mixed Economy

As has been already stated, in a mixed economy there is a need to achieve a compromise between self-interest and social interest. This is a very difficult task as the government has to carefully foresee the type of development it wants to achieve and closely monitor the activities of the private sector to ensure that the social interest is never at stake. Obviously, planning is a very difficult exercise in a mixed economy set up. The success of planning will depend upon;

The extent to which the public sector is able to rise to achieve the social gains aimed for,

The success of the state in guiding and regulating the private sector activities towards social goals and

The extent to which the state is able to check the distortions taking place in investment by private sector affecting the interest of the public sector.

Hence in the planning process the state has taken up the following steps to ensure the accomplishment of the objectives of the mixed economy,

By holding complete ownership of defense and heavy industries, the government has provided an industrial base with which the private sector is expected to plan its investment activities.

The state also has made huge investments in economic infrastructures so as to help the extension of market for goods, raising the productivity in agricultural and industrial sectors, encouragement of further productive investment.

The government has complete control of the financial institutions including banks so that it can ensure that the banks and other institutions play a key role in the development activities of the state. The government could also realize the expected gains by encouraging the priority activities in every sector. The economic

institutions are made to support the weaker sections of the community.

Through powerful legislation's the government could ensure that there is no scope for exploitation of the common people by the private enterprise. Such a legal framework lays down the rules of the game and ensures fair play in a mixed economic set up.

As a method of protecting the weaker and downtrodden people, the government has policies like rationing, price controls, etc. Such regulations are built in the planning mechanism itself, so that the private sector cannot exploit the community.

Towards the improvement of welfare in the economy, the state has undertaken several specific programs aimed at specific target groups. For example schemes aimed at the backward and schedule tribe providing them reservation in educational, employment and other opportunities, rural oriented schemes for the rural folks, health for all schemes, provision of free educational and medical facilities up to a certain level, etc. All these schemes aim at improving the social welfare. In all these activities the private sector is also welcome to play its role.

The government makes effective use of the tools of fiscal policy viz. taxation and public expenditure, so as to achieve the objectives of economic planning.

3.4 The problem of coordination in various economic systems.

Analysis of the problem of placement of benefits takes us to the problem of interaction economic actors. After every economic entity rated by their benefits and costs and made a choice, society is faced with need to coordinate economic activities of individual actors which includes the need to:

- 1) agree on the decisions of producers;
- 2) agree on the decision of consumers;
- 3) to reach decisions on production and consumption in general. This need is generated by many factors, including specialization economic actors in certain types of economic activity.

Depending on how to solve the problem of placement of goods, and consequently, the coordination of economic activity, distinguished certain economic system. Clearly, characterizing features of the economic system, the differences in the way of placement benefits and coordination of economic activity are determined by differences in governing economic behavior of institutions and institutional structures.

In the administrative system of the sluggishness of the patriarchal society in part overcome by breaking the unique relation of the economic subject and standards his behavior, although the role of ideology, the pressure is still very high. Rules and parameters of economic behavior, and appropriate placement of the benefits determined by the influence of the dominant subsystem, which is above all state, no matter what the various forms it may take. Compliance Conduct economic entity controlling actions is provided in primarily non-economic means, in addition to incorporating ideology coercive apparatus. Such coordination of economic activity provides opportunities for significant development at the expense of the changes to the rules of economic behavior, as well as the concentration of resources under control of the control subsystem. Its weakness is the lack internal incentives in economic activity for reporting to external teams and limited them in their actions of economic agents.

Therefore, periods of rapid, but short of alternate in such systems with states of stagnation and decline.

In a market system of rules of economic behavior are formed on the basis interaction of buyers and sellers. It combines the one hand, the possibilities for economic development by changing the parameters and rules of economic activity in the course of cooperation and competition, and with On the other hand, the opportunities to individual interest economic actors in this development using the Institute private property. Meanwhile, all business entities subject single universal laws limiting freedom of action of each commitments for all governmental law and the boundaries of his possessions, but provides significant increase in

self-reliance and economic activity. When This expansion indie INDIVIDUAL freedom of action and general orderliness regulation of economic activity increases substantially.

The consequences of failed economic decisions can be very severe. The role of coordination of economic agents and accommodation wealth in the economy performs the market mechanism, and above all the price system.

At any given time, all systems of coordination of economic activities coexist in specific economic systems, connecting to various ratios. As shown, each system has its benefits and weaknesses. In a market system of economic costs activities related to this case with the implementation of market transactions, take the form of transaction costs. They include costs collection and processing of information incurred in the definition of the subject transaction, obtaining pricing and other information, the definition of its position, search partner, the dissemination of information about the desire to enter into a transaction; costs negotiation and decision-making, including the development of conditions market agreement and its registration in the relevant legal norms form; cost control and legal protection of the contract, such as quality control and other characteristics of the subject transaction, definition and protection of property rights (including the courts)verify and enforcements on the agreement.

The costs of economic activities associated with the operation administrative system, take the form of administrative costs. These include costs informatics software (information about state of managed objects and processing) costs of training administrative decisions (making the draft decisions, their coordination indifferent parts of the administration, approval having right decision), the costs of execution (communicating decisions to immediate perpetrators, the legal environment for implementation including the distribution of authority, control of the parent organizations, functioning of the system of incentives and sanctions).

Comparison of levels of transaction and administrative costs to determine ratio and the boundaries of the market and

administrative mechanisms this particular economic system. The market provides the most economical operation of the coordination process, reducing one of the parts transaction costs (for collection of information) to a minimum.

The problem of coordination in market conditions is analyzed using the model turnover and models of supply and demand.

Model circuit divides the economy into two sectors: households and firms. Households use the profits they receive from sale of their resources - labor, capital and land, to purchase goods and services from firms. Companies use the money they receive from the sale goods and services for the purchase of resources in households.

That households decide what to consume, and therefore – that produce. These decisions should form the basis of production plans firms. Companies must coordinate their decisions on the use limited resources.

In a market system, the task of coordinating solve two types of markets: the market productive resources and market consumer goods. Model of demand and proposal gives an explanation of the interaction of the business sector and household sector. When the two sectors interact over sale of the commodity market, the model determines the price and quantity traded goods. When they interact on the sale of market resources, they determine the price and quantity of resources.

Theme 4 MARKET ECONOMY AND ITS MODEL

4.1 Private Property.

In a market system, private individuals and firms, not the government, own most of the property resources (land and capital). In fact, it is this extensive private ownership of capital that gives capitalism its name. This right of **private property**, coupled with the freedom to negotiate binding legal contracts, enables individuals and businesses to obtain, use, and dispose of property resources as they see fit. The right of property owners to designate who will receive their property when they die sustains the institution of private property.

Property rights encourage investment, innovation, exchange, maintenance of property, and the expansion of the production of goods and services. Almost everyone can see that individuals stock stores, build factories, or clear land for farming because they can reap the rewards. Why would they do so if the government, or anyone else, could take that property from them?

Property rights also extend to the intellectual property through patents, copyrights, and trademarks. Such long-term protection encourages people to write books, music, and computer programs and to invent new products and production processes without fear that others will steal them and the rewards they may bring.

Property rights also facilitate exchange. The title to an automobile or the deed to a cattle ranch assures the buyer that the seller is the legitimate owner. Moreover, property rights encourage owners to maintain or improve their property so as to preserve or increase its value. Finally, property rights enable people to use their time and resources to produce more goods and services, rather than using them to protect and retain the property they have already produced or acquired.

Freedom of Enterprise and Choice.

Closely related to private ownership of property is freedom of enterprise and choice. The market system requires that various

economic units make choices, which are expressed and implemented in the economy's markets.

- *Freedom of enterprise* ensures that entrepreneurs and private businesses are free to obtain and use resources to produce their choice of goods and services, and to sell them in the markets of their choice.

- *Freedom of choice* allows owners to employ or dispose of their property and money as they see fit. It also allows workers to enter any line of work for which they are qualified. Finally, it ensures that consumers are free to buy the goods and services that best satisfy their wants.

These choices are free only within broad legal limitations, of course. Illegal choices such as selling human organs or buying illicit drugs are punished through fines and imprisonment.

Self-Interest.

In the market system, **self-interest** is the motivating force of all the various economic units as they express their free choices. Self-interest means that each economic unit tries to do what is best for itself. Entrepreneurs try to maximize profit or minimize loss. Property owners try to get the highest price for the sale or rent of their resources. Workers try to maximize their utility (satisfaction) by finding jobs that offer the best combination of wages, hours, fringe benefits, and working conditions.

Consumers try to obtain the products they want at the lowest possible price and apportion their expenditures to maximize their utility.

The pursuit of self-interest is not the same as selfishness. Self-interest simply means maximizing some benefit, and can include helping others. Astockholder may invest to receive the best available corporate dividends and then donate a portion of them to the United Way or give them to grandchildren. A worker may take a second job to help pay college or university tuition for her or his children. An entrepreneur may make a fortune and donate much of it to a charitable foundation. For example, Ted Turner, the entrepreneur

who started CNN, donated one billion U.S. dollars to the United Nations!

4.2 Competition.

The market system fosters **competition** among economic units. The basis of this competition is freedom of choice exercised in pursuit of the best return. Very broadly defined, *competition* requires:

- Independently acting sellers and buyers operating in a particular product or resource market
- Freedom of sellers and buyers to enter or leave markets, based on their selfinterest

Competition diffuses economic power within the businesses and households that make up the economy. When there are independently acting sellers and buyers in a market, no one buyer or seller is able to dictate the price of the product.

Consider the supply side of the product market. When a product becomes scarce, its price rises. An unseasonable frost in Florida may seriously reduce the supply of citrus crops and sharply increase the price of oranges. Similarly, if a single producer can somehow restrict the total output of a product, it can raise the product's price.

By controlling market supply, a firm can “rig the market” to its own advantage. But that is not possible in markets in which suppliers compete. A firm that raises its price will lose part or all of its business to competitors.

The same reasoning applies to the demand side of the market. Because there are multiple buyers, single buyers cannot manipulate the market to their own advantage by refusing to pay the market price.

Competition also implies that producers can enter or leave an industry; there are no insurmountable barriers to an industry expanding or contracting. This freedom of an industry to expand or contract provides the economy with the flexibility needed to remain efficient over time. Freedom of entry and exit enables the economy to

adjust to changes in consumer tastes, technology, and resource availability.

The diffusion of economic power inherent in competition limits the potential abuse of that power. A producer who charges more than the competitive market price will lose sales to other producers. An employer who pays less than the competitive market wage will lose workers to other employers. A firm that fails to exploit new technology will lose profits to firms that do. Competition is the basic regulatory force in the market system.

Competition and the "Invisible Hand".

In his 1776 book *The Wealth of Nations*, Adam Smith first noted that the operation of a market system creates a curious unity between private interests and social interests.

Firms and resource suppliers, seeking to further their own self-interest and operating within the framework of a highly competitive market system, will simultaneously, as though guided by an "*invisible hand*," promote the public or social interest. In a competitive environment, businesses use the least-costly combination of resources to produce a specific output because it is in their self-interest to do so.

To act otherwise would be to forgo profit or even to risk business failure. But, at the same time, to use scarce resources in the least-costly (most efficient) way is also in the public interest.

In our more-fruit-juice-less-milk illustration, it is self-interest that induces responses appropriate to the change in society's wants. Businesses seeking to make higher profits and to avoid losses, and resource suppliers pursuing greater monetary rewards, negotiate changes in the allocation of resources and end up with the output that society demands. Competition controls or guides self-interest in such a way that it automatically, and quite unintentionally, furthers the best interests of society. The "*invisible hand*" ensures us that when firms maximize their profits, they also maximize society's output and income.

Of the many virtues of the market system, three merit special emphasis:

- *Efficiency.* The basic economic argument for the market system is that it promotes the efficient use of resources, by guiding them into the production of those goods and services most wanted by society. It forces the use of the most efficient techniques in organizing resources for production, and it encourages the development and adoption of new and more efficient production techniques.

- *Incentives.* The market system encourages skill acquisition, hard work, and innovation. Greater work skills and effort mean greater production and higher incomes, which translate into a higher standard of living. Similarly, the assuming of risks by entrepreneurs can result in substantial profit incomes. Successful innovations generate economic rewards.

- *Freedom.* The major non-economic argument for the market system is its emphasis on personal freedom. In contrast to central planning, the market system coordinates economic activity without coercion. The market system permits – indeed, it thrives on – freedom of enterprise and choice. Entrepreneurs and workers are free to further their own self-interest, subject to the rewards and penalties imposed by the market system itself.

4.3 Market Failure.

The market system has many positive aspects in its favour. Unfortunately, there are instances when it doesn't work. *Market failure* occurs when the competitive market system (1) produces the “wrong” amounts of certain goods and services or (2) fails to allocate any resources whatsoever to the production of certain goods and services that are economically justified. The first type of failure results from what economists call *spillovers*, and the second type involves *public goods*. Both kinds of market failure can be corrected by government action.

Spillovers or Externalities.

When we say that competitive markets automatically bring about the efficient use of resources, we assume that all the benefits and costs for each product are fully reflected in the market demand

and supply curves. That is not always the case. In some markets certain benefits or costs may escape the buyer or seller.

Spillover occurs when some of the costs or the benefits of a good are passed on to or “spill over to” someone other than the immediate buyer or seller. Spillovers are also called *externalities* because they are benefits or costs that accrue to some third party that is external to the market transaction.

Spillover costs.

Production or consumption costs inflicted on a third party without compensation are called **spillover costs**. Environmental pollution is an example. When a chemical manufacturer or a meatpacking plant dumps its wastes into a lake or river, swimmers, fishers, and boaters—and perhaps those who drink the water—suffer spillover costs. When a petroleum refinery pollutes the air with smoke or a paper mill creates obnoxious odours, the community experiences spillover costs for which it is not compensated.

What are the economic effects? Recall that costs determine the position of the firm’s supply curve. When a firm avoids some costs by polluting, its supply curve lies farther to the right than it does when the firm bears the full costs of production.

As a result, the price of the product is too low and the output of the product is too large to achieve allocative efficiency. A market failure occurs in the form of an overallocation of resources to the production of the good.

Correcting for spillover costs.

Government can do two things to correct the overallocation of resources. Both solutions are designed to internalize external costs—that is, to make the offending firm pay the costs rather than shift them to others:

- *Legislation.* In cases of air and water pollution, the most direct action is legislation prohibiting or limiting the pollution. Such legislation forces potential polluters to pay for the proper disposal of industrial wastes—here, by installing smoke-abatement equipment or water-purification facilities. The idea is to force potential offenders,

under the threat of legal action, to bear *all* the costs associated with production.

- *Specific taxes.* A less direct action is based on the fact that taxes are a cost and therefore a determinant of a firm's supply curve. Government might levy a *specific tax*—that is, a tax confined to a particular product—on each unit of the polluting firm's output. The amount of this tax would roughly equal the estimated amount of the spillover cost arising from the production of each unit of output. Through this tax, government would pass back to the offending firm a cost equivalent to the spillover cost the firm is avoiding. This would shift the firm's supply curve to the left, reducing equilibrium output and eliminating the overallocation of resources.

Spillover benefits.

Sometimes spillovers appear as benefits. The production or consumption of certain goods and services may confer spillover or external benefits on third parties or on the community at large without compensating payment. Immunization against measles and polio results in direct benefits to the immediate consumer of those vaccines. But it also results in widespread substantial spillover benefits to the entire community. Education is another example of **spillover benefits**. Education benefits individual consumers: "Better-educated" people generally achieve higher incomes than "less-well-educated" people. But education also provides benefits to society, in the form of a more versatile and more productive labour force, on the one hand, and smaller outlays for crime prevention, law enforcement, and welfare programs, on the other.

Spillover benefits mean that the market demand curve, which reflects only private benefits, understates total benefits. The demand curve for the product lies farther to the left than it would if the market took all benefits into account. As a result, a smaller amount of the product will be produced or, alternatively, there will be an *underallocation* of resources to the product—again a market failure.

Correcting for spillover benefits.

How might the underallocation of resources associated with spillover benefits be corrected? The answer is either to subsidize

consumers (to increase demand), to subsidize producers (to increase supply), or, in the extreme, to have government produce the product.

- *Subsidize consumers.* To correct the underallocation of resources to higher education, the federal and provincial governments provide low-interest loans to students so that they can afford more education. Those loans increase the demand for higher education.

- *Subsidize suppliers.* In some cases government finds it more convenient and administratively simpler to correct an underallocation by subsidizing suppliers.

For example, in higher education, provincial governments provide substantial portions of the budgets of colleges and universities. Such subsidies lower the costs of producing higher education and increase its supply. Publicly subsidized immunization programs, hospitals, and medical research are other examples.

- *Provide goods via government.* A third policy option may be appropriate where spillover benefits are extremely large: Government may finance or, in the extreme, own and operate the industry that is involved.

4.4 Public Goods and Services.

Certain goods called *private goods* are goods produced through the competitive market system and are said to be *divisible* because they are produced in units small enough to be purchased and used by individual buyers. Examples are the many items sold in stores. Private goods are also subject to the **exclusion principle**. Buyers who are willing and able to pay the price of the product obtain it, but those who are unable or unwilling to pay are *excluded* from acquiring the product and its benefits.

Certain other goods and services, called **public goods**, have the opposite characteristics. Public goods are *indivisible*; they must be produced in such large units that they cannot ordinarily be sold to individual buyers. Individuals can buy hamburgers, computers, and automobiles through the market but they cannot buy aircraft carriers, highways, or space telescopes.

The exclusion principle does not apply to public goods since there is no effective way of excluding individuals from their benefits once such goods come into existence. Obtaining the benefits of private goods requires that they be *purchased*; obtaining the benefits of public goods requires only that they be *available*.

The classic example of a public good is a proposed lighthouse on a treacherous coast. The construction of the lighthouse would be economically justified if its benefits (fewer shipwrecks) exceeded its cost. But the benefits accruing to a single user would not be great enough to justify the purchase of such an indivisible product.

Moreover, once it was in operation, the warning light would be a guide to *all* ships; there would be no practical way to exclude any captain from using the light. Economists call this the **free-rider problem**, in which people receive benefits from a good without contributing to its cost. Because the services of the lighthouse cannot be priced and sold, it would be unprofitable for a private firm to devote resources to it. So here we have a service that could yield substantial benefits but to which the market system would allocate no resources. It is a public good, much like national defence, flood control, and public health. Society signals its desire for such goods by voting for particular political candidates who support their provision. The goods themselves must be provided by the public sector and financed by compulsory charges in the form of taxes.

Quasi-Public Goods.

Government provides many goods that fit the economist's definition of a public good. However, it also provides other goods and services that could be produced and delivered in such a way that the exclusion principle would apply. Such goods, called **quasi-public goods**, include education, streets and highways, police and fire protection, libraries and museums, preventive medicine, and sewage disposal.

They could all be priced and provided by private firms through the market system. But, as we noted earlier, because they all have substantial spillover benefits, they would be underproduced by

the market system. Therefore, government often provides them to avoid the underallocation of resources that would otherwise occur.

The Reallocation Process.

How are resources reallocated from the production of private goods to the production of public and quasi-public goods? If the resources of the economy are fully employed, government must free up resources from the production of private goods and make them available for the production of public and quasi-public goods. It does so by reducing private demand for them. And it does that by levying taxes on households and businesses, taking some of their income out of the circular flow. With lower incomes and hence less purchasing power, households and businesses are obliged to curtail their consumption and investment spending. As a result, the private demand for goods and services declines, as does the private demand for resources. So by diverting purchasing power from private spenders to government, taxes remove resources from private use.

Government then spends the tax proceeds to provide public and quasi-public goods and services. Taxation releases resources from the production of private consumer goods (food, clothing, television sets) and private investments goods (printing presses, boxcars, warehouses). Government shifts those resources to the production of public and quasi-public goods (post offices, submarines, parks), changing the composition of the economy's total output.

4.5 The Circular Flow Revisited.

In Figure 4.5.1 we integrate government into the circular flow model first shown in the theme 2. Here flows (1) through (4) are the same as the corresponding flows in that figure. Flows (1) and (2) show business expenditures for the resources provided by households. These expenditures are costs to businesses but represent wage, rent, interest, and profit income to households. Flows (3) and (4) show household expenditures for the goods and services produced by businesses.

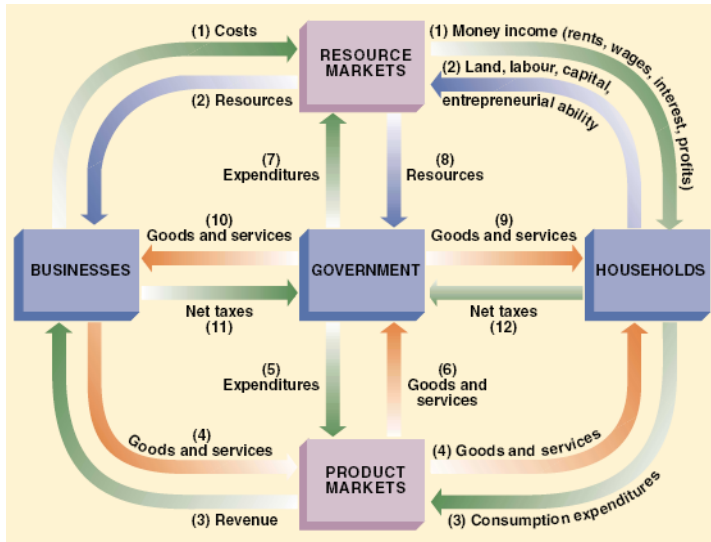


Figure 4.5.1 – The circular flow and the public sector.

Now consider what happens when we add government. Flows (5) through (8) illustrate that government makes purchases in both product and resource markets. Flows (5) and (6) represent government purchases of such products as paper, computers, and military hardware from private businesses. Flows (7) and (8) represent government purchases of resources. The federal government employs and pays salaries to members of Parliament, the armed forces, lawyers, meat inspectors, and so on. Provincial and municipal governments hire and pay teachers, bus drivers, police, and firefighters. The federal government might also lease or purchase land to expand a military base and a city might buy land on which to build a new elementary school. Government then provides public goods and services to both households and businesses as shown by flows (9) and (10). To finance those public goods and services, businesses and households are required to pay taxes, as shown by flows (11) and (12). These flows are labelled as *net* taxes to indicate

that they also include “taxes in reverse” in the form of transfer payments to households and subsidies to businesses. Thus, flow (11) entails various subsidies to farmers, ship builders, and airlines as well as income, sales, and excise taxes paid by businesses to government. Most subsidies to business are “concealed” in the form of low-interest loans, loan guarantees, tax concessions, or public facilities provided at prices below their cost. Similarly, flow (12) includes both taxes collected by government directly from households and transfer payments such as welfare payments and social insurance benefits paid by the government. We can use Figure 4.1 to review how government alters the distribution of income, reallocates resources, and changes the level of economic activity. The structure of taxes and transfer payments significantly affects income distribution. In flow (12), a tax structure that draws tax revenues primarily from well-to-do households, combined with a system of transfer payments to low-income households, reduces income inequality. Flows (5) through (8) imply that government diverts goods and resources away from private sector consumption or use and directs them to the public sector. This resource reallocation is required to produce public goods and services.

4.6 Features of the Belarusian economic model.

The Republic of Belarus is an export-oriented state with a well-developed production sector, services sector and agriculture. Belarus is one of the global leading exporters of freight vehicles, tractors, road construction and municipal equipment. One in ten wheeled tractors in the world is produced in Belarus.

Belarus accounts for 17% of the world’s output of harvesters, 6% of tractors, 6.4% of flax fibers and 2.8% of potatoes. The share of BelAZ rock haulers in the global market makes 30%. Belarusian dairy companies account for 1.4% of global milk production. The country accounts for about 5% of the global export of dairy products and almost 11% of butter export.

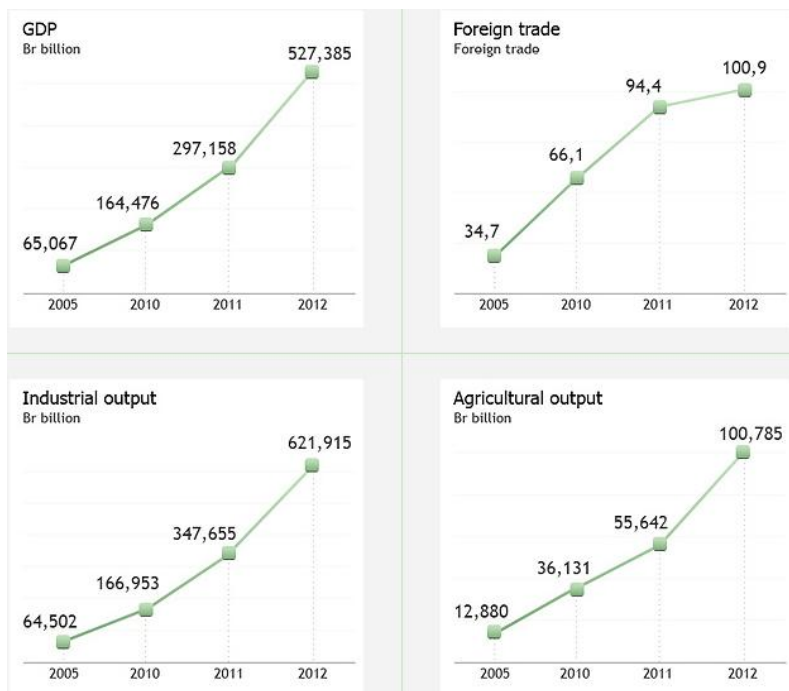


Figure 4.6.1 – Main socio-economic indicators

Belarus is among CIS leaders in chemistry and petrochemistry, agricultural and automobile construction, agriculture, light industry, individual branches of the information and communication technologies industry. Belarus exports more IT services per capita than any other CIS state. Belarus has good prospects in the high-tech sector, namely in the production of optical and laser devices, automated management systems.

Belarus adheres to the socially-oriented model of the market economy which has proven to be consistent and efficient.

The major branches of the Belarus economy include mechanical engineering, chemical and petrochemical industry, fuel

and energy sector, services sector, agriculture, forestry industry, wood processing and other ones.

The top ten Belarusian products which account from 30% to 0.6% of the global market are: freight vehicles, road and construction equipment, tractors and agricultural equipment, refrigerators and household equipment, fertilizers, flax fibers, chemical fibers and threads, clothes and footwear, potatoes, meat products, dairy products.

Automobile industry is one of the leading industries of the mechanical engineering sector. It accounts for one fourth of the sector's output.

Belarus specializes in manufacturing freight vehicles, buses and special vehicles. The biggest companies are Minsk Automobile Plant (MAZ trademark) and Belarusian Autoworks (BelAZ trademark). Belarusian Autoworks accounts for a third of the global market of rock haulers and is one of the leading producers of quarry equipment in the world.

Belarus is a leading producer of agricultural equipment such as tractors, grain harvesters, all kinds of forage harvesters. Minsk Tractor Works (MTZ trademark) is among the biggest manufacturers of wheeled tractors. Belarusian tractors account for 96% of the global market.

Chemical and petrochemical industry.

The Belarusian state petrochemical concern Belneftekhim incorporates over 60 enterprises. It accounts for more than 30% of the country's industrial output.

The top exporters of mineral fertilizers in Belarus are Belaruskali and GrodnoAzot.

Belaruskali is one of the world's biggest manufacturers of potash fertilizers. The Belarusian enterprise accounts for 16% of the global potassium market. About 90% of Belaruskali's output is exported to Europe, East Asia, Mediterranean countries, South Africa, India, China, South and North Americas — a total of 65 countries across the globe.

Belshina is Europe's largest tire producer.

The Belarusian oil processing industry includes Novopolotsk-based Naftan Oil Refinery and Mozyr Oil Refinery. These are modern facilities manufacturing high-quality oil products which are exported to Central and Northwest Europe.

Metalworking industry.

The Belarusian metalworking industry includes eight manufacturers of electrowelded circular and shaped steel pipes, steel cast bars, rolled steel, various kinds of wire, steel cord, bolts, screws, nuts, nails, molding materials, heating equipment.

Belarusian Steel Works (BMZ trademark) in Zhlobin is Belarus' biggest manufacturer of ferrous metallurgy merchandize.

Power engineering.

The Belarusian fuel and energy complex includes companies engaged in production, transportation, and storage of all kinds of energy resources. About 85% of energy resources consumed by the national economy is imported. Electricity generation is the core of the Belarusian fuel and energy complex. This is one of the leading branches of the national economy where a traditionally high level of Belarus' technical and engineering potential is concentrated. OAO Beltransgaz distributes and transports gas across Belarus.

In the near future nuclear energy will play a leading role in the fuel and energy complex. The decision to build a nuclear power plant with the capacity of up to 2,000MW in Belarus was made in 2008. The NPP will allow reducing the prime cost of produced energy by up to 20%.

Agriculture.

Agricultural production accounts for about 8% of the country's GDP. Less than 10% of the people employed in the national economy work in the agricultural industry.

Belarusian companies almost fully satisfy the needs of the domestic food market. Food import accounts for less than 10% of the total consumption. The production of milk per capita in Belarus is 2.8 times higher than that in the European Union and 8.4 times higher than that in the world. The production of meat per capita is 1.1 times

and 2.2 times higher, the manufacture of grain is 1.6 times and 2.5 times higher respectively.

The country accounts for 1% of the global export of milk, 11% of butter export, and 5.7% of cheese export. Belarus is a top exporter of dairy products in the world along with Australia, New Zealand, Brazil, and Argentina.

Belarus is ranked first in terms of per capita production of potatoes and is one of the major potato producers in the world.

About 16% of the world's flax crops are grown in Belarus. Belarus is a top five country among the world's 26 flax fiber manufacturers.

Transport and logistics.

Belarus is a major transport artery in Eurasia. Every year over 100 million tonnes of European cargoes is transported via Belarus. About 90% of the cargoes is transported between Russia and the European Union. Transit of goods via Belarus is fast and secure. Transport services are rendered by railway, automobile, air, inland water, and pipeline transport operators.

Belarus' geographical location favors the deployment of logistics centers along the routes used to transport cargoes between Europe and Asia.

The country has worked out a large-scale program to guide the development of the logistics system till 2015. The program envisages the construction of 50 logistics centers, including 18 sites fit transport and logistics centers with the consequent processing of products as an option.

Foreign trade.

The economic structure, geographic location and historical development of Belarus have determined the openness of the country's economy and its focus on foreign markets.

Belarus trades with more than 160 countries across the globe. Bilateral trade with Russia and Kazakhstan has advanced to a new level within the framework of the Customs Union.

As of January 2014, Russia accounted for 49.1% of Belarus' trade turnover, Ukraine – for 7.1%, the United Kingdom – for 7.1%,

Germany – for 5.3%, China – for 3.8%, Poland – for 3.4%, Italy – for 3.2%, the Netherlands – for 2.5%, Lithuania – for 2%, Brazil – for 1.4%, Kazakhstan – for 0.8%.

Banking system.

Belarus has a two-level banking system which is common worldwide. It consists of the National Bank of the Republic of Belarus, or the central bank, and commercial banks.

As of 23 April 2013 there were 32 banks in Belarus. There are seven offices of foreign banks in the country.

The Development Bank of the Republic of Belarus was established following the presidential decree of 21 June 2011. The bank has been tasked with developing the system to finance national programs and socially-important investment projects.

Modul II FUNDAMENTALS OF MICROECONOMIC

Theme 5 SUPPLY, DEMAND AND MARKET EQUILIBRIUM

5.1 Summary and Introduction to Demand.

In microeconomics, demand refers to the buying behaviour of a household. What does this mean? Basically, microeconomics want to try to explain three things:

Why people buy what they buy?

How much they're willing to pay?

How much they want to buy?

Instead of looking at all consumers in the world, however, they try and model how smaller units function: instead of asking, "How does the American market function?" they ask, "What will one household do?" Each household, or small-scale decision-making unit, is affected by different factors when making choices about what to buy and how much to buy. For instance, if one household lives in Florida and another lives in Michigan, they might have different preferences for clothing, since the climates are so different. Consumer preferences weigh heavily in a household's buying decisions. Another factor that affects such decisions is income: a millionaire and an average citizen will have very different purchasing choices, since they have different budgets to work on. All buyers will try to maximize their utility, that is, make themselves as happy as possible, by spending what money they have in the best way possible. By considering both their preferences and their budget, they ensure that they end up with the best combination of goods possible. Because the household is such a small unit, no household has a significant impact on the market, and so the actions of any single household is its best effort to react to the market price and the goods available.

In this unit on demand, we will learn how to work with graphical and mathematical models for demand, we will observe how changes in price or income can affect demand, we will see how

consumers make choices under uncertainty, and we will apply that knowledge to calculate the optimal purchases an individual consumer can make, given their income and the prices of goods.

Two Approaches to Demand.

Economists graphically represent the relationship between product price and quantity demanded with a demand curve. Typically, demand curves are downwards sloping, because as price increases, buyers are less likely to be willing or able to purchase whatever is being sold. Each individual buyer can have their own demand curve, showing how many products they are willing to purchase at any given price, as shown below. This graph shows what Jim's demand curve for graham crackers might be:

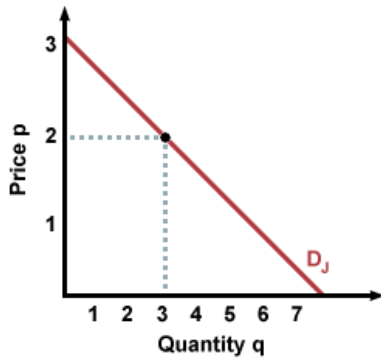


Figure 5.1.1 – Jim's Demand Curve for Graham Crackers

To find out how many boxes of graham crackers Jim will buy for a given price, extend a perpendicular line from the price on the y-axis to his demand curve. At the point of intersection, extend a line from the demand curve to the x-axis (perpendicular to the x-axis). Where it intersects the x-axis (quantity) is how many boxes of graham crackers Jim will buy. For instance, in the graph above, Jim will buy 3 boxes when the price is \$2 a box.

Aggregate Demand and Horizontal Addition

Typically, economists don't look at individual demand curves, which can vary from person to person. Instead, they look at

aggregate demand, the combined quantities demanded of all potential buyers. To do this, add the quantities which buyers are willing to buy at different prices. For instance, if Jim and Marvin are the only two buyers in the market for graham crackers, we would add how many they are willing to buy at price $p=1$ and record that as aggregate demand for $p=1$. Then we would add how many they are willing to buy at price $p=2$ and record that as aggregate demand for $p=2$, and so on. This results in the following graph of aggregate demand for graham crackers:

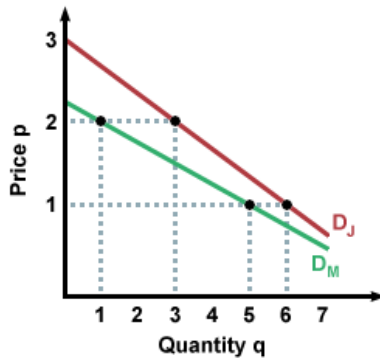


Figure 5.1.2 – Jim and Marvin's Demand Curves for Graham Crackers

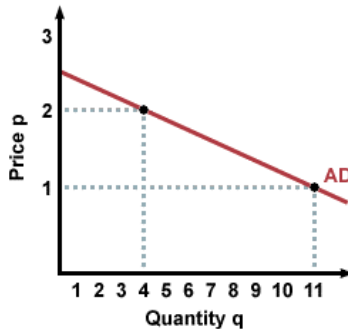


Figure 5.1.3 – Aggregate Demand Curve for Graham Crackers

This method is called horizontal addition because you look at a price level, and add the separate quantities demanded across that price level, giving you total quantity demanded for that price.

There are many factors that can affect demand quantity, including income, prices, and preferences. Let's look at one good to see how this works. How much are you willing to pay for a cold soda? If you recently got a raise at your job, you might not mind buying a pricier soda, even if you don't need it. Your friend who has less money, however, might pick a generic brand, or they might stick with tap water. Below are possible demand curves for you (with your big raise) and your friend (without your big raise). Note that you are willing to buy more soda than your friend is:

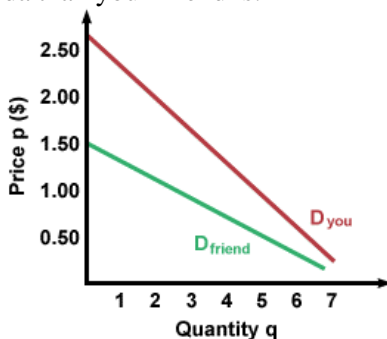


Figure 5.1.4 – Demand Curves for Soda

What if soda cost a dollar yesterday and costs two dollars today? That might make you think twice about getting the same soda you drank yesterday. Likewise, if it cost two dollars yesterday and a dollar today, you might be more willing to buy the soda than usual. We can see this on the graph on a single demand curve. When the price is a dollar, the quantity demanded is higher than when the price is two dollars. What this means in the real world is that if two companies charge different prices for the same good, the company that charges a lower price will get more customers. (Exceptions to this general rule may occur when there is a real or perceived difference in quality of the goods being sold).

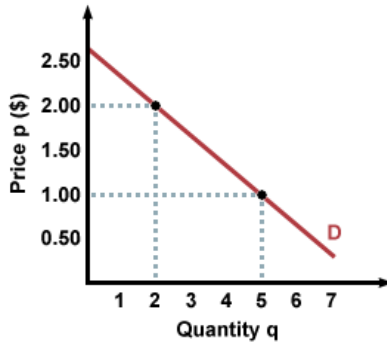


Figure 5.1.5 – Changes in Demand with Changes in Price

We have been looking at how changes in price can affect buyers' decisions: when price increases, demand decreases, and vice versa. However we have been assuming that when the price changes, all else is staying the same; this restriction allows us to use the same demand curve, with changes in demand being represented by movements up and down the same curve. This model of a buyer moving up and down one demand curve is correct if the only thing that is changing is the price of the good. If preferences or income change, however, the demand curve can actually shift.

For example, let's say that Conan's initial demand curve for concert tickets looks like curve 1. If Conan gets a new job, with a permanently higher income, however, his demand curve will shift outwards, to curve 2. Why is this? Conan realizes that he has more money, and that, as long as he doesn't lose his new job, he will always have more money. That means that he can buy more of what he likes, and he will have a higher demand curve for all normal goods.

Note that for any price level, Conan's demand is now higher than it was before the demand shift. This can also occur with a change in buyer preferences. If Conan suddenly decides that he wants to collect jazz CDs, and he now likes jazz CDs much more than he did before, his demand curve will shift outwards, reflecting his new appreciation of jazz, and his willingness to pay more for the same

CDs, since they have become more valuable in his eyes. Shifts in demand curves are caused by changes in income (which make the goods seem more or less expensive) or changes in preferences (which make the goods seem more or less valuable).

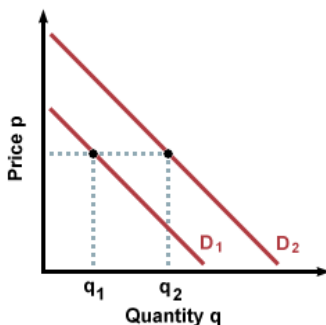


Figure – 5.1.6 Shifts in Demand

The Algebraic Approach.

It is also possible to model demand using equations, known as demand equations or demand functions. While these equations can be very complex, for now we will use simple algebraic equations. We have been showing demand as straight, downward-sloping lines, which can easily be translated into mathematical equations, and vice versa. Just as the graphs provide a visual guide to consumer behaviour, demand functions provide a numerical guide to consumer behaviour. For example, if Sean's demand curve for T-shirts looks like this:

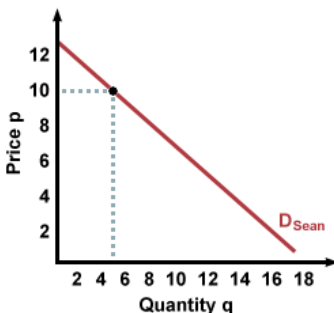


Figure – 5.1.7 Figure: Sean's Demand Curve for T-Shirts

The corresponding equation that describes Sean's demand for T-shirts is simply the equation for the line on the graph, or:

$$Q = 25 - 2P$$

If we want to see how much Sean will buy if the price is 10, we plug 10 in for P and solve for Q. In this case, $[25 - 2(10)] = 5$ T-shirts. When we want to find aggregate demand using the algebraic approach instead of the graphical approach, we just add the demand equations together. So, if we're adding Sean's demand for T-shirts to Noah's demand for T-shirts, it looks like this:

$$\begin{array}{r} Q = 25 - 2P \\ +) Q = 40 - 3P \\ \hline Q^* = 65 - 5P \end{array}$$

If price for T-shirts is still equal to 10, we find out that together, Sean and Noah will buy

$$[65 - 5(10)] = 15 \text{ T-shirts.}$$

One caveat in this method is that you can only add the equations together when both will result in positive demand. For example, if the price of a T-shirt is \$13, Sean would supposedly want to buy $[25 - 2(13)] = -1$ T-shirts. Obviously that is impossible, and Sean will buy 0 T-shirts. But because Sean's demand equation would yield the answer -1 , adding the demand equations together would result in a wrong answer. When using this method, always check to make sure that there will be no negative demand for the given price before adding equations together. To find how many T-shirts Sean and Noah would buy in this case, you would only look at Noah's demand,

$$[40 - 3(13)] = 1 \text{ T-shirt.}$$

5.2 Summary and Introduction to Supply.

At the other side of every transaction is a seller. Economists refer to the behavior of sellers as that market force of supply. It is the combined forces of supply and demand that make up a market economy. In microeconomics, the smallest unit of supply is the firm, which is analogous to the demand unit of the household. Firms

operate independently of each other, making decisions about what to sell, and how much to sell, depending on the price. How do firms make their selling decisions? Once they have decided what to sell, a decision they make based on what they believe buyers will want to buy, their decision is then influenced by the market price of the goods. If a firm in Boston decides to sell warm hats, they will want to sell more hats if the going price is high than if the going price is low. Just like households, firms try to maximize their utility when making selling decisions. Whereas a buyer's utility is a complex combination of preferences, needs, and happiness, economists usually assume that sellers derive utility from profit, that is, the more money a seller makes from a sale, the happier it will be. Firms will maximize their utility by selling whatever will make them the most money. In this way, sellers' utility is somewhat easier to study and understand, since we don't have to take personal preferences into account (in theory). Instead, we look purely at price and profit.

In this unit on supply, we will look at graphical and mathematical ways to represent supply, and we will see what factors can affect supply.

The Graphical Approach Supply.

Economists graphically represent the relationship between product price and quantity supplied with a supply curve. Typically, supply curves are upwards sloping, because as price increases, sellers are more likely to be willing to sell something. For instance, if someone offered you \$10 for one of your favorite shirts, you might not want to part with it, since it wouldn't be worth it. However, if someone offered you \$500 for that same shirt, you would probably consider it. Each individual seller can have their own supply curve, showing how many products they are willing to sell at any given price, as shown below. This graph shows what James's supply curve for hours of tutoring in economics might be:

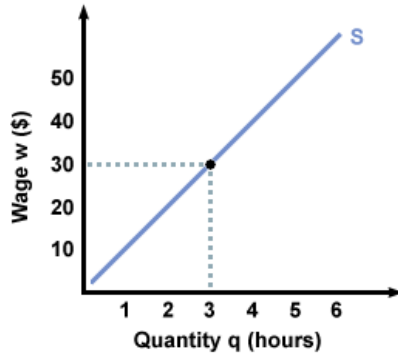


Figure – 5.2.1 James's Supply Curve

To find out how many hours of tutoring James will give for a given wage (when we put a price on hours of work, we call it a wage), extend a perpendicular line from the price on the y-axis to his supply curve. At the point of intersection, extend a line from the supply curve to the x-axis (perpendicular to the x-axis). Where it intersects the x-axis (quantity) is how many hours of tutoring James will teach. For instance, in the graph above, James will teach for 3 hours when the hourly wage is \$30 an hour.

Typically, however, economists don't look at individual supply curves. Instead, they look at aggregate supply, the combined quantities supplied by all potential sellers. To do this, you add the quantities that sellers are willing to sell at different prices, just like we do to find aggregate demand. For instance, if James and Ina are the only two tutors in the market for economics tutoring, we would add how many hours they are willing to tutor at wage $w=20$ and record that as aggregate demand for $w=20$. Then we would add how many they are willing to tutor at wage $w=30$ and record that as aggregate demand for $w=30$, and so on. Combining the two supply curves in the first graph results in the aggregate supply curve in the second graph:

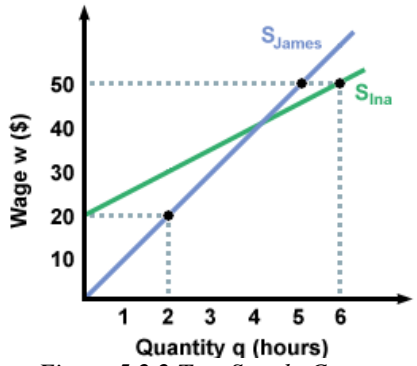


Figure 5.2.2 Two Supply Curves

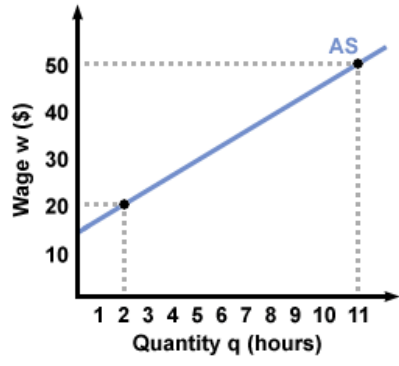


Figure 5.2.3 Aggregate Supply Curve.

Since at $w=20$ James is unwilling to work and Ina is willing to work 2 hours, at $w=20$ the aggregate supply curve equals 2 hours. At $w=30$, James is willing to work 5 hours and Ina 6, so at $w=20$ the aggregate supply curve equals 11 hours. This method is called horizontal addition, since we add across each price level to find the total quantity supplied.

There are two ways that supply quantity can change: one is through movements along the same supply curve, the other is through shifts in the supply curve. Let's look at the first one: movements along one supply curve.

Movements along one supply curve follow the same idea as movements along a single demand curve: nothing is changing except for the price of the good, so the only thing influencing supply is a change in price. With all else being equal, we can see how James might change how much he is willing to tutor when his wage rises or falls in the following graph:

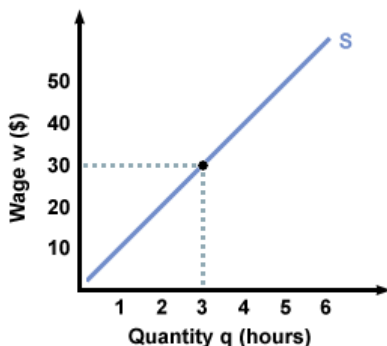


Figure 5.2.4 – James's Supply Curve

Note that when the wage is higher, the quantity supplied is higher, and vice versa. The reservation price (or in this case, the reservation wage) is the lowest price that a seller is willing to accept for its products. Most firms will sell products up to the point where their profits are 0, or where the amount they spend to make and sell the product is equal to the amount they receive for the product on the market. To find the reservation wage on James's supply curve, find the point where his quantity supplied will be 0. The reservation price will be marginally higher than the price at $Q = 0$. If we assume that James can only tutor in hourly increments (that is, he can't tutor for less than an hour), then his reservation wage will be the wage at which he will only tutor for one hour. On the graph, it looks like James's reservation wage will be about \$10/hour.

The other way in which supply quantity can change is through actual shifts in the supply curve. If you recall when we studied shifts in demand curves, you will remember that such shifts

are caused by outside factors. While demand curves are shifted by changes in income or changes in preferences, supply curves can be affected by changes in profit. Profit is how much a firm actually gains when they make a sale. For instance, if a bookstore buys a used book for \$1 and sells it for \$5, their profit is \$4. Changes in the selling price of the book can change how many books they are willing to sell, and such changes would be represented by sliding up and down the same supply curve, as in the previous example. If the price the bookstore has to pay for the book changes, however, that would cause their supply curve to shift, even if the selling price doesn't change. If they have to pay more for the book, their profits drop, and make them less willing to sell books at prices they were willing to sell at before the change. We can see this below:

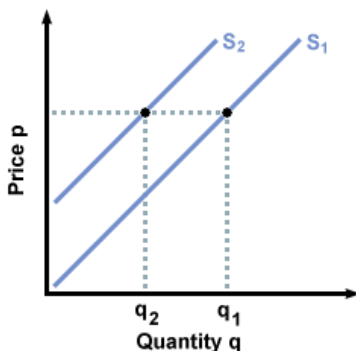


Figure 5.2.5 A Shift in the Supply Curve

Notice that for any given price, the store will sell fewer books than before, reflecting the higher costs and lower profits they get for each book. Without changing the price at which they sell the book, we have shifted their supply curve and changed their willingness to sell. Thus, changes in profits can shift a firm's supply curve, even if the market price stays constant. We will later learn how to graphically visualize a firm's profits in a given market by using their different costs, sources of income, and the market price and demand.

The Algebraic Approach.

As with demand, it is also possible to model supply using equations. These supply equations, or supply functions, are used to numerically represent firm behavior and the variation of firm behavior with price. For simplicity's sake, we will again use simple algebraic equations.

If Amy's bookstore sells textbooks with a supply curve that looks like this:

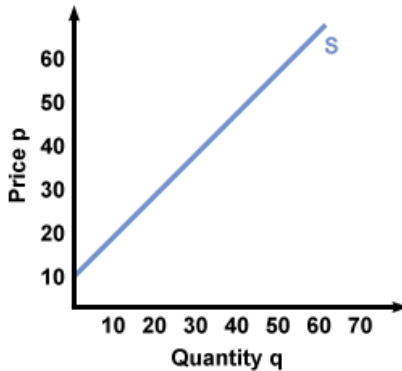


Figure 5.2.6 Amy's Bookstore's Supply Curve

The corresponding equation that describes the bookstore's supply of textbooks will be the equation for the line, or:

$$Q = -10 + P$$

If we want to see how many books the store is willing to sell if the price is \$50, we plug 50 in for P and solve for Q. In this case,

$$Q = [-10 + 50] = 40 \text{ textbooks}$$

If we want to solve for aggregate supply using the algebraic approach instead of the graphical approach, we just add the supply equations together. So, if we're adding Amy's bookstore's supply to Tony's bookstore's supply, it will look like this:

$$\begin{array}{r}
 Q = -10 + P \\
 +) Q = -5 + 1.5P \\
 \hline
 Q^* = -15 + 2.5P
 \end{array}$$

If price is still equal to 50, we find out that together, Amy and Tony will sell

$$Q = [-15 + 2.5(50)] = 110 \text{ textbooks}$$

One caveat: It is possible that some supply functions will sometimes give a negative quantity for some prices. For instance, the supply equation for Amy's bookstore will give a negative quantity supplied if the price is under \$10 per textbook. Since it is impossible to supply a negative quantity of textbooks, for values under \$10 the store will not sell any textbooks. Before adding together two or more supply equations, always check to make sure that none of them will give you negative results for the price for which you are solving.

To find the reservation price when working with supply functions, set Q equal to 0 and solve for P. The reservation price will be marginally higher than P when Q is equal to 0. For instance, if we want to find Amy's reservation price:

$$\begin{array}{l}
 Q = -10 + P \\
 0 = -10 + P \\
 P = 10
 \end{array}$$

Amy's reservation price will be marginally higher than \$10. Assuming that she can only sell whole books (that is, she can't sell 1/2 of a book), then her reservation price will be the price when her supply quantity will be 1:

$$\begin{array}{l}
 1 = -10 + P \\
 P = \$11 \text{ per textbook}
 \end{array}$$

If we want to see how supply can change even without a change in the market price, we need to look at utility. While buyers get their utility from their preferences and needs, firms get their utility from profit. Basically, profit is how much a seller actually gains by making a sale (and what we use to measure how happy the seller will be), and is derived by subtracting the costs from income. The simplest form of the profit equation is as follows:

Profit = Total Revenue (TR) - Total Cost (TC)

For instance, if an ice cream store pays \$500 in rent, \$500 in wages, and \$200 for ice cream each month, and they sell 500 ice cream cones at \$3 each, then their profit each month is:

$$[(500)(3) - (500 + 500 + 200)] = \$300.$$

One thing that can change their profit margin is the price. We know from before that changes in price are reflected in movements along one supply curve. However, changes in their costs, such as rent, wages, or gallons of ice cream can cause their supply curve to shift, since any of these changes would affect their willingness to sell ice cream at a given price.

We can see how this works when we change how much rent the ice cream store has to pay each month without changing the price they charge for an ice cream cone. If the monthly rent increases to \$600, and nothing else changes, then their monthly profits will fall to \$200. If you were the ice cream store owner, and you had this happened to you, how willing would you be to sell ice cream cones? Last month, you sold 500 cones and made \$300. This month, you would have to work just as hard to make less money. It is easy to see why firms can be affected by more than just the price of a good when deciding how much to sell, and it is these considerations that can cause shifts in their supply curves.

5.3 Summary and Introduction to Equilibrium.

So far, we've looked at supply, we've looked at demand, and the main question that now arises is, "How do these two opposing forces of supply and demand shape the market?" Buyers want to buy as many goods as possible, as cheaply as possible. Sellers want to sell as many goods as possible, at the highest price possible. Obviously, they can't both have their way. How can we figure out what the price will be, and how many goods will be sold? In most cases, supply and demand reach some sort of compromise on the price and quantity of goods sold: the market price is the price at which buyers are willing to buy the same number of goods that sellers are willing to sell. This point is called market equilibrium. Because supply and demand can

shift and change, equilibrium in a standard market is also fluid, responding to changes in either market force. There are, however, some cases in which the normal fluidity of equilibrium does not exist, whether due to the structure of the market or inefficiencies within the market. We will examine some of these cases, such as monopolies or markets with government intervention, which are not "traditional" market economies.

In this unit, we will learn how to find market equilibrium to determine the prices and quantities of goods sold, we will calculate firms' profit margins, and we will study ways in which a market can deviate from this traditional market model.

Two Approaches to Market Equilibrium.

The Graphical Approach.

By now, we are familiar with graphs of supply curves and demand curves. To find market equilibrium, we combine the two curves onto one graph. The point of intersection of supply and demand marks the point of equilibrium. Unless interfered with, the market will settle at this price and quantity. Why is this? At this point of intersection, buyers and sellers agree on both price and quantity. For instance, in the graph below, we see that at the equilibrium price p^* , buyers want to buy exactly the same amount that sellers want to sell.

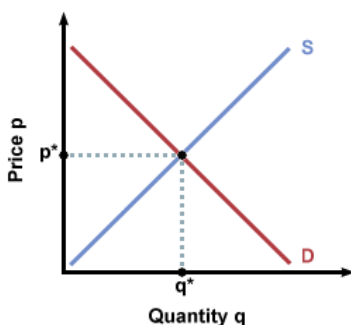


Figure 5.3.1 – Market Equilibrium

If the price were higher, however, we can see that sellers would want to sell more than buyers would want to buy. Likewise, if

the price were lower, quantity demanded would be greater than quantity supplied. The following graph shows the discrepancy in supply and demand if the price is higher than the equilibrium price:

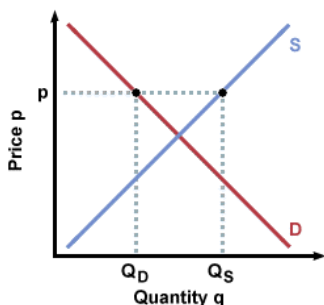


Figure 5.3.2 – Price Higher than Equilibrium Price

Note that the quantity that sellers are willing to sell is much higher than the quantity that buyers are willing to buy.

We can also see what happens when one of the curves shifts up or down in response to outside factors. For example, if we were to look at the market for Beanie Babies before and after they became a popular fad, we would see a shift outwards from the initial demand curve over time. The reason for this is that as people began to like Beanie Babies, their preferences changed, and they began to want Beanie Babies enough that they would pay much more for each Beanie Baby than they would have previously. We can see this new preference for Beanie Babies in the outward shift of the demand curve: for every price, buyers will buy more Beanie Babies than they would have before the fad.

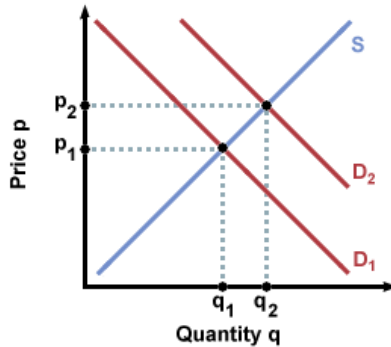


Figure 5.3.3 Shift in the Demand for Beanie Babies

Note that this combines two effects we studied earlier: there is a shift in the demand curve, which causes a movement up the supply curve. These two effects combine to reach the new market equilibrium, which has both a higher price and a higher quantity than the previous market equilibrium.

It is only through a shift in either the supply or the demand curve that the market equilibrium will change. Why is this? If neither curve shifts, and we move along one of the curves, the market will naturally shift back to equilibrium. For example, if we look at a market in equilibrium, and a store tries to move up its supply curve by selling goods at a higher price, the result will be that no one will buy the goods, since they are less expensive at the store's competitors. The store will have to either go out of business, or move its prices back down to equilibrium.

What happens if both curves shift? Will we end up at the same equilibrium point? In this model, it is not possible to reach the same equilibrium: either the price or the quantity can be the same as the previous equilibrium, but not both, unless the curves shift back to their original positions. To illustrate why this is true, consider the graph below. The initial equilibrium, between supply curve 1 and demand curve 1, has price p^* and quantity q^* . If supply shifts to supply curve 2, both equilibrium price and quantity change. It is now

possible to change back to our original price by shifting the demand curve to position 2 or it is possible to revert to our original quantity by shifting the demand curve to position 3. Note that we cannot reach the original equilibrium point unless we move the curves back to their original points.

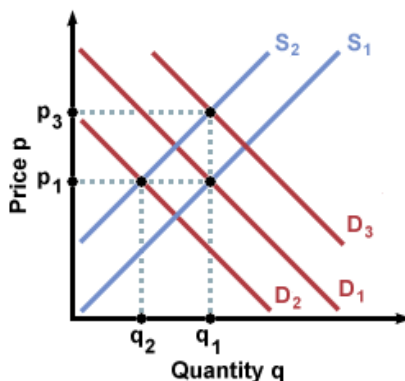


Figure 5.3.4 – Shift in Supply and Demand

For a real world example, consider the market for oil. The initial supply and demand curves would be at position 1 (p_1). When the suppliers decide to collaborate and supply less oil for every price, this causes a backwards shift in the supply curve, to supply curve 2. This cuts the quantity supplied from quantity 1 (q_1) to quantity 2 (q_2) and raises the price paid for oil along demand curve 1. We can either shift the demand curve in to curve 2, maintaining previous price levels, but decreasing consumption even more, or we can shift our demand curve out to curve 3, maintaining previous levels of consumption but raising prices. Since there is a tradeoff between having steady prices or steady consumption, the consumers have to make a decision about which is more important to them. In the short run, they will probably decide to pay the higher prices to keep consumption steady (that is, they will shift out to curve 3), but if the prices stay high for a long time, they will start finding ways to economize, (thereby shifting in to curve 2).

The Algebraic Approach

We have worked with supply and demand equations separately, but they can also be combined to find market equilibrium. We have already established that at equilibrium, there is one price, and one quantity, on which both the buyers and the sellers agree. Graphically, we see that as a single intersection of two curves. Mathematically, we will see it as the result of setting the two equations equal in order to find equilibrium price and quantity.

If we are looking at the market for cans of paint, for instance, and we know that the supply equation is as follows:

$$Q_S = -5 + 2P$$

And the demand equation is:

$$Q_D = 10 - P$$

Then to find the equilibrium point, we set the two equations equal. Notice that quantity is on the left-hand side of both equations. Because quantity supplied is equal to quantity demanded at equilibrium, we can set the right-hand sides of the two equations equal.

$$Q_S = Q_D$$

$$-5 + 2P = 10 - P$$

$$3P = 15$$

$$P = 5$$

At equilibrium, paint will cost \$5 a can. To find out the equilibrium quantity, we can just plug the equilibrium price into either equation and solve for Q.

$$Q^* = Q_S$$

$$Q_S = -5 + 2(5)$$

$$Q_S = Q^* = 5 \text{ cans}$$

Shifts up and down supply and demand curves are represented by plugging different prices into the supply and demand equations: different prices yield different quantities. For example, changing the price to \$6 a can would decrease quantity demanded from 5 cans to 4 cans, as we can see when we plug the two prices into the demand function:

$$P = 5$$

$$QD = 10 - 5 = 5 \text{ cans}$$

$$P = 6$$

$$QD = 10 - 6 = 4 \text{ cans}$$

The equivalent of shifting supply and demand curves is changing the actual supply and demand equations. Let's say that everyone in a small town just recently painted their houses, and therefore no longer need any paint. This means that they will be less willing to buy paint, even if the price doesn't go up. Their new demand function might be:

$$QD = 7 - P$$

We can see that for any price, they will demand fewer cans of paint. At the old equilibrium price of \$5, they will only buy:

$$QD = 7 - 5 = 2 \text{ cans of paint}$$

This new equation, representing a shift in demand, also causes a shift in market equilibrium, which we can find by setting the new demand equation equal to supply:

$$QS = QD$$

$$-5 + 2P = 7 - P$$

$$3P = 12$$

$$P = \$4 \text{ a can}$$

Now to solve for the equilibrium quantity:

$$Q^* = QS$$

$$QS = -5 + 2P = -5 + 2(4)$$

$$QS = Q^* = 3 \text{ cans of paint}$$

At the new equilibrium, 3 cans of paint will be sold at \$4 each.

Theme 6 THE DEMAND AND SUPPLY ELASTICITY

6.1 Introduction to Elasticity.

We've already studied how supply and demand curves act together to determine market equilibrium, and how shifts in these two curves are reflected in prices and quantities consumed. Not all curves are the same, however, and the steepness or flatness of a curve can greatly alter the affect of a shift on equilibrium. Elasticity refers to the relative responsiveness of a supply or demand curve in relation to price: the more elastic a curve, the more quantity will change with changes in price. In contrast, the more inelastic a curve, the harder it will be to change quantity consumed, even with large changes in price. For the most part, Goods with elastic demand tend to be goods which aren't very important to consumers, or goods for which consumers can find easy substitutes. Goods with inelastic demands tend to be necessities, or goods for which consumers cannot immediately alter their consumption patterns.

In this unit, we will define and examine the concept of elasticity, and we will learn how to calculate and compare elasticities. Once we have calculated a curve's elasticity, how do we determine whether the curve is elastic or inelastic? We will define these boundaries of elasticity. Additionally, we will take a look at practical applications of elasticity, and examine how it can affect markets in the real world.

Elasticity.

What is Elasticity?

Elasticity refers to the degree of responsiveness in supply or demand in relation to changes in price. If a curve is more elastic, then small changes in price will cause large changes in quantity consumed. If a curve is less elastic, then it will take large changes in price to effect a change in quantity consumed. Graphically, elasticity can be represented by the appearance of the supply or demand curve. A more elastic curve will be horizontal, and a less elastic curve will tilt more vertically. When talking about elasticity, the term "flat"

refers to curves that are horizontal; a "flatter" elastic curve is closer to perfectly horizontal.

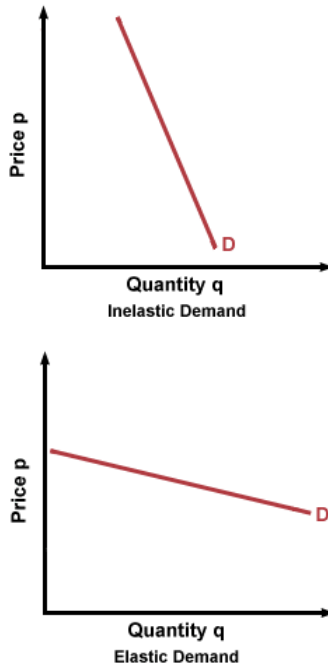


Figure 6.1.1 – Elastic and Inelastic Curves

At the extremes, a perfectly elastic curve will be horizontal, and a perfectly inelastic curve will be vertical. Hint: You can use perfectly inelastic and perfectly elastic curves to help you remember what inelastic and elastic curves look like: an Inelastic curve is more vertical, like the letter I. An Elastic curve is flatter, like the horizontal lines in the letter E.

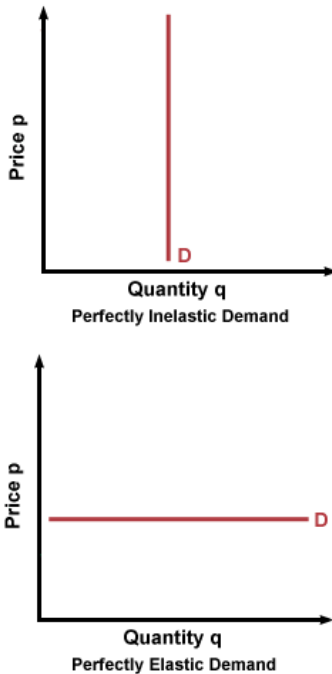


Figure 6.1.2 – Perfectly Elastic and Perfectly Inelastic Curves

Price elasticity of demand, also called the elasticity of demand, refers to the degree of responsiveness in demand quantity with respect to price. Consider a case in the figure below where demand is very elastic, that is, when the curve is almost flat. You can see that if the price changes from \$.75 to \$1, the quantity decreases by a lot. There are many possible reasons for this phenomenon. Buyers might be able to easily substitute away from the good, so that when the price increases, they have little tolerance for the price change. Maybe the buyers don't want the good that much, so a small change in price has a large effect on their demand for the good.

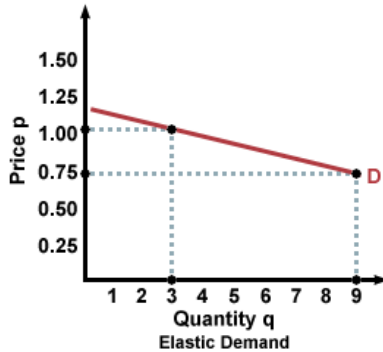


Figure 6.1.3 – Elastic Demand

If demand is very inelastic, then large changes in price won't do very much to the quantity demanded. For instance, whereas a change of 25 cents reduced quantity by 6 units in the elastic curve in the figure above, in the inelastic curve below, a price jump of a full dollar reduces the demand by just 2 units. With inelastic curves, it takes a very big jump in price to change how much demand there is in the graph below. Possible explanations for this situation could be that the good is an essential good that is not easily substituted for by other goods. That is, for a good with an inelastic curve, customers really want or really need the good, and they can't get want that good offers from anywhere else. This means that consumers will need to buy the same amount of the good from week to week, regardless of the price.

Like demand, supply also has varying degrees of responsiveness to price, which we refer to as price elasticity of supply, or the elasticity of supply. An inelastic supplier (one with a steeper supply curve) will always supply the same amount of goods, regardless of the price, and an elastic supplier (one with a flatter supply curve) will change quantity supplied in response to changes in price.

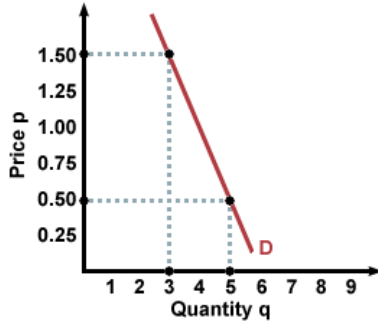


Figure 6.4 – Inelastic Demand

How Is Elasticity Measured?

As we have noted, elasticity can be roughly compared by looking at the relative steepness or flatness of a supply or demand curve. Thus, it makes sense that the formula for calculating elasticity is similar to the formula used for calculating slope. Instead of relating the actual prices and quantities of goods, however, elasticity shows the relationship between changes in price and quantity. To calculate the coefficient for elasticity, divide the percent change in quantity by the percent change in price:

$$\text{Elasticity} = (\% \text{ Change in Quantity}) / (\% \text{ Change in Price})$$

Remember that to find percent change itself, you divide the amount of change in a variable by the initial level of the variable:

$$\% \text{ Change} = (\text{Amount of Change}) / (\text{Initial Level})$$

Another important thing to remember is that percentage changes can be positive or negative, but elasticity is always an absolute value. That is, even when an increase in price is paired with a decrease in quantity (as with most demand curves), the elasticity will be positive; remember to drop any minus signs when finding your final value for elasticity.

Let's apply this and solve for elasticity in the market for ping pong balls. When ping pong balls cost \$1 each, Alice is willing to buy 10 balls, and Joe is willing to sell 10 balls. When they cost \$1.50

each, Alice is willing to buy 6 balls, and Joe is willing to sell 20. First, let's solve for Alice's price elasticity of demand:

$$\% \text{ Change in Quantity} = (6-10)/10 = -0.4 = -40\%$$

$$\% \text{ Change in Price} = (1.50-1)/1 = 0.5 = 50\%$$

$$(-40\%)/(50\%) = -0.8$$

Take the absolute value to find elasticity.

$$\text{Elasticity of Demand} = 0.8$$

Now, we use the same process to find Joe's price elasticity of supply:

$$\% \text{ Change in Quantity} = (20-10)/10 = 1 = 100\%$$

$$\% \text{ Change in Price} = (1.50-1)/1 = 0.5 = 50\%$$

$$\text{Elasticity of Supply} = (100\%)/(50\%) = 2$$

6.2 Elastic vs. Inelastic?

An elasticity of 1 is the established borderline between elastic and inelastic goods. A curve with an elasticity of 1 is called unit elastic; an elasticity of 1 indicates perfect responsiveness of quantity to price; that is, in a unit elastic supply curve, a 10% increase in price yields a 10% increase in quantity; a unit elastic demand curve will have a decrease in quantity of 10% with a price decrease of 10%.

If the elasticity of demand is greater than or equal to 1, meaning that the percent change in quantity is great than the percent change in price, then the curve will be relatively flat and elastic: small price changes will have large effects on demand. If the elasticity of the demand curve is less than 1, meaning the percent change in quantity is less than the percent change in price, then the curve will be steep and inelastic: it will take a big change in price to affect demand.

Similarly, if the elasticity of supply is greater than or equal to 1, the curve will be elastic: relatively flat, with quantity supplied very responsive to changes in price. If the elasticity of the supply curve is less than 1, it will be inelastic: the curve will be flatter and quantity supplied will be less responsive to changes in price.

Remember that elasticity is an absolute value; it doesn't indicate an increase in quantity with an increase in price when you are dealing with downward-sloping curves.

Except for curves with an elasticity of 1, elasticity on straight-line curves is not constant. Why is this? As you move along the curve, the slope stays constant, so that each movement yields the same amount of increase or decrease. But as a curve shifts out, these increases or decreases make up a different percentage of the base amount, and the resulting percentage changes are therefore different at different points on the curve. Thus, unless elasticity is specifically stated to be constant on a curve, it usually changes from point to point, and so we usually only study the elasticity of demand or supply at a specific point (usually at the equilibrium point).

Note: One solution to studying elasticity over a curve, rather than at a specific point, is to calculate elasticity using the following formula:

Elasticity = (Change in quantity/Average quantity) / (Change in price/Average price)

Elasticity = $((Q1 - Q2) / ((Q1 + Q2)/2)) / ((P1 - P2) / ((P1 + P2)/2))$

This formula will give you an approximation of the elasticity over a range, instead of a point-specific elasticity, but as the range gets larger, the result becomes less and less accurate, which is why many economists prefer to use the traditional measure of elasticity.

It is a little difficult to visualize why elasticity is not constant on a straight-line graph without looking at a diagram. In , the slope of this hypothetical straight-line supply curve is constant (slope = 2), but the elasticity changes as you move along the graph. Let's assume that the price of this good is initially \$3, and then increases to \$5. In this case, the elasticity for the good can be calculated as follows:

Elasticity = (% Change in Quantity) / (% Change in Price)

Elasticity = $[(2 - 1)/1] / [(5 - 3)/3] = 3/2$

If the price increases from \$5 to \$7 however, the elasticity is calculated as follows:

Elasticity = (% Change in Quantity) / (% Change in Price)

$$\text{Elasticity} = [(3 - 2)/2] / [(7 - 5)/5] = 5/4$$

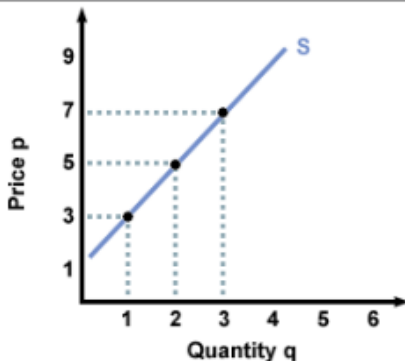


Figure 6.2.1 – Changes in Elasticity Over a Straight Line Graph

The lesson? Be careful when dealing with elasticity. Don't assume that elasticity will be constant, just because you're dealing with a straight line.

The Effects of Elasticity on Equilibrium Price and Quantity

As we already know, equilibrium price and equilibrium quantity in a given market are determined by the intersection of the supply and demand curves. Depending on the elasticities of supply and demand, the equilibrium price and quantity can behave differently with shifts in supply and demand. We can see one example of how this works if we imagine a supply curve shifting in and out along a single demand curve. If demand is very elastic, then shifts in the supply curve will result in large changes in quantity demanded and small changes in price at the equilibrium point.

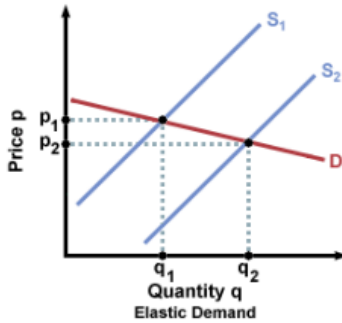


Figure 6.2.2 – Shifts in Supply with Elastic Demand

If demand is very inelastic, however, then shifts in the supply curve will result in large changes in price and small changes in quantity at the equilibrium point.

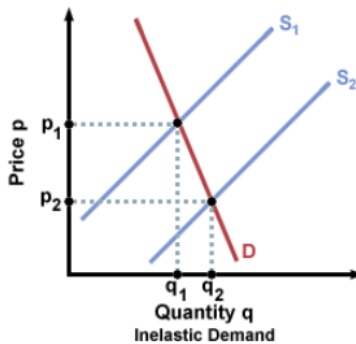


Figure 6.2.3 – Shifts in Supply with Inelastic Demand

6.3 Elasticity in the Real World.

The Substitution Effect.

We've seen how elasticity can affect changes in price and quantity in a market economy on a graph, but does this actually happen in the real world? While it is unlikely that demand for very many goods is perfectly elastic or perfectly inelastic, economists recognize that demand for certain goods will be more elastic than others, and demand for certain goods will be less elastic. So, while

the extreme cases are pretty rare, elasticity still has some effect over market behavior.

Goods with very elastic demand tend to be non-necessary goods, or goods that can be easily substituted for by other goods. When the prices of these goods go up, consumers will either decide they don't really need the goods, and won't buy any, or they will begin to substitute away from the goods, buying more of the cheaper substitutes. One possible example of a non-essential good might be candy. It is not an essential good, and if the price were to double, demand would probably fall a good deal as consumers decide they don't really need to eat candy, especially since it costs so much money. An easily substituted good might be cola. If the price of one brand of cola increases, demand will drop quickly as consumers decide to buy a competing brand, whose price has stayed the same.

Goods with very inelastic demand tend to be goods with no easy substitutes, or essential goods that consumers cannot do without. For these goods, even when the price increases, demand stays relatively steady, because consumers have no other options, and feel that they still need to buy the same amount of goods. In the short run, gasoline could be considered an inelastic good, since it is difficult to completely alter transportation patterns in an immediate response to changes in gasoline prices. (Over the long run, however, consumers may change their habits and decrease their consumption of gasoline, using public transportation or carpools, once they realize that their costs have increased permanently). Another example might be staple foods. While luxury items such as caviar or Belgian chocolates aren't essential to our diet, basics such as bread, pasta, and rice are relatively indispensable. In other words, an increase in price would have less effect on the consumption of staple foods than it would have on luxury foods.

Shifting Supply or Demand Curves.

Another way in which elasticity takes on practical meaning is through the impact of shifting supply or demand curves. Shifts in one curve can have drastically different effects, depending on how elastic or inelastic the other curve is. For instance, let's take another look at

the market for gasoline. Because demand is relatively inelastic, at least in the short run, when OPEC decides to tighten up supply and send less oil to the U.S., the inward shift in the supply curve causes much higher prices, with a slight drop in quantity consumed.

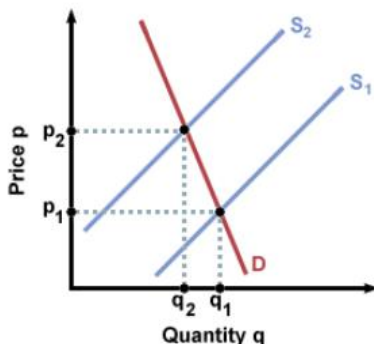


Figure 6..3.1 – The Effects of Tightened Oil Supply on the Market for Gasoline

Why is this? Because American consumers are not willing to significantly cut their gasoline consumption in the short run (meaning they are very inelastic in the short run) a shift in the supply curve affects the price much more than the quantity. A powerful general rule can be gleaned from this example: if one curve (whether supply or demand) is inelastic, shifts in the complementary curve (whether demand or supply) affect price more than quantity; on the flip side, if one curve is elastic, shifts in the other curve affect quantity more than price.

Practically speaking, the government often has to take such effects into consideration before making policy changes. For example, if the government's goal is to limit imports in order to promote domestic industry, it must first consider whether its policy will have the desired effect. If demand for imports is inelastic, an increased tariff on imports will only result in increased prices without a significant drop in quantity of imports consumed, which does not benefit domestic producers and only results in angry domestic consumers.

Theme 7 BASES OF BEHAVIOR OF SUBJECTS OF MARKET ECONOMY

7.1 Monopolies & Oligopolies.

Introduction to Monopolies and Oligopolies.

In the news lately, stories of the big bad monopolies abound. We constantly hear of government regulation in software, utilities, transportation, and financial institutions. The justice department closely scrutinizes mergers and acquisitions so that firms don't end up with too much market power. All of this begs the question, what's the big deal? Where does our fear of monopolies originate? After all, in a free market economy, there is no coercion. Presumably, the economy is still driven solely by mutually beneficial exchange whether one firm exists or many.

Thus far in our treatment of economics, we have assumed that there exist a large number of firms in a market. This assumption enabled us to treat firms as price takers, since no firm in particular had any more market power than any other. In this Sparknote, we will investigate the impact of a relaxation of the multiple firms assumption on equilibrium. We will demonstrate the importance of the assumption in our understanding of perfect competition.

In the first section, we will define a monopoly and walk through the mechanics behind calculating equilibrium in a monopolistic market. We will also investigate the monopoly's impact on social welfare. In the second section, we extend the model of a monopoly to 2 firms and then to n firms. We define the assumptions underlying Cournot, Bertrand, and Stackelberg duopolies. We then walk through examples designed to clarify the mechanics behind the various models of duopoly, and generalize to the n firm case in a Cournot framework.

Monopolies.

Pure Monopolies and Natural Monopolies

Pure Monopolies

A pure monopoly is a firm that satisfies the following conditions:

1. It is the only supplier in the market.
2. There is no close substitute to the output good.
3. There is no threat of competition.

In practice, pure monopolies are very rare. For instance, a supermarket may be the only food supplier in a particular town, but if it raises its prices and retains too much of a profit, a competitor may enter the space. Even the threat of serious competition entering the market forces the existing firm to act conscientiously, and differently from how it would act otherwise. A train company may be the only carrier in a particular station, but if cars are also available in the area, there exists a close substitute to the output good.

Natural Monopoly.

A natural monopoly is a firm with such extreme economies of scale that once it begins creating a certain level of output, it can produce more at a far lower cost than any smaller competitor. Natural monopolies exist far more frequently than pure monopolies, mainly because the requirements are not as stringent.

Natural monopolies occur when, for whatever reason, the average cost curves decline over a relevant span of output quantities. A firm with high fixed costs relative to its marginal costs will have declining average costs for a significant span of quantities. A firm with a decreasing marginal cost structure will also have declining average costs. For example, utilities and software are two industries where natural monopolies occur often.

7.2 Duopolies and Oligopolies.

Overview.

Monopoly power comes from a firm's ability to set prices. This ability is dictated by the shape of the demand curve facing that firm. If the firm faces a downward sloping demand curve, it is no longer a price taker but rather a price setter. In our perfect competition model, we assume there exist multiple participants, and because there are so many participants, the slice of the demand curve each firm sees is but a flat line. These firms are price takers.

There is a medium between monopoly and perfect competition in which only a few firms exist in a market. None of these firms faces the entire demand curve in the way a monopolist would, but each does have some power to set prices. A small collection of firms who dominate a market is called an oligopoly. A duopoly is a special case of an oligopoly, in which only two firms exist.

Duopolies.

We will begin our discussion with an investigation of duopolies. For the following duopoly examples, we will assume the following:

The two firms produce homogeneous and indistinguishable goods.

There are no other firms in the market who produce the same or substitute goods.

No other firms can or will enter the market.

Collusive behavior is prohibited. Firms cannot act together to form a cartel.

There exists one market for the produced goods.

Bertrand Duopoly.

The Bertrand duopoly Model, developed in the late nineteenth century by French economist Joseph Bertrand, changes the choice of strategic variables. In the Bertrand model, rather than choosing how much to produce, each firm chooses the price at which to sell its goods.

Rather than choosing quantities, the firms choose the price at which they sell the good.

All firms make this choice simultaneously.

Firms have identical cost structures.

The model is restricted to a one-stage game. Firms choose their prices only once.

Although the setup of the Bertrand Model differs from the Cournot model only in the strategic variable, the two models yield surprisingly different results. Whereas the Cournot model yields equilibriums that fall somewhere in between the monopolistic

outcome and the free market outcome, the Bertrand model simply reduces to the competitive equilibrium, where profits are zero. Rather than take you through a series of convoluted equations to derive this result, we will simply show there could be no other outcome.

The Bertrand equilibrium is simply the no profit equilibrium. First, we will demonstrate that the Bertrand outcome is indeed an equilibrium. Imagine a market in which two identical firms sell at market price P , the competitive price at which neither firm earns profits. Implicit in our argument is our assumption that at equal price, each firm will sell to half the market. If Firm 1 were to raise its price above the market price P , Firm 1 would lose all its sales to Firm 2 and would have to exit the market. If Firm 1 were to lower its price below P , it would be operating below cost and therefore at a loss overall. At the competitive outcome, Firm 1 cannot increase profits by changing its price in either direction. By the same logic, Firm 2 has no incentive to change prices. Therefore, the no profit outcome is an equilibrium, in fact a Nash equilibrium, in the Bertrand model.

We now demonstrate uniqueness of the Bertrand equilibrium. Naturally, there can be no equilibrium where profits are negative. In this case, all firms would operate at a loss and exit the market. It remains to be shown that there is no equilibrium where profits are positive. Imagine a market in which two identical firms sell at market price P , which is greater than cost. If Firm 1 were to raise its price above the market price P , Firm 1 would lose all its sales to Firm 2. However, if Firm 1 were to lower its price ever so slightly below P (while still remaining above MC), it would capture the entire market at a profit. Firm 2 is faced with the same incentives, so Firm 1 and Firm 2 would undercut each other until profits are driven to zero. Therefore no equilibrium exists when profits are positive in the Bertrand model.

Modul III BASES OF THE THEORY OF MACROECONOMIC AND INTERNATIONAL ECONOMY

Theme 8 MAIN MACROECONOMIC INDICATORS

8.1 Introduction and Summary.

Macroeconomists use a variety of different observational means in their effort to study and explain how the economy as a whole functions and changes over time. One such method relies on personal experience. It is relatively simple to notice that your company is producing more than it has in the past or that a paycheck does not go as far as it used to. Yet while personal observations do provide information about the economy, that information can often be localized rather than universal, and may not accurately reflect the state of the economy as a whole.

In order to move beyond the limitations inherent in personal experiences, macroeconomists begin by systematically measuring the basic elements of the economy in order to derive standard and comprehensive statistics. This data provides information about the entire economy rather than simply about a single household or firm. Two of the most fundamental elements macroeconomists study are the total output of an economy (GDP) and the cost of living within an economy (CPI). Gross domestic product, or GDP, is an indicator of economic performance that measures the market value of goods and services produced within a country. This measurement is of great importance to consumers since it also equals the total income within an economy. The consumer price index, or CPI, is a cost of living indicator; it measures the total cost of goods and services purchased by a typical consumer within a country. This index allows economists and consumers to see just how much purchasing power a dollar yields, and to compare that power between different years and eras. Together, GDP and CPI show how much income exists within an economy and how much this income can purchase.

The concepts of GDP and CPI open the door to a scientific understanding of the functioning of the economy on a large, or

macro, level. These are the most basic tools of measurement used by macroeconomists, policy makers, and consumers to understand and describe the economy. In fact, GDP and CPI are published and discussed regularly in the media. Through understanding the concepts of GDP and CPI, the world of macroeconomics begins to unfold.

8.2 Gross Domestic Product (GDP).

The Gross Domestic Product measures the value of economic activity within a country. Strictly defined, GDP is the sum of the market values, or prices, of all final goods and services produced in an economy during a period of time. There are, however, three important distinctions within this seemingly simple definition:

GDP is a number that expresses the worth of the output of a country in local currency. GDP tries to capture all final goods and services as long as they are produced within the country, thereby assuring that the final monetary value of everything that is created in a country is represented in the GDP. GDP is calculated for a specific period of time, usually a year or a quarter of a year.

Taken together, these three aspects of GNP calculation provide a standard basis for the comparison of GDP across both time and distinct national economies.

Computing GDP.

Now that we have an idea of what GDP is, let's go over how to compute it. We know that in an economy, GDP is the monetary value of all final goods and services produced. For example, let's say Country B only produces bananas and backrubs.

Table 8.2.1 = Goods and Services Produced in Country B

| Year | Price of bananas | Quantity of bananas | Price of backrubs | Quantity of backrubs |
|------|------------------|---------------------|-------------------|----------------------|
| 1 | 1\$ | 5 | 6\$ | 5 |
| 2 | 1\$ | 10 | 6\$ | 7 |
| 3 | 2\$ | 10 | 6\$ | 9 |

In year 1 they produce 5 bananas that are worth \$1 each and 5 backrubs that are worth \$6 each. The GDP for the country in this year equals (quantity of bananas X price of bananas) + (quantity of backrubs X price of backrubs) or $(5 \times \$1) + (5 \times \$6) = \$35$. As more goods and services are produced, the equation lengthens. In general, $GDP = (\text{quantity of A} \times \text{price of A}) + (\text{quantity of B} \times \text{price of B}) + (\text{quantity of whatever} \times \text{price of whatever})$ for every good and service produced within the country.

In the real world, the market values of many goods and services must be calculated to determine GDP. While the total output of GDP is important, the breakdown of this output into the large structures of the economy can often be just as important. In general, macroeconomists use a standard set of categories to breakdown an economy into its major constituent parts; in these instances, GDP is the sum of consumer spending, investment, government purchases, and net exports, as represented by the equation:

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

Because in this equation Y captures every segment of the national economy, Y represents both GDP and the national income. This because when money changes hands, it is expenditure for one party and income for the other, and Y, capturing all these values, thus represents the net of the entire economy.

Let's briefly examine each of the components of GDP.

Consumer spending, C, is the sum of expenditures by households on durable goods, nondurable goods, and services. Examples include clothing, food, and health care.

Investment, I, is the sum of expenditures on capital equipment, inventories, and structures. Examples include machinery, unsold products, and housing.

Government spending, G, is the sum of expenditures by all government bodies on goods and services. Examples include naval ships and salaries to government employees.

Net exports, NX, equals the difference between spending on domestic goods by foreigners and spending on foreign goods by

domestic residents. In other words, net exports describes the difference between exports and imports.

GDP vs. GNP.

GDP is just one way of measuring the total output of an economy. Gross National Product, or GNP, is another method. GDP, as said earlier, is the sum value of all goods and services produced within a country. GNP narrows this definition a bit: it is the sum value of all goods and services produced by permanent residents of a country regardless of their location. The important distinction between GDP and GNP rests on differences in counting production by foreigners in a country and by nationals outside of a country. For the GDP of a particular country, production by foreigners within that country is counted and production by nationals outside of that country is not counted. For GNP, production by foreigners within a particular country is not counted and production by nationals outside of that country is counted. Thus, while GDP is the value of goods and services produced within a country, GNP is the value of goods and services produced by citizens of a country.

For example, in Country B, represented in , bananas are produced by nationals and backrubs are produced by foreigners. Using figure 1, GDP for Country B in year 1 is $(5 \times \$1) + (5 \times \$6) = \$35$. GNP for country B is $(5 \times \$1) = \5 , since the \$30 from backrubs is added to the GNP of the foreigners' country of origin.

The distinction between GDP and GNP is theoretically important, but not often practically consequential. Since the majority of production within a country is by nationals within that country, GDP and GNP are usually very close together. In general, macroeconomists rely on GDP as the measure of a country's total output.

Real GDP vs. Nominal GDP.

In order to deal with the ambiguity inherent in the growth rate of GDP, macroeconomists have created two different types of GDP, nominal GDP and real GDP.

Nominal GDP is the sum value of all produced goods and services at current prices. This is the GDP that is explained in the

sections above. Nominal GDP is more useful than real GDP when comparing sheer output, rather than the value of output, over time.

Real GDP is the sum value of all produced goods and services at constant prices. The prices used in the computation of real GDP are gleaned from a specified base year. By keeping the prices constant in the computation of real GDP, it is possible to compare the economic growth from one year to the next in terms of production of goods and services rather than the market value of these goods and services. In this way, real GDP frees year-to-year comparisons of output from the effects of changes in the price level.

The first step to calculating real GDP is choosing a base year. For example, to calculate the real GDP for in year 3 using year 1 as the base year, use the GDP equation with year 3 quantities and year 1 prices. In this case, real GDP is $(10 \times \$1) + (9 \times \$6) = \$64$. For comparison, the nominal GDP in year 3 is $(10 \times \$2) + (9 \times \$6) = \$74$. Because the price of bananas increased from year 1 to year 3, the nominal GDP increased more than the real GDP over this time period.

GDP Deflator.

When comparing GDP between years, nominal GDP and real GDP capture different elements of the change. Nominal GDP captures both changes in quantity and changes in prices. Real GDP, on the other hand, captures only changes in quantity and is insensitive to the price level. Because of this difference, after computing nominal GDP and real GDP a third useful statistic can be computed. The GDP deflator is the ratio of nominal GDP to real GDP for a given year minus 1. In effect, the GDP deflator illustrates how much of the change in the GDP from a base year is reliant on changes in the price level.

For example, let's calculate, using , the GDP deflator for Country B in year 3, using year 1 as the base year. In order to find the GDP deflator, we first must determine both nominal GDP and real GDP in year 3.

$$\text{Nominal GDP in year 3} = (10 \times \$2) + (9 \times \$6) = \$74$$

Real GDP in year 3 (with year 1 as base year) = $(10 \times \$1) + (9 \times \$6) = \$64$

The ratio of nominal GDP to real GDP is $(\$74 / \$64) - 1 = 16\%$.

This means that the price level rose 16% from year 1, the base year, to year 3, the comparison year.

Rearranging the terms in the equation for the GDP deflator allows for the calculation of nominal GDP by multiplying real GDP and the GDP deflator. This equation demonstrates the unique information shown by each of these measures of output. Real GDP captures changes in quantities. The GDP deflator captures changes in the price level. Nominal GDP captures both changes in prices and changes in quantities. By using nominal GDP, real GDP, and the GDP deflator you can look at a change in GDP and break it down into its component change in price level and change in quantities produced.

GDP Per Capita.

GDP is the single most useful number when describing the size and growth of a country's economy. An important thing to consider, though, is how GDP is connected with standard of living. After all, to the citizens of a country, the economy itself is less important than the standard of living that it provides.

GDP per capita, the GDP divided by the size of the population, gives the amount of GDP that each individual gets, on average, and thereby provides an excellent measure of standard of living within an economy. Because GDP is equal to national income, the value of GDP per capita is therefore the income of a representative individual. This number is connected directly to standard of living. In general, the higher GDP per capita in a country, the higher the standard of living.

GDP per capita is a more useful measure than GDP for determining standard of living because of differences in population across countries. If a country has a large GDP and a very large population, each person in the country may have a low income and thus may live in poor conditions. On the other hand, a country may

have a moderate GDP but a very small population and thus a high individual income. Using the GDP per capita measure to compare standard of living across countries avoids the problem of division of GDP among the inhabitants of a country.

8.3 Consumer Price Index (CPI).

The consumer price index or CPI is a more direct measure than per capita GDP of the standard of living in a country. It is based on the overall cost of a fixed basket of goods and services bought by a typical consumer, relative to price of the same basket in some base year. By including a broad range of thousands of goods and services with the fixed basket, the CPI can obtain an accurate estimate of the cost of living. It is important to remember that the CPI is not a dollar value like GDP, but instead an index number or a percentage change from the base year.

Constructing the CPI.

Each month, the Bureau of Labor Statistics publishes an updated CPI. While in practice this is a rather daunting task that requires the consideration of thousands of items and prices, in theory computing the CPI is simple.

The CPI is computed through a four-step process.

The fixed basket of goods and services is defined. This requires figuring out where the typical consumer spends his or her money. The Bureau of Labor Statistics surveys consumers to gather this information.

The prices for every item in the fixed basket are found. Since the same basket of goods and services is used across a number of time periods to determine changes in the CPI, the price for every item in the fixed basket must be found for every point in time.

The cost of the fixed basket of goods and services must be calculated for each time period. Like computing GDP, the cost of the fixed basket of goods and services is found by multiplying the quantity of each item times its price.

A base year is chosen and the index is computed. The price of the fixed basket of goods and services for each comparison year is

then divided by the price of the fixed basket of goods in the base year. The result is multiplied by 100 to give the relative level of the cost of living between the base year and the comparison years.

Table 8.3.1 – Goods and Services Consumed in Country B

| Time | Price of bananas | Price of backrubs |
|------|------------------|-------------------|
| 1 | 1\$ | 6\$ |
| 2 | 2\$ | 7\$ |
| 3 | 3\$ | 8\$ |

For example, let's compute the CPI for Country B. In this simplified example, consumers in Country B only purchase bananas and backrubs (lucky fools). The first step is to fix the basket of goods. The typical consumer in Country B purchases 5 bananas and 2 backrubs in a given period of time, so our fixed basket is 5 bananas and 2 backrubs. The second step is to find the prices of these items for each time period. This data is reported in the table, above. The third step is to compute the basket's cost for each time period. In time period 1 the fixed basket costs $(5 \times \$1) + (2 \times \$6) = \$17$. In time period 2 the fixed basket costs $(5 \times \$2) + (2 \times \$7) = \$24$. In time period 3 the fixed basket costs $(5 \times \$3) + (2 \times \$8) = \$31$. The fourth step is to choose a base year and to compute the CPI. Since any year can serve as the base year, let's choose time period 1. The CPI for time period 1 is $(\$17 / \$17) \times 100 = 100$. The CPI for time period 2 is $(\$24 / \$17) \times 100 = 141$. The CPI for time period 3 is $(\$31 / \$17) \times 100 = 182$. Since the price of the goods and services that comprise the fixed basket increased from time period 1 to time period 3, the CPI also increased. This shows that the cost of living increased across this time period.

Changes in the CPI over time.

As we have just seen, the CPI changes over time as the prices associated with the items in the fixed basket of goods change. In the example just explored, the CPI of Country B increased from 100 to 141 to 182 from time period 1 to time period 3. The percent change in the price level from the base year to the comparison year is

calculated by subtracting 100 from the CPI. In this example, the percent change in the price level from the base period (time period 1) to time period 2 is $141 - 100 = 41\%$. The percent change in the price level from time period 1 to time period 3 is $182 - 100 = 82\%$. In this way, changes in the cost of living can be calculated across time.

Problems with the CPI.

While the CPI is a convenient way to compute the cost of living and the relative price level across time, because it is based on a fixed basket of goods, it does not provide a completely accurate estimate of the cost of living. Three problems with the CPI deserve mention: the substitution bias, the introduction of new items, and quality changes. Let's examine each of these in detail.

Theme 9 THE MONEY MARKET. THE MONETARY AND CREDIT SYSTEM

9.1 Functions of Money.

Try to imagine an economy without money. Without money, it would be almost impossible to carry out the usual day to day business of life. For instance, if you wanted to buy a hamburger without cash, you would have to give the restaurant something else in return. Perhaps you could wash the dishes, or sweep the floor. Either way, the ability to pay for goods and services with money greatly simplifies consumer life and eliminates the necessity of bartering goods and services for other goods and services.

What exactly does money do? Sure, you can buy things with it and save it, but how does it function within the economy? There are four basic functions of money: the first is as a medium of exchange, the second is as a unit of account, the third is as a store of value, the fourth is as liquidity.

By understanding each of these functions, it is possible to see how important money is to the economy.

The most obvious function of money is as a medium of exchange. When you hand the waiter a five-dollar bill in exchange for your hamburger, you are using money as a medium of exchange. You might have a hard time paying for your hamburger with five dollars worth of apples, but if you did, the apples would serve as a medium of exchange as well. To simplify, a medium of exchange is something that buyers give to sellers in exchange for goods and services. Perhaps money's most compelling advantage is that it is a commonly recognized and universally accepted medium of exchange. This allows anyone with money to walk into any restaurant with the confidence that the waiter or clerk will take your cash in exchange for goods or services. This would likely not be the case with a basket full of apples.

The second function of money, as a unit of account, is rather obvious, but you may never have considered it before. When you walk into a restaurant, the menu tells you that a hamburger costs \$5

and a steak costs \$15. You know what this means and are able to compare these prices. If, on the other hand, apples and oranges were used as units of account, comparison between the costs of goods and services would be much more difficult. Imagine trying to determine what costs more, a hamburger costing 25 apples or a steak costing 30 oranges. As a unit of account, money serves as the common base of comparison that people use to present prices and record debts. Without a common unit of account, these tasks would be much more difficult.

The third function of money, as a store of value, is one that we all know well. When you work, you are paid a wage. The portion of that wage that you do not spend gets saved. By saving money, you are able to spend some now and some later. In this way, money serves as a store of value, allowing you to trade current consumption for future consumption. Imagine if you were paid in bananas. Any bananas that you did not eat or trade immediately would rot, rendering you unable to enjoy the fruits of your labor at a later time.

The fourth and final function of money, as a means of liquidity, is important for an economy to move beyond a simple system of bartering. Imagine that you have 30 apples, and you really want a steak. You walk to the local restaurant and ask the waiter if you can trade 30 apples for a steak. He informs you that they have plenty of apples, but could use some oranges. Frustrated and hungry, you walk out of the restaurant. In this example, apples lacked liquidity since they could not easily be traded for what you wanted. Liquidity describes the ease with which an item can be traded for something that you want, or into the common currency within an economy. Money is the most liquid asset because it is universally recognized and accepted as the common currency. In this way, money gives consumers the freedom to trade goods and services easily without having to barter.

9.2 Types of Money.

Money comes in a number of different forms. In the preceding section, we saw apples and oranges used as money. When

something with intrinsic value, like precious metals, is used as money, it is called commodity money. It is interesting to think about the enormous variety of goods that can serve as commodity money. Basically, anything that can fulfill the four functions of money, to some degree, can be used as commodity money.

Barter economies depend on commodity money. When something lacking intrinsic value is used as money, it is called fiat money. This system only works if a government backs the fiat money and regulates its production. In most countries, the cash or currency is a form of fiat money. The advent of fiat money is a great convenience in many ways-- imagine trying to carry a week's pay in apples and oranges.

9.3 Value of money.

What gives money value? We know that intrinsically, a dollar bill is just worthless paper and ink. However, the purchasing power of a dollar bill is much greater than that of another piece of paper of similar size. From where does this power originate?

Like most things in economics, there is a market for money. The supply of money in the money market comes from the Fed. The Fed has the power to adjust the money supply by increasing or decreasing the number of bills in circulation. Nobody else can make this policy decision. The demand for money in the money market comes from consumers.

The determinants of money demand are infinite. In general, consumers need money to purchase goods and services. If there is an ATM nearby or if credit cards are plentiful, consumers may demand less money at a given time than they would if cash were difficult to obtain. The most important variable in determining money demand is the average price level within the economy. If the average price level is high and goods and services tend to cost a significant amount of money, consumers will demand more money. If, on the other hand, the average price level is low and goods and services tend to cost little money, consumers will demand less money.

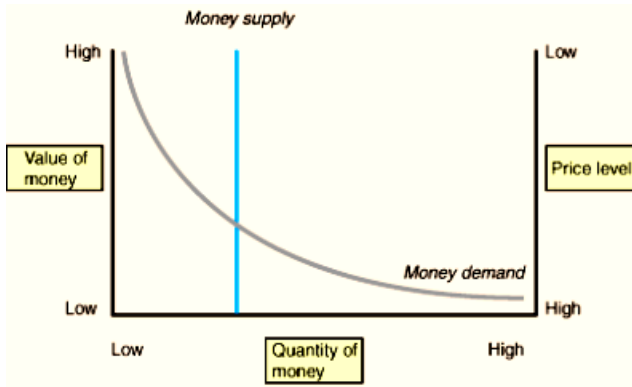


Figure 9.3.1 – Sample money market

The value of money is ultimately determined by the intersection of the money supply, as controlled by the Fed, and money demand, as created by consumers. Figure 1 depicts the money market in a sample economy. The money supply curve is vertical because the Fed sets the amount of money available without consideration for the value of money. The money demand curve slopes downward because as the value of money decreases, consumers are forced to carry more money to make purchases because goods and services cost more money. Similarly, when the value of money is high, consumers demand little money because goods and services can be purchased for low prices. The intersection of the money supply curve and the money demand curve shows both the equilibrium value of money as well as the equilibrium price level.

The value of money, as revealed by the money market, is variable. A change in money demand or a change in the money supply will yield a change in the value of money and in the price level. Notice that the change in the value of money and the change in the price level are of the same magnitude but in opposite directions. An increase in the money supply is depicted in Figure 2. Notice that the new intersection of the money supply curve and the money demand curve is at a lower value of money but a higher price level. This happens because more money is in circulation, so each bill

becomes worth less. It takes more bills to purchase goods and services, and thus the price level increases accordingly.

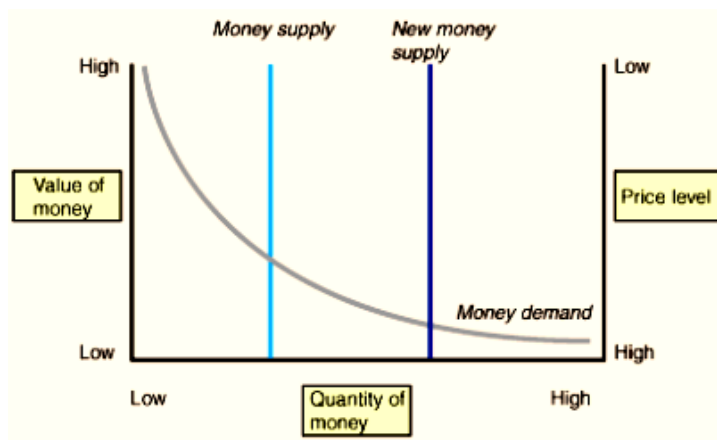


Figure 9.3.2 – Sample shift in the money market

The quantity theory of money is based directly on the changes brought about by an increase in the money supply. The quantity theory of money states that the value of money is based on the amount of money in the economy. Thus, according to the quantity theory of money, when the Fed increases the money supply, the value of money falls and the price level increases. In the SparkNote on inflation we learned that inflation is defined as an increase in the price level. Based on this definition, the quantity theory of money also states that growth in the money supply is the primary cause of inflation.

9.4 Velocity.

While the relationship between money supply, money demand, the price level, and the value of money presented above is accurate, it is a bit simplistic. In the real world economy, these factors are not connected as neatly as the quantity theory of money and the basic money market diagram present. Rather, a number of

variables mediate the effects of changes in the money supply and money demand on the value of money and the price level.

The most important variable that mediates the effects of changes in the money supply is the velocity of money. Imagine that you purchase a hamburger. The waiter then takes the money that you spent and uses it to pay for his dry cleaning. The dry cleaner then takes that money and pays to have his car washed. This process continues until the bill is eventually taken out of circulation. In many cases, bills are not removed from circulation until many decades of service. In the end, a single bill will have facilitated many times its face value in purchases.

Velocity of money is defined simply as the rate at which money changes hands. If velocity is high, money is changing hands quickly, and a relatively small money supply can fund a relatively large amount of purchases. On the other hand, if velocity is low, then money is changing hands slowly, and it takes a much larger money supply to fund the same number of purchases.

As you might expect, the velocity of money is not constant. Instead, velocity changes as consumers' preferences change. It also changes as the value of money and the price level change. If the value of money is low, then the price level is high, and a larger number of bills must be used to fund purchases. Given a constant money supply, the velocity of money must increase to fund all of these purchases. Similarly, when the money supply shifts due to Fed policy, velocity can change. This change makes the value of money and the price level remain constant.

The relationship between velocity, the money supply, the price level, and output is represented by the equation $M * V = P * Y$ where M is the money supply, V is the velocity, P is the price level, and Y is the quantity of output. $P * Y$, the price level multiplied by the quantity of output, gives the nominal GDP. This equation can thus be rearranged as $V = (\text{nominal GDP}) / M$. Conceptually, this equation means that for a given level of nominal GDP, a smaller money supply will result in money needing to change hands more

quickly to facilitate the total purchases, which causes increased velocity.

The equation for the velocity of money, while useful in its original form, can be converted to a percentage change formula for easier calculations. In this case, the equation becomes (percent change in the money supply) + (percent change in velocity) = (percent change in the price level) + (percent change in output). The percentage change formula aids calculations that involve this equation by ensuring that all variables are in common units.

The velocity equation can be used to find the effects that changes in velocity, price level, or money supply have on each other. When making these calculations, remember that in the short run, output (Y), is fixed, as time is required for the quantity of output to change.

Let's try an example. What is the effect of a 3% increase in the money supply on the price level, given that output and velocity remain relatively constant? The equation used to solve this problem is (percent change in the money supply) + (percent change in velocity) = (percent change in the price level) + (percent change in output). Substituting in the values from the problem we get $3\% + 0\% = x\% + 0\%$. In this case, a 3% increase in the money supply results in a 3% increase in the price level. Remember that a 3% increase in the price level means that inflation was 3%.

In the long run, the equation for velocity becomes even more useful. In fact, the equation shows that increases in the money supply by the Fed tend to cause increases in the price level and therefore inflation, even though the effects of the Fed's policy is slightly dampened by changes in velocity. This results a number of factors. First, in the long run, velocity, V, is relatively constant because people's spending habits are not quick to change. Similarly, the quantity of output, Y, is not affected by the actions of the Fed since it is based on the amount of production, not the value of the stuff produced. This means that the percent change in the money supply equals the percent change in the price level since the percent change in velocity and percent change in output are both equal to zero. Thus,

we see how an increase in the money supply by the Fed causes inflation.

Let's try another example. What is the effect of a 5% increase in the money supply on inflation? Again, we begin by using the equation (percent change in the money supply) + (percent change in velocity) = (percent change in the price level) + (percent change in output). Remember that in the long run, output not affected by the Fed's actions and velocity remains relatively constant. Thus, the equation becomes $5\% + 0\% = x\% + 0\%$. In this case, a 5% increase in the money supply results in a 5% increase in inflation.

The velocity of money equation represents the heart of the quantity theory of money. By understanding how velocity mitigates the actions of the Fed in the long run and in the short run, we can gain a thorough understanding of the value of money and inflation.

9.5 Banking.

Introduction and Summary.

You work after school and earn \$200 per week. On payday, you take your check to the bank and cash it. You put part of the money in a savings account and you put the rest in a checking account. After a number of months, you decide to purchase a car, using your money in savings plus interest and a loan from the bank.

This situation seems normal enough, but this commonly utilized chain is more complex than it would appear on the surface. It also raises some important questions. How are banks able to take money and make loans? Do banks always have enough currency in their vaults to cover the deposits? If not, where does the currency go? How do banks get money in the first place? These questions will be addressed in the following SparkNote.

In the SparkNote on money and interest rates, we learned that there is less currency in the economy than is necessary to fund all of the purchases that occur in a given period of time. This means that bills must change hands many times to make the economy turn. In effect, there is much more wealth in the economy than there is currency to cover it. How is this wealth created? Furthermore, how

much more money moves through the economy than there is currency to cover all transactions? This SparkNote will cover the topic of banking. Banks fit into the economy in a number of ways that are not necessarily apparent. We will go over these intricacies and some that are particular to the American banking system.

Business of banks.

What do banks do? We know that most banks serve to accept deposits and make loans. They act as safe stores of wealth for savers and as predictable sources of loans for borrowers. In this way, the major business of banks is that of a financial intermediary between savers and borrowers. The bank simplifies this process by eliminating the need for savers to find the right borrowers and the right time to directly make a loan.

Banks are generally trusted by the public. When people put their savings into banks, they receive little more than a paper receipt in return. There are two organizations in place to ensure that banks are trustworthy with individuals' money and reasonable in the loans that they make. The Federal Deposit Insurance Corporation guarantees that deposits, up to \$100,000 per account, will be returned to the depositor, even if the bank fails. Individual banks also have a board of directors to regulate the sizes and interest rates of loans the bank makes. This board is charged with ensuring that the bank is taking reasonable risks with its depositors' money.

Banks serve another important role. When you look at a check or a debit card you will usually see the name of a bank. Individual banks serve as the issuing and regulating bodies for many financial services often employed by consumers. In this way, banks are able to give depositors access to their money while also maintaining a large number of loans.

What happens when you deposit money into a bank? First, the money is recorded (usually by computer) and added to your account. It is then placed into the vault. At various times during the day, money is removed from the vault and taken to a second bank. This bank, unlike the first, does not serve individuals. It is a "banks' bank," usually a branch of the Federal Reserve. The first bank is able

to make deposits, withdrawals, and take out loans from the second bank.

When you walk into a bank to withdraw money or to take out a loan, the reverse of the process outlined above occurs. If the first bank does not have enough money in the vault to cover the withdrawal or the loan, the first bank goes to the second bank and withdraws money. If the first bank does not have enough money in its account at the second bank, then it must take out a loan at a lower rate of interest than the loan that it will eventually give to the individual borrower. In this way, a bank is able to accept deposits, honor withdrawals, and make loans without having to maintain all of the deposited cash on hand in the vault.

How do banks make money? As financial intermediaries, they earn enough to support their activities by the difference between the interest rate paid to savers and the interest rate charged on loans. When customers make deposits in a savings account, they earn interest on the principle. Similarly, when customers take out loans, they pay interest on the principle. By charging the borrower a slightly higher interest rate than that which is given to the depositor, a bank is able to cover its expenses.

Creation of money.

Banks serve another very important purpose involving the creation of money. To begin, let's go to a simplified world where banks only serve as a safe place to store money. They do not make loans and do not pay interest. Also, let's say that the money supply is only \$1000. In this case, if a bank held \$100 in deposits, the money supply would simply be \$900 since the \$100 in the bank would no longer be in circulation. When the depositor withdrew the \$100 deposit and spent it, the money supply would again increase to \$1000. This system is called a 100% reserve banking system because a bank holds 100% of all of the deposits made.

In the real world though, banks are required to hold significantly less than 100% of the deposits in reserve. A bank can make loans, which are then redeposited, and can then be loaned out again; this, in essence, creates money. In this way, any banking

system with less than 100% required reserves effectively increases the money supply. This system is called fractional reserve banking because banks hold less than 100% or a fraction of the deposits in reserve.

For example, let's say that an economy has a money supply equal to \$1000 and that there is a reserve requirement of 50%. If all \$1000 is deposited into a bank, half of this amount must be held as reserves to cover withdrawals and half of this amount can be used to make loans. Say the bank gives out \$500 in loans. The money is spent and eventually redeposited in the bank. Now, the bank has \$1500 deposited. Only \$1000 of this amount is in currency. The other \$500 is owed to the bank and exists in a form known as a paper balance. The bank has \$1500 in deposits, and since it is required to keep half in reserves, it must keep \$750 in currency. This leaves only \$250 in currency available for loan seekers. This process continues and real balances are replaced by paper balances until the bank can no longer make loans because all of its currency must be kept in real balances.

This action by banks can also be illustrated using a balance sheet procedure. A balance sheet is an accounting tool that lists assets and liabilities. For a bank, reserves and loans serve as assets because they are money that the bank has, or has coming. Deposits, on the other hand, are liabilities; they are money that the bank owes. When creating a balance sheet, the assets are listed on the left and the liabilities are listed on the right.

We can model the example of fractional reserve banking presented above using a balance sheet procedure. This is done in figure 9.5.1. To begin, list the assets and the liabilities of the bank after \$1000 is deposited and \$500 is loaned out. Remember that the reserve rate is 50%, so \$500 must be held back in reserves and the rest may be loaned out. Given that this money is deposited into the bank again rather than stored in a mattress, the liability of deposits increases by \$500 to \$1500 while the reserves increase by \$250 to \$750. The bank now has \$250 with which to make loans. Given that it loans out the entire amount, which is then deposited again, the

liability of deposits increases by \$250 to \$1750. Furthermore, the assets of loans increase to \$750 and the assets of reserves increase to \$875. This process continues until the reserve amount is equal to the total amount of the money supply. Until that time, each loan that is made and redeposited increases the money supply.

| First loan cycle: \$1000 is deposited and a loan for \$500 is made | |
|--|------------------|
| Assets | Liabilities |
| Reserves= \$500 | Deposits= \$1000 |
| Loans= \$500 | |
| Second loan cycle: \$500 loan from first cycle is deposited and a loan for \$250 is made | |
| Assets | Liabilities |
| Reserves= \$750 | Deposits= \$1500 |
| Loans= \$750 | |
| Third loan cycle: \$250 loan from second cycle is deposited and a loan for \$125 is made | |
| Assets | Liabilities |
| Reserves= \$875 | Deposits= \$1750 |
| Loans= \$875 | |
| The cycles continue until the reserves required equal the initial \$1000 deposit | |

Figure 9.5.1 – Balance Sheet for a Bank

Money multiplier.

The process of money creation by banks continues until no more loans can be made due to reserve requirements. Each time a loan is made and redeposited, the possible amount of next loan shrinks. There is an easy way to determine the total money supply created by an initial deposit. Simply multiply the initial deposit by

one over the reserve rate. Then, to find the amount of money created by the bank, simply subtract the initial deposit from this figure.

For example, say that \$2000 is initially deposited into a bank and the reserve requirement is 20%. What is the change in the money supply created by this deposit? First multiply the initial deposit by one over the reserve rate. This gives $\$2000 * (1 / .2) = \$10,000$. Then, subtract the initial deposit: $\$10,000 - \$2000 = \$8000$. Thus, a \$2000 deposit yielded an \$8000 change in the money supply.

Clearly, there are many jobs and purposes for banks. By creating money, banks serve to facilitate many transactions with a relatively small initial money supply. By holding deposits and making loans, banks fulfill the needs of consumers and producers. In this way, banks are more than just financial intermediaries. Banks are in fact crucial to the functioning of the economy.

9.6 The National Bank of the Republic of Belarus.

The National Bank of the Republic of Belarus (hereinafter referred to as the "National Bank") is the central bank and a government agency of the Republic of Belarus operating exclusively in the interests of the Republic of Belarus.

In performing its activities, the National Bank shall be guided by the Constitution of the Republic of Belarus , the Banking Code of the Republic of Belarus , laws of the Republic of Belarus, regulatory legal acts of the President of the Republic of Belarus, and the Statute of the National Bank of the Republic of Belarus and shall be independent in its activities

The accountability of the National Bank to the President of the Republic of Belarus, means, inter alia, that:

The President of the Republic of Belarus approves the Statute of the National Bank and modifications and/or amendments thereto;

The President of the Republic of Belarus appoints, with the consent of the Council of the Republic of the National Assembly of the Republic of Belarus, the Chairperson and Members of the Board of the National Bank and removes them from their positions

notifying the Council of the Republic of the National Assembly of the Republic of Belarus accordingly;

The President of the Republic of Belarus designates an audit organisation to examine the activity of the National Bank; and

The President of the Republic of Belarus approves the Annual Report of the National Bank.

The main objectives of the National Bank shall be as follows:

- protecting the Belarusian ruble and ensuring its stability, including its purchasing power and the rate of exchange relative to foreign currencies;

- maintaining the stability of the banking system of the Republic of Belarus; and

- ensuring efficient, reliable, and secure functioning of the payment system.

Gaining profit shall not be the main objective of the National Bank.

Status of the National Bank

The National Bank is a legal person having its seal with the State Coat of Arms of the Republic of Belarus and an inscription "Национальный банк Республики Беларусь" (National Bank of the Republic of Belarus). Its full name is:

- in Russian – "Национальный банк Республики Беларусь";

- in Belarusian – "Нацыянальны банк Рэспублікі Беларусь";

- in English – "National Bank of the Republic of Belarus".

The National Bank comprises the main office, organizational units.

The main office of the National Bank is located at the following address:

20, Nezavisimosty Ave.,

220008 Minsk, Belarus

Functions of the National Bank

The National Bank shall perform the following functions:

- develop the Republic of Belarus Monetary Policy Guidelines and pursue, in concert with the Government of the Republic of Belarus, a unified monetary policy of the Republic of Belarus in the manner prescribed by the Banking Code and other legislative acts of the Republic of Belarus;
- carry out operations necessary for implementing the main objectives of the National Bank;
- act as the lender of last resort with respect to banks and provide refinancing thereof;
- issue money;
- issue National Bank's securities;
- create the gold reserve stock of the National Precious Metals and Precious Stones Foundation of the Republic of Belarus and manage it on a day-to-day basis within the scope of its authority;
- in consultation with the President of the Republic of Belarus, establish gold and foreign exchange reserves and manage them within the scope of its authority;
- carry out foreign exchange regulation and foreign exchange control in accordance with legislation of the Republic of Belarus;
- regulate credit relations;
- regulate and organise money circulation;
- act as a financial agent for the Government of the Republic of Belarus and local executive and administrative bodies in matters relating to the execution of the republican and local budgets;
- establish banking operations rules and procedures;
- give consent for the banks and non-bank financial institutions to engage in securities transactions in cases prescribed by legislation of the Republic of Belarus;
- coordinate the issues of securities of banks and non-bank financial institutions in cases prescribed by legislation of the Republic of Belarus;
- organise the activities of banks and non-bank financial institutions related to the issue and circulation of promissory notes, unless otherwise decreed by the President of the Republic of Belarus;

- engage in depository activities in the manner prescribed by legislation of the Republic of Belarus;
- set requirements for banks and non-bank financial institutions regarding transactions involving forward and futures contracts, options and other financial instruments;
- regulate relations arising from consolidation of monetary funds and/or securities in the bank management fund in line with the agreements of bank management fund's trust management, unless otherwise prescribed by legislative acts of the Republic of Belarus;
- prescribe procedures for cash and non-cash settlements in the Republic of Belarus, including the amount thereof, as well as for cash settlements in Belarusian rubles between legal persons, their separate divisions, and individual entrepreneurs;
- arrange for collection and transportation of cash, payment instructions, precious metals, precious stones, and other valuables;
- arrange for settlement and/or cash services to the Government of the Republic of Belarus and organizations referred to in the Statute of the National Bank, and other organizations in cases prescribed by legislative acts of the Republic of Belarus;
- prescribe procedures for opening and maintaining precious metals accounts by banks and non-bank financial institutions in the Republic of Belarus, as well as the terms and conditions of opening such accounts by residents with banks and other credit institutions outside the Republic of Belarus;
- establish, jointly with the authorized government agencies, procedures for imports and exports of precious metals and precious stones in carrying out banking operations;
- set prices for purchasing/selling precious metals and precious stones in carrying out banking operations;
- govern activities of banks and non-bank financial institutions;
- perform banking supervision;
- establish the procedures for state registration of banks and non-bank financial institutions in line with the Banking Code and

other legislative acts of the Republic of Belarus, as well as perform state registration thereof;

- carry out license banking activities;
- monitor financial stability;
- arrange for the functioning of the payments system of the Republic of Belarus and exercise supervision thereover;
- form and develop single settlement and information space, ensure functioning of automated information system of single settlement and information space;
- ensure the implementation of unified state policy in the field of accounting and reporting for the National Bank, banks, and non-bank financial institutions;
- provide the National Bank, banks and non-bank financial institutions with methodological support in the maintenance of accounting and reporting, as well as perform other powers in the sphere of accounting and reporting in accordance with legislative acts of the Republic of Belarus;
- develop and approve national financial reporting standards and other regulatory legal acts related to accounting and reporting binding on the National Bank, banks and non-bank financial institutions;
- prescribe for banks and non-bank financial institutions statistical reporting procedures in formats and within the time limits prescribed by legislation of the Republic of Belarus;
- form the statistics for the balance of payments, international investment position and the banking system's external debt, banking statistics, statistics for financial market, including domestic foreign exchange market and cash money circulation, and statistics for financial stability, as well as post statistical data on the official website of the National Bank in the global computer network Internet;
- analyze the balance of payments and participate in the development of the balance of payments' outlook by the government agencies;

- review and forecast developments in monetary relations, as well as post the relevant analytical materials on the official web-site of the National Bank in the global computer network Internet;
- monitor organisations based on carrying out regular surveys with a view to identifying tendencies in economic processes, analysing thereof and forecasting in concert with monetary policy instruments;
- implement state policy in the field of security activities of banks and non-bank financial institutions;
- establish regulatory requirements to the objects' secure functioning and safe provision of banking services for banks and non-bank financial institutions, protection of information resources and data, distribution and/or submission of which is limited, unless otherwise specified in legislative acts of the Republic of Belarus;
- set requirements to technical opportunities of banks, non-bank financial institutions, branches thereof, organisational units and remote work places with a view to carrying out banking operations, as well as perform technical normalization and standardisation in the field of banking activities;
- exercise control over security and protection of information resources in banks and non-bank financial institutions;
- specify requirements for reproducing images of banknotes and coins;
- form credit histories on the basis of the information on credit transactions provided by the sources of credit histories formation and submit credit reports to the users and entities of credit histories;
- enter into agreements with central (national) banks and credit institutions of foreign countries; and
- perform other functions prescribed by the Banking Code and other legislative acts of the Republic of Belarus.

Monetary Policy Guidelines of the Republic of Belarus

The National Bank shall perform its activities on the basis of the Monetary Policy Guidelines approved by the President of the Republic of Belarus annually.

The National Bank, in concert with the Government of the Republic of Belarus, shall annually submit the country's Monetary Policy Guidelines for the subsequent year to the President of the Republic of Belarus by October 1 of the current year.

The National Bank shall, on a quarterly basis, inform:

- the President of the Republic of Belarus and the Government of the Republic of Belarus on the volume of currency issue and on implementation of the Republic of Belarus Monetary Policy Guidelines; and

- the President of the Republic of Belarus on the amount of gold and foreign exchange reserves established in line with objectives and tasks stipulated in the Republic of Belarus Monetary Policy Guidelines.

Board of the National Bank

The management body of the National Bank shall be the Board of the National Bank, a collective body that establishes key areas of activity of the National Bank and administers and governs it.

The membership of the Board of the National Bank shall be decided by the President of the Republic of Belarus.

The competence of the Board of the National Bank and the procedures for convening the meetings thereof shall be specified in the Statute of the National Bank.

The members of the Board of the National Bank are not allowed to hold other public positions unless otherwise stipulated in the Constitution of the Republic of Belarus and other legislative acts of the Republic of Belarus, as well as belong to political parties.

Limitations specified in part three of Article 68 of the Banking Code shall be applied to the members of the Board of the National Bank.

9.7 Monetary Policy.

Money Supply and Monetary Policy.

In the SparkNote on money and interest rates we learned about the money supply. This is the starting point for understanding monetary policy. Initially we defined the money supply as the total

amount of currency held by the public. While this definition is correct, it is incomplete. In the Sparknote on Banking we learned that through a fractional reserve banking system, the money supply increases. Thus, the money supply is better defined as the total amount of currency plus deposits held by the public. This accounts for all money available as currency or demand deposits.

Simply stated, monetary policy is carried out by the Fed to change the money supply. When the Fed increases the money supply, the policy is called expansionary. When the Fed decreases the money supply, the policy is called contractionary. These policies, like fiscal policy, can be used to control the economy. Under expansionary monetary policy the economy expands and output increases. Under contractionary monetary policy the economy shrinks and output decreases. Let's investigate how the Fed affects the money supply.

There are three basic ways that the Fed can affect the money supply. The first is through open market operations. The second is by changing the reserve requirement. The third is through changing the federal funds interest rate. Each of these actions in some way affects the total amount of currency or deposits available to the public.

Open market operations are the sale and purchase of government bonds issued and regulated by the Fed. When the Fed sells government bonds, the public exchanges currency for bonds, resulting in a shrinking of the money supply. When the Fed purchases government bonds, the Fed exchanges currency for bonds, thus resulting in an increase in the money supply. Open market operations are the most common tool that the Fed uses to affect the money supply. In fact, almost every weekday government bonds are bought and sold in New York City.

The second way that the Fed can influence the money supply is through changing the reserve requirements. We learned in the SparkNote on the purpose of banks that the money multiplier shows how much an initial deposit increases the money supply after loans are made and redeposited. Recall that the money multiplier is one over the reserve requirement. Thus, if the reserve requirement is decreased, banks are required to hold fewer reserves and can then

make more loans. This in turn repeats the cycle of loan to deposit, resulting in a greater increase in the money supply. For a given initial deposit, a smaller reserve requirement will result in a larger money multiplier, and thus in a larger change in the money supply.

The third way that the Fed can influence the money supply is through changing the federal funds interest rate. As we know, banks make deposits, withdrawals, and loans from banks' banks that are usually branches of the Fed. When a bank makes many loans, its reserves are near their absolute required minimum. If a customer makes a withdrawal, banks must either recall a loan or take out a loan to pay the withdrawal while still maintaining the necessary reserves. If the Fed increases the federal funds interest rate, banks will be less likely to borrow money from the Fed and will thus be more wary of making loans to ensure that they have the necessary reserve requirements. Thus, if the federal funds interest rate is higher, banks make fewer loans, the money multiplier is not fully utilized to its end, and the change in the money supply for a given initial deposit is smaller.

Expansionary vs. Contractionary Monetary Policy.

The Fed has two basic types of monetary policy. Expansionary monetary policy increases the money supply while contractionary monetary policy decreases the money supply. Expansionary monetary policy includes purchasing government bonds, decreasing the reserve requirement, and decreasing the federal funds interest rate. Contractionary monetary policy includes selling government bonds, increasing the reserve requirement, and increasing the federal funds interest rate. Recall that the point of monetary policy is to allow the Fed to control the economy, and in particular output and inflation, through the interest rate. Monetary policy and fiscal policy are like the reins held by the Fed as it steers the big, wild horse known as the economy.

Monetary Policy and the Interest Rate.

The interest rate changes when the Fed changes monetary policy. In general, when the Fed uses expansionary monetary policy, thus expanding the money supply, the interest rate falls. The reason

for this change can be conceptualized in two ways. First, given a constant demand for money, when money is widely available in the economy due to expansionary monetary policy, the interest rate falls as people are eager to make loans and hesitant to take loans. If there is much money in the economy and constant demand for money, then the price of holding money--the interest rate--must be low. Second, when the Fed injects money into the economy by purchasing bonds from the public, decreasing the reserve requirement, or decreasing the federal funds interest rate, the demand and price for loans falls. Since the interest rate is the equilibrating factor in the market for loanable funds, a fall in the demand for loans results in a fall in the interest rate. This works in conjunction with a direct decrease in the interest rate effected by the Fed.

We can apply the reverse of the above logic to the effects of contractionary monetary policy on interest rates. Given a constant demand for money, when money is relatively scarce due to contractionary monetary policy, the interest rate rises as people are hesitant to make loans and eager to take loans. Alternatively, when the Fed takes money from the economy by selling bonds to the public, increasing the reserve requirement, or increasing the federal funds interest rate, the demand for loans rises as money becomes harder, or more expensive, to obtain. Since the interest rate is the equilibrating factor in the market for loanable funds, a rise in the demand for loans results in a rise in the interest rate. Similarly, in order to induce the public to give up their cash in exchange for bonds, the government must offer an interest rate that is more attractive than the competing rates, corrected for risk. When the government does this, the overall interest rate in the economy also increases. Again, some Fed contractionary monetary policy--like increasing the reserve requirement and increasing the federal funds interest rate--directly affects the interest rate.

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10 ECONOMIC AND A BASIS OF ITS
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10.1 Fiscal Policy.

Taxes and Government Spending.

Fiscal policy describes two governmental actions by the government. The first is taxation. By levying taxes the government receives revenue from the populace. Taxes come in many varieties and serve different specific purposes, but the key concept is that taxation is a transfer of assets from the people to the government. The second action is government spending. This may take the form of wages to government employees, social security benefits, smooth roads, or fancy weapons. When the government spends, it transfers assets from itself to the public (although in the case of weaponry, it is not always so obvious that the population holds the assets). Since taxation and government spending represent reversed asset flows, we can think of them as opposite policies.

In the first macroeconomic SparkNote on measuring the economy we learned that output, or national income, can be described by the equation $Y = C + I + G + NX$ where Y is output, or national income, C is consumption spending, I is investment spending, G is government spending, and NX is net exports. This equation can be expanded to represent taxes by the equation $Y = C(Y - T) + I + G + NX$. In this case, $C(Y - T)$ captures the idea that consumption spending is based on both income and taxes. Disposable income is the amount of money that can be spent on consumption after taxes are removed from total income. The new form of the output, or national income, equation reflects both elements of fiscal policy and is most useful for analysis of the effects of fiscal policy changes.

Types of Fiscal Policy.

The government has control over both taxes and government spending. When the government uses fiscal policy to increase the

amount of money available to the populace, this is called expansionary fiscal policy. Examples of this include lowering taxes and raising government spending. When the government uses fiscal policy to decrease the amount of money available to the populace, this is called contractionary fiscal policy. Examples of this include increasing taxes and lowering government spending.

There is another way to interpret the terms expansionary and contractionary when discussing fiscal policy. If we look at the effects of fiscal policy on the economy as a whole rather than on the individual, we see that expansionary fiscal policy increases the output, or national income, while contractionary fiscal policy decreases the output, or national income. Thus, there are two basic classes of effects of fiscal policy, those that deal with the individual and those that deal with the economy at large.

Let us first work through how expansionary fiscal policy functions. Recall that lowering taxes and raising government spending are both forms of expansionary fiscal policy. When the government lowers taxes, consumers have more disposable income. In terms of the economy as a whole, this is represented in the output equation $Y = C(Y - T) + I + G + NX$, where a decrease in T , given a stable Y , leads to an increase in C , and ultimately to an increase in Y . Raising government spending has similar effects. When the government spends more on goods and services, the population, which provides those goods and services, receives more money. In terms of the economy as a whole, this is again represented by $Y = C(Y - T) + I + G + NX$, where an increase in G leads to an increase in Y . Thus, expansionary fiscal policy makes the populace wealthier and increases output, or national income.

Let us now work through how contractionary fiscal policy functions. Recall that raising taxes and lowering government spending are both forms of contractionary fiscal policy. When the government raises taxes, consumers are forced to put a larger portion of their income toward taxes, and thus disposable income falls. In terms of the economy as a whole, this is represented by $Y = C(Y - T) + I + G + NX$ where an increase in T results in a decrease in Y ,

holding all other variables fixed. When the government reduces government spending, the recipients of government spending, the populace, have less disposable income. In terms of the economy as whole, this is represented by $Y = C(Y - T) + I + G + NX$ where a decrease in G results in a decrease in Y . Contractionary fiscal policy makes the populace less wealthy and decreases output, or national income.

Fiscal Policy Multipliers.

While expansionary and contractionary fiscal policy both directly affect the national income, the ultimate change in output is not always equal to the policy change. That is, there are factors that increase or decrease the efficacy of fiscal policy. These factors are called multipliers. In particular, there are two types of multipliers. There are tax multipliers and government spending multipliers. Each of these will be discussed in detail in the proceeding paragraphs.

Tax multipliers are based on the population's willingness to consume. The marginal propensity to consume, or MPC, is a measure of that willingness. It is defined as the amount of an additional dollar of income that a consumer will spend on goods and services. The MPC can have a value between 0 and 1. A small MPC represents a large amount of savings and a small amount of consumption. A large MPC represents a small amount of savings and a large amount of consumption. When a tax decrease occurs, consumers will spend part of the money and save part of it. Therefore, the actual change in national income as a result of a change in tax policy is equal to [(+ or -) change in taxes * - MPC] / (1 - MPC). The resulting number is called the tax multiplier.

There is also a multiplier for government spending. This multiplier is derived in a different way. When the government increases purchases, it directly increases output, or national income. But, there is a greater effect than just the actual amount of increase in government purchases. When the government spends more, the populace receives more. That is, because the population is the target of increased government spending, personal incomes, and thus consumption, increases. Once again, the size of this increase is based

on the MPC. The total change in output as a result of a change in government purchases is equal to $(\text{change in government purchases}) / (1 - \text{MPC})$. This number is called the government spending multiplier.

Let us work through a couple of examples. The first one will deal with tax policy. What is the total change in output from a tax cut of \$20 million if the MPC is 0.8? To solve this, simply plug these numbers into the tax multiplier, that is $[(\text{change in taxes}) * -\text{MPC}] / (1 - \text{MPC})$. This becomes $[(-\$20 \text{ million}) * -0.8] / (1 - 0.8) = \80 million . This means that a \$20 million tax cut will yield an \$80 million increase in output. What is the process this equation models? Simply put, when consumers have more disposable income, they spend some and save some. The money that they spend goes back into the economy and is saved and spent by somebody else. This process continues, and eventually the final change in output created by a tax cut is significantly larger than the initial tax cut itself.

The second example we will work through deals with government spending policy. What is the total change in output from an increase in government spending equal to \$20 million if the MPC is 0.8? To solve this, simply plug these numbers into the government spending multiplier: $(\text{change in government purchases}) / (1 - \text{MPC})$. This becomes $(\$20 \text{ million}) / (1 - 0.8) = \100 million . A \$20 million increase in government spending will cause a \$100 million increase in output. When government spending increases, the populace, as the recipient of this spending, has more disposable income. When consumers have more disposable income, they spend some and save some. The money that they spend goes back into the economy and is saved and spent by somebody else. This process continues. Eventually the final change in output created by a tax cut, as in the previous example, is significantly larger than the initial tax cut itself.

10.2 Interest Rates and Fiscal Policy.

Fiscal policy has a clear effect upon output. But there is a secondary, less readily apparent fiscal policy effect on the interest rate.

Basically, expansionary fiscal policy pushes interest rates up, while contractionary fiscal policy pulls interest rates down. The rationale behind this relationship is fairly straightforward. When output increases, the price level tends to increase as well. This relationship between the real output and the price level is implicit. According to the theory of money demand, as the price level rises, people demand more money to purchase goods and services. Given that there is no change in the money supply, this increased demand for money leads to an increase in the interest rate. The opposite is the case with contractionary fiscal policy. When output decreases, the price level tends to fall as well. Again, this relationship between the real output and the price level is implicit. According to the theory of money demand, as the price level falls, people demand less money to purchase goods and services. Given that there is no change in the money supply, this decreased demand for money leads to a decrease in the interest rate. This is how fiscal policy affects the interest rate.

The next SparkNote presents a more complex and realistic explanation of the effects of fiscal policy on output in the short and long runs.

10.3 Effectiveness of Monetary Policy and Fiscal Policy.

Active policy.

The Fed and the government use different tools to steer the economy. Recall that monetary policy, the toolbox of the Fed, includes performing open market operations, and changing both the reserve requirement and the federal funds interest rate. Recall also that fiscal policy, the toolbox of the government, includes changing both taxes and government spending.

All of these tools can be controlled actively. That is, if the Fed or the government decide to use expansionary policy, they can simply select a tool from the policy toolbox and use it. In this way, active policy is defined as actions by the Fed or by the government that are done in response to economic conditions. That is, the Fed or the government choose to respond to something in the economy by undertaking a specific policy. This is also called discretionary policy.

Active policy, while simple, is open to a number of difficulties. Because it relies on the actions and experiences of the policymakers in the Fed and in the government, the weaknesses or prejudices of these policymakers can be translated into official economic policy. For instance, during election years, a central banker may pursue policy that enables the economy to grow in the short run, regardless of the long-term effects, in order to help a candidate. On the other hand, the central banker may contract the economy to hurt a candidate. Similarly, it would be possible for the policymakers to pursue policies that achieve their selfish ends rather than those that are best for the economy at large. Finally, with active policy, policymakers can say one thing and do another. There may be benefits to making the public believe that something different is occurring in the economy rather than what actually is occurring. For instance, if the Fed wants to increase investment, it could use deception by claiming that it raised interest rates while not actually doing so. In this scenario, private investors would save more but investment would remain at the old level or even increase. Thus, it is reasonable to claim that active policy leaves monetary policy and fiscal policy open to not only accidental human error but also to malicious and self-serving acts.

But there are some advantages to active policy. Active policy allows policymakers to respond to shifts in a complex economy and steer the economy in the optimal direction. For instance, an excellent policymaker may be able to keep the economy growing steadily without inflation if she is given complete control of macroeconomic policy. Similarly, active policy, at least in theory, gives control to those individuals who are considered optimally capable to deal with the fluctuations in the economy. That is, active policy allows the sharpest policymakers of the time to control the economy. Finally, the ability to create different expectations between the policymakers and the public can be an advantageous policy tool, as described in the previous paragraph.

Passive policy.

In contrast to active (or discretionary) policy is passive policy (or policy by rule). Under this system, macroeconomic policy is conducted according to a preset series of rules. These rules take into account many macroeconomic variables and dictate the best course of action given these conditions. For instance, a passive policy may follow the rule that in order to stabilize the economy the interest rate must be dropped one point whenever the nominal GDP falls one percent.

The major advantage to passive policy is that it takes the short-term desires of policymakers out of the list of possible goals of macroeconomic policy. Instead, the policymakers are simply present to carry out the macroeconomic policy and to ensure that everything runs smoothly. Policy by rule uses policymakers to implement, rather than design, macroeconomic policy. Similarly, another advantage of passive policy is that the policy rules are based on optimizing the economy in the long run and are less likely to trade short run prosperity for long run growth.

Passive policy is not immune to the problems that plague active policy, however. For instance, passive policy must be written by policymakers at some point. Thus, policy rules can contain the biases of the policymakers of a different time--biases that are perhaps quite inappropriate to the current economic climate. And any outright errors in judgment or theory made by these policymakers will be incorporated into the rules and will thus be present as long as the rules are in effect.

Which method of macroeconomic policy is better? Active policy relies on the judgment and character of policymakers to pursue the optimal long-term policies for the economy. Passive policy takes the power of choice away from policymakers and instead relies on the judgment and character of the writers of the rules. It is not clear that either method of policy is better. The majority of macroeconomic policy in the United States is active.

Policy lags.

Whichever method of policy is desired, a major problem exists. This problem is based on the fact that it takes time for

economic problems to be noticed and dealt with. Detection lags refer to the amount of time between the onset of an economic problem and its detection. Policy lags, on the other hand, refer to the amount of time between the enactment of macroeconomic policy and the moment when that policy takes effect.

For example, say that the economy is contracting. It must contract for a while before the policymakers recognize the contraction. When it is finally recognized, the policymakers must then decide which policy or policy rule to institute. Finally, once the policy or policy rule is instituted, it takes a fair amount of time for it to affect the economy. In the end, lags create significant delays in the progression from problem to solution in macroeconomic policy.

The delays created by lags can have one final and very important effect. If lags are so long that the economy corrects itself before the macroeconomic policies take effect, then the policies can actually worsen the situation. For instance, if the government uses fiscal policy to stimulate the economy, but the economy begins to correct itself before the policy takes effect, then the economy will be over-stimulated, resulting in possible inflation.

There is little that can be done to correct lags. Because the macroeconomy is constantly fluctuating, it is impossible to simply begin policies when a change is detected. The presence of lags must be acknowledged and accounted for as a necessary evil implicit in macroeconomic policy. By using macroeconomic policy judiciously and in small increments, dangerous situations created by lags can be avoided.

10.4 Problems with Monetary Policy and Fiscal policy.

Monetary policy and fiscal policy under a system of fixed output.

Initially, monetary policy and fiscal policy were introduced in an economy where changes in these policies would affect output. In reality, there is no real link between monetary policy and real variables. That is, changes in monetary policy and fiscal policy cannot affect the total level of output because the total level of output

is determined by the factors of production and not by monetary variables. This is called the neutrality of money.

Fiscal policy and crowding out.

Fiscal policy has a very important affect on the division of total output. This is one major negative effect of fiscal policy. Recall that the tools of fiscal policy are taxes and government spending. When the government increases government spending, there should be an indirect increase in output, as mitigated by the government spending multiplier.

In reality, government spending does not change output as the government spending multiplier would seem to indicate. It does, instead, significantly change the interest rate. A rise in the interest rate has a strong affect on investment. That is, as the interest rate rises, investment falls. This is because the interest rate is the opportunity cost of holding money, and as this increases, taking out loans becomes relatively less attractive.

When the government increases spending, the interest rate rises and investment falls. This is called crowding out. That is, increases in government spending tend to replace, or crowd out, private investment. This works because the total level of output is fixed by the factors of production, thus causing there necessarily to be an equal and opposite change from an increase in government purchases. Because investment is more sensitive to interest rates than either consumption or net exports, investment takes the primary hit from the fiscal policy change. For this reason, crowding out always occurs when expansionary fiscal policy is used. In the long run, this crowding out may hamper economic growth since investment affects the factors of production, which do affect total output.

When taxes decrease, consumption immediately rises because disposable income rises. But, since total output is fixed by the factors of production and government spending is fixed by fiscal policy, a change in consumption is met by an equal and opposite change in investment. Here again the case exists where a change in fiscal policy crowds out investment. In this way, a tradeoff is created between the short run and long run effects of fiscal policy upon the

economy due to government spending and taxes replacing, or crowding out, private investment.

10.5 Budget Deficit.

Balanced budget debate.

The budget deficit is often in the media spotlight. The budget deficit is defined as the difference between what the government spends and what the government collects. Government spending takes the form of salaries, defense spending, aid programs, and other cash outflows. Government collection predominately take the form of taxes. When the government spends more than it collects, a budget deficit exists. When the government collects more than it spends, a budget surplus exists.

There are three basic sides to the balanced budget debate. The traditionalists argue for a reduction of the budget deficit on the grounds that it harms the economy. Another group holds the Ricardian view of government debt in believing that there is no real harm done to the economy by the national debt. A third group exists on the fringe with the opinion that the budget deficit is not an adequate measure of fiscal policy.

Traditionalists argue that a reduction in the budget deficit will significantly help the economy in the long run. This theory is based on the following logic. When the government runs a budget deficit, it is spending more than it is taking in. In this way, national savings decreases. When national savings decreases, investment--the primary store of national savings--also decreases. Lower investment leads to lower long-term economic growth. Similarly, lower investment is accompanied by higher domestic interest rates, which decreases net exports. Based on this logic, a budget deficit is a drain on the long-term economy.

But the Ricardian view of the budget deficit takes a much less negative position on this issue. Supporters of this view believe that a budget deficit represents trading taxes in the future for taxes today. That is, if the government spends more than it taxes today, then it must tax more than it spends tomorrow. Given that the public

intrinsically understands this, a questionable premise, then the public will spend and save accordingly. Since the public is adjusting its spending and savings schedules to account for the necessary future increases in taxes, the budget deficit should have little long-term effect on economic growth.

The third position, a bit on the fringe, claims that the budget deficit is not a reasonable measure of fiscal policy. While these economists do believe that the government can affect spending, savings, and investment, they also believe that the budget deficit is simply an incomplete measure of these variables. Based on this position, the budget deficit should not be a focal issue in the economic policy debate.

Which of these views is most reasonable? There is likely a bit of truth in all of them. The best view of the budget deficit comes from understanding the major positions on the issue and creating some sort of compromise between the traditional, Ricardian, and fringe viewpoints.

Burden of the national debt.

Each time a budget deficit is run, money is added to the national debt. Similarly, each time a budget surplus is run, money can be, but is not necessarily, taken away from the national debt. In this context, the national debt is the total amount of money owed by the government for goods and services delivered but never paid for. Interestingly, deficit spending tends to increase both real GDP and the price level. The desirability of these effects of the budget deficit is mixed in the short run.

As with the budget deficit, there are a number of different views regarding the national debt. Some believe that the national debt is a significant strain on economic growth, while others minimize the possible effects of the national debt. With the national debt in the United States in the many trillions of dollars, the effects of a significantly reduced national debt seem far off and theoretical, yet in reality they can serve as very important goals for policy decisions.

Instead of analyzing the many views regarding the national debt, we will focus on the truths about the national debt and let the

relative merits of the positions fall into place. The most important effects of a national debt are on the supply side of the economy. That is, because a large national debt increases the interest rate, investment falls as the national debt increases. That is, a large national debt today will result in less capital, especially physical, being passed on to future generations. In this way, future generations are burdened by a lower capacity for productivity as a result of decreased investment created by the national debt.

The problems created by the national debt can be attacked from another angle. If the government runs a budget deficit, then it spends more than it receives. In order to fund this spending, the government must take out loans. This is usually done by selling government bonds. In order for the government to sell its bonds, it must offer an interest rate that is attractive to investors. When the government sells bonds, money is diverted away from bonds being sold by private companies. Thus, the money that private companies would have received and used as investment funds is instead funneled to the government to fund a budget deficit. This is called crowding out because the government takes investment funds away from the private sector.

However, there is a force that works in the opposite direction of crowding out. This force is called crowding in. According to the theory of crowding in, as the government spends money, private industry must be prepared to provide the output demanded by the government. In order to do this businesses must invest in capital to increase their productivity. This is an effect of government spending wherein the government actually stimulates investment, thus "crowding in."

It is generally accepted that the crowding out effect of government spending increases is stronger than the crowding in effect. But, given the presence of both effects, it is not unreasonable to expect that in some situations, like extreme slowdowns in the economy, crowding in might be stronger than crowding out. In these situations a budget deficit is a positive policy, as it spurs on

economic activity in a time where activity might otherwise be extremely sluggish.

It is important to remember that while crowding out is usually stronger than crowding in, it is not strong enough to completely cancel out all of the effects of increased government spending. In this way, national debt and budget deficits may be beneficial to the US economy, especially when the debt is owed domestically, because it represents economic activity that would otherwise be absent. While it is true that future generations will be burdened with greater interest payments on a large national debt, because all of this economic activity--including the interest payments--is predominately between agents in the US, the harmful effects of the national debt and the budget deficits are minimized.

There is a fringe party in the national debt debate who believes in debt neutrality. That is, they believe that the national debt has little or no effect on the economic wellbeing of the public because the public saves and spends in accordance with long-term economic goals. According to this position, if the national debt is high, citizens will save more to allow this debt to be attacked in the future. While this view is theoretically important, its practical importance is questionable as it relies on a fully informed populace. It is much more reasonable to accept the views that acknowledge some effect of the national debt on the economy.

Theme 11 THE MACROECONOMIC EQUILIBRIUM: THE MODEL OF AGGREGATE DEMAND AND THE AGGREGATE SUPPLY (AD-AS MODEL)

11.1 Aggregate Demand

From microeconomics we know that individuals and firms have demand curves for goods and services. But what happens when you try to get a picture of the demand for goods and services for the entire economy? While this task may at first seem daunting, there is a relatively simple way to perform it by using the aggregate demand curve. The aggregate demand curve represents the total demand for goods and services in an economy. By defining the aggregate demand curve in terms of the price level and output or income, it is possible to analyze the effects of other variables, like the interest rate, on aggregate demand through the aggregate demand equation.

But, aggregate demand is only half of the view of the economy that we have been building up to in macroeconomics. The other half of this view, aggregate supply, was covered in the following SparkNote on Aggregate Supply. For now, we will focus on the basics of aggregate demand. We will work through why the aggregate demand curve is downward sloping. We will also catch a glimpse of how the aggregate demand curve is derived. Finally, we will see how the aggregate demand curve shifts when economic variables change the aggregate demand.

By understanding the basics of aggregate demand as presented in this section, you will be preparing yourself for the big picture of the macroeconomy that follows when aggregate demand and aggregate supply are combined. This allows policies and economic changes to be evaluated in a highly realistic model. Through the combined aggregate supply aggregate demand, or AS-AD, model, macroeconomic theory approaches macroeconomic reality. In this way, the AS-AD model is the centerpiece of evaluating macroeconomic policy decisions.

Components of Aggregate Demand.

Aggregate demand tells the quantity of goods and services demanded in an economy at a given price level. In effect, the aggregate demand curve is just like any other demand curve, but for the sum total of all goods and services in an economy. It tells the total amount that all consumers, businesses, and the government are willing to spend on goods and services at different price levels.

The aggregate demand curve can be thought of just like a demand curve for a firm. When the price level is high, aggregate demand is low; when the price level is low, aggregate demand is high. The aggregate demand curve lies in a plane consisting of the price level and income or output. It shows a downward slope with price level on the vertical axis and income or output on the horizontal axis. As such, the aggregate demand curve outlines the relationship between income or output and the price level. It is important to notice that aggregate demand is a schedule because as the price level changes, the income or output also changes.

There are four major components of aggregate demand. The equation for aggregate demand, $Y = C(Y - T) + I(r) + G + NX(e)$, tells much about the nature of both aggregate demand and the curve that represents this schedule.

Components of aggregate demand.

The equation for aggregate demand proposed by the Mundell-Fleming model of a large open economy is $Y = C(Y - T) + I(r) + G + NX(e)$. Y represents income or output. $C(Y - T)$ represents consumption as a function of disposable income, defined as income less taxes. $I(r)$ represents investment as a function of the interest rate, where an increase in the interest rate decreases investment. G represents government spending, which is predominately unaffected by interest rates. Finally, $NX(e)$ represents net exports, defined as exports less imports as a function of the real exchange rate, where an increase in the real exchange rate decreases net exports. Understanding the details of each component of aggregate demand is an important first step toward understanding aggregate demand.

The first piece of the aggregate demand equation is Y . This represents output or income. Because Y is the total amount of goods and services purchased by consumers, businesses, and the government, taking into account foreign trade, it is necessarily the output for the economy. This number is also the gross domestic product of an economy. Because every unit of output within an economy turns into income for members of the economy, it is reasonable to call output income. More specifically, the output of an economy is the national income for the economy. The per capita income is the national income for the economy divided by the population. This number is useful for comparing the standard of living across countries. All of this information directly results from the aggregate demand equation.

The second piece of the aggregate demand equation is $C(Y - T)$. This signifies that consumption is a function of disposable income. Disposable income is the money that consumers have left to spend after taxes. The function for consumption is aggregated across all consumers and thus is applicable for all incomes and tax brackets. Consumption captures spending by households on goods and services. Examples include purchasing food, movie tickets, and vacations.

The third piece of the aggregate demand equation is $I(r)$. This signifies that investment spending is a function of the real interest rate. That is, as the real interest rate increases, investment spending falls because the cost of borrowing money increases. The real interest rate is simply the nominal interest rate as published in the media corrected for expected inflation. When firms consider investment spending, they routinely take into account the nominal interest rate, inflation, and the real interest rate. Examples of investment spending include machinery, buildings, education, and new housing.

The fourth piece of the aggregate demand equation is G . Government spending encompasses every expenditure made by the government. The total amount of money spent by the government is often surprising. In fact, it is not unusual for government spending to constitute upwards of one third of gross domestic product. The level

of government spending is a hotly debated topic as political parties vie for their programs in the annual budget. Examples of government spending include salaries to government employees, defense spending, welfare and social security programs, and foreign aid.

The fifth piece of the aggregate demand equation is $NX(e)$. Net exports are defined as the difference between exports and imports. It is important to recognize that net exports are dependent upon the real exchange rate. As the real exchange rate rises, domestic currency is relatively more valuable and thus the price of domestic goods is relatively more expensive than the price of foreign goods. In this case, exports fall and imports rise, causing net exports to decline. Interestingly, a thriving domestic economy will result in a higher real exchange rate and thus lower net exports. Examples of exports include cars and electronics made in the US and sold Asian countries. Examples of imports include fruits and vegetables grown in New Zealand and sold in the US.

The equation for aggregate demand of $Y = C(Y - T) + I(r) + G + NX(e)$ has now been deciphered. This equation has many meanings such as output, national income, and GDP. It is difficult, or impossible, to think of economic activity that is not represented in the aggregate demand equation. This is the idea of aggregate demand: to capture all economic activity within an economy

The Aggregate Demand Curve

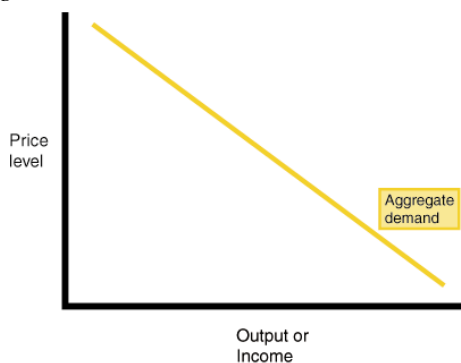


Figure 11.1 – Graph of the aggregate demand curve.

The most noticeable feature of the aggregate demand curve is that it is downward sloping, as seen in . There are a number of reasons for this relationship. Recall that a downward sloping aggregate demand curve means that as the price level drops, the quantity of output demanded increases. Similarly, as the price level drops, the national income increases. There are three basic reasons for the downward sloping aggregate demand curve. These are Pigou's wealth effect, Keynes's interest-rate effect, and Mundell-Fleming's exchange-rate effect. These three reasons for the downward sloping aggregate demand curve are distinct, yet they work together.

The first reason for the downward slope of the aggregate demand curve is Pigou's wealth effect. Recall that the nominal value of money is fixed, but the real value is dependent upon the price level. This is because for a given amount of money, a lower price level provides more purchasing power per unit of currency. When the price level falls, consumers are wealthier, a condition which induces more consumer spending. Thus, a drop in the price level induces consumers to spend more, thereby increasing the aggregate demand.

The second reason for the downward slope of the aggregate demand curve is Keynes's interest-rate effect. Recall that the quantity of money demanded is dependent upon the price level. That is, a high price level means that it takes a relatively large amount of currency to make purchases. Thus, consumers demand large quantities of currency when the price level is high. When the price level is low, consumers demand a relatively small amount of currency because it takes a relatively small amount of currency to make purchases. Thus, consumers keep larger amounts of currency in the bank. As the amount of currency in banks increases, the supply of loans increases. As the supply of loans increases, the cost of loans--that is, the interest rate--decreases. Thus, a low price level induces consumers to save, which in turn drives down the interest rate. A low interest rate increases the demand for investment as the cost of investment falls with the interest rate. Thus, a drop in the price level decreases the

interest rate, which increases the demand for investment and thereby increases aggregate demand.

The third reason for the downward slope of the aggregate demand curve is Mundell-Fleming's exchange-rate effect. Recall that as the price level falls the interest rate also tends to fall. When the domestic interest rate is low relative to interest rates available in foreign countries, domestic investors tend to invest in foreign countries where return on investments is higher. As domestic currency flows to foreign countries, the real exchange rate decreases because the international supply of dollars increases. A decrease in the real exchange rate has the effect of increasing net exports because domestic goods and services are relatively cheaper. Finally, an increase in net exports increases aggregate demand, as net exports is a component of aggregate demand. Thus, as the price level drops, interest rates fall, domestic investment in foreign countries increases, the real exchange rate depreciates, net exports increases, and aggregate demand increases.

11.2 Aggregate Supply.

From microeconomics we know that firms have supply curves for goods and services. But what happens when we try to get a picture of the supply of goods and services for the entire economy? While this task may at first seem daunting, there is a relatively simple way to perform it by using the aggregate supply curve. The aggregate supply curve represents the total supply of goods and services in an economy. By defining the aggregate supply curve in terms of the price level and output or income, we can analyze the effects of other variables, such as the interest rate, on aggregate supply.

This second part of this SparkNote will contain a discussion of modeling the macroeconomy. In previous macro SparkNotes, we learned about macroeconomic phenomena like fiscal policy, monetary policy, and unemployment, to name a few. We also saw how these phenomena affect the money market, output, and interest rates. The next step is to evaluate the effects of phenomena on the entire macroeconomic picture.

Aggregate supply and aggregate demand model the effects of economic changes on the economy as a whole. By utilizing the information we'll learn about the aggregate supply curve and about the aggregate demand curve, we can determine the effects of economic policies on the macroeconomy.

Introduction to Aggregate Supply.

In the previous SparkNote we learned that aggregate demand is the total demand for goods and services in an economy. But the aggregate demand curve alone does not tell us the equilibrium price level or the equilibrium level of output. In order to obtain this information, we need to add the aggregate supply curve to the diagram containing the aggregate demand curve. Then, and only then, do the equilibrium values of the economy in the AS-AD model appear.

The aggregate supply curve shows the relationship between the price level and the quantity of goods and services supplied in an economy. The equation for the upward sloping aggregate supply curve, in the short run, is $Y = Y_{\text{natural}} + a(P - P_{\text{expected}})$. In this equation, Y is output, Y_{natural} is the natural rate of output that exists when all productive factors are used at their normal rates, a is a constant greater than zero, P is the price level, and P_{expected} is the expected price level. This equation holds only in the short run because in the long run the aggregate supply curve is a vertical line, as output is dictated by the factors of production alone.

But what does the equation for the aggregate supply curve mean? Basically, this equation means that output deviates from the natural rate of output when the price level deviates from the expected price level. The constant, a , shows how much output changes due to unexpected deviation in the price level. It is also important to notice that the slope of the aggregate supply curve is $(1/a)$.

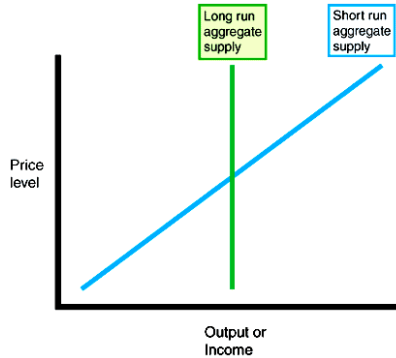


Figure 11.2 – Graph of the aggregate supply curves

Depicts the short-run aggregate supply curve and the long-run aggregate supply curve. Notice that the axes are the same as for the aggregate demand curve. The vertical axis is the price level. The horizontal axis is output or income. Also notice that the short-run aggregate supply curve is downward sloping with slope equal to $(1/a)$ while the long-run aggregate supply curve is vertical with no slope.

Aggregate Supply in the Short Run/

The equation for aggregate supply presented above holds only in the short run. Recall that the aggregate supply curve shows the relationship between the price level and the quantity of goods and services supplied. Also recall that the aggregate supply curve states that output deviates from the natural rate of output when the price level deviates from the expected price level. All of these elements of aggregate supply point to an upward sloping short-term aggregate supply curve and a vertical long-term aggregate supply curve.

But how do we know that aggregate supply is upward sloping in the short run and vertical in the long run? First, recall from microeconomics that output is a function of capital and labor--the inputs to production. Thus, in the long run, the levels of capital and labor in an economy fix the level of output. The only way to increase output in the long run is to increase the levels of capital and labor. This is called increasing the capital stock--the result of investment--and increasing the labor force--the result of more people working.

Therefore, in the long run, the aggregate supply curve is affected only by the levels of capital and labor and not by the price level. Thus, the long run aggregate supply is vertical with respect to the price level.

The reason that the short-term aggregate supply curve is upward sloping is a bit more complex. There are four basic explanatory models, which will be explained in detail in the next section. These models are the sticky-wage model, the worker-misperception model, the imperfect-information model, and the sticky-price model. In their own ways, each of these models explains why output deviates from the natural rate of output when the price level deviates from the expected price level.

Introduction to Aggregate Supply Models.

The aggregate supply curve shows the relationship between the price level and output. While the long run aggregate supply curve is vertical, the short run aggregate supply curve is upward sloping. There are four major models that explain why the short-term aggregate supply curve slopes upward. The first is the sticky-wage model. The second is the worker-misperception model. The third is the imperfect-information model. The fourth is the sticky-price model. The following headings explain each of these models in depth. As we move on to explore each of these four models, keep in mind that an upward sloping short run aggregate supply curve means that as the price level rises, output increases. This is the point of each of the following models.

11.3 Complete AS-AD Model.

Unlike the aggregate demand curve, the aggregate supply curve does not usually shift independently. This is because the equation for the aggregate supply curve contains no terms that are indirectly related to either the price level or output. Instead, the equation for aggregate supply contains only terms derived from the AS-AD model. For this reason, to understand how the aggregate supply curve shifts, we must work from the AS-AD model as a whole.

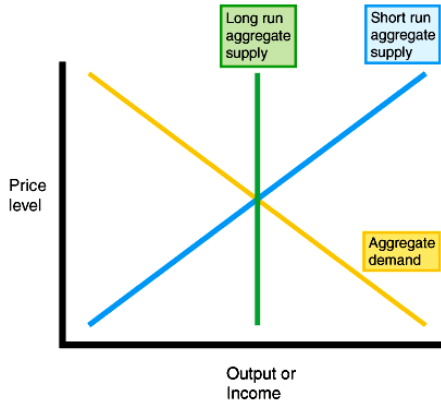


Figure 11.3 – Graph of the AS-AD model

Depicts the AS-AD model. The intersection of the short-run aggregate supply curve, the long-run aggregate supply curve, and the aggregate demand curve gives the equilibrium price level and the equilibrium level of output. This is the starting point for all problems dealing with the AS-AD model.

Shifts in Aggregate Demand in the AS-AD Model.

The primary cause of shifts in the economy is aggregate demand. Recall that aggregate demand can be affected by consumers both domestic and foreign, the Fed, and the government. For a review of the shifters of aggregate demand, see the SparkNote on aggregate demand. In general, any expansionary policy shifts the aggregate demand curve to the right while any contractionary policy shifts the aggregate demand curve to the left. In the long run, though, since long-term aggregate supply is fixed by the factors of production, short-term aggregate supply shifts to the left so that the only effect of a change in aggregate demand is a change in the price level.

Let's work through an example. For this example, refer to . Notice that we begin at point A where short-run aggregate supply curve 1 meets the long-run aggregate supply curve and aggregate demand curve 1. The point where the short-run aggregate supply curve and the aggregate demand curve meet is always the short-run

equilibrium. The point where the long-run aggregate supply curve and the aggregate demand curve meet is always the long-run equilibrium. Thus, we are in long-run equilibrium to begin.

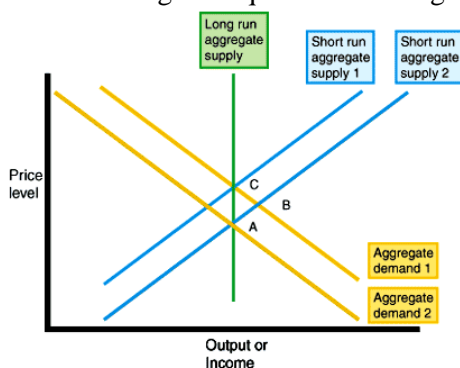


Figure 11.4 – Graph of an expansionary shift in the AS-AD model.

Now say that the Fed pursues expansionary monetary policy. In this case, the aggregate demand curve shifts to the right from aggregate demand curve 1 to aggregate demand curve 2. The intersection of short-run aggregate supply curve 1 and aggregate demand curve 2 has now shifted to the upper right from point A to point B. At point B, both output and the price level have increased. This is the new short-run equilibrium.

But, as we move to the long run, the expected price level comes into line with the actual price level as firms, producers, and workers adjust their expectations. When this occurs, the short-run aggregate supply curve shifts along the aggregate demand curve until the long-run aggregate supply curve, the short-run aggregate supply curve, and the aggregate demand curve all intersect. This is represented by point C and is the new equilibrium where short-run aggregate supply curve 2 equals the long-run aggregate supply curve and aggregate demand curve 2. Thus, expansionary policy causes output and the price level to increase in the short run, but only the price level to increase in the long run.

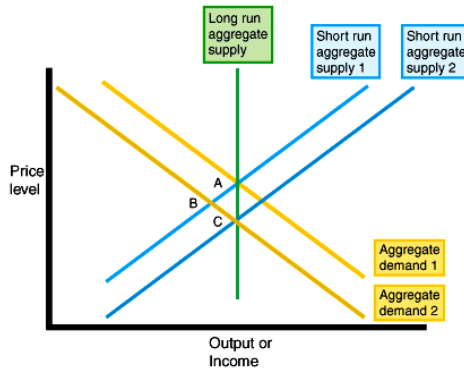


Figure 11.5 – Graph of a contractionary shift in the AS–AD model

The opposite case exists when the aggregate demand curve shifts left. For example, say the Fed pursues contractionary monetary policy. For this example, refer to . Notice that we begin again at point A where short-run aggregate supply curve 1 meets the long-run aggregate supply curve and aggregate demand curve 1. We are in long-run equilibrium to begin.

If the Fed pursues contractionary monetary policy, the aggregate demand curve shifts to the left from aggregate demand curve 1 to aggregate demand curve 2. The intersection of short-run aggregate supply curve 1 and the aggregate demand curve has now shifted to the lower left from point A to point B. At point B, both output and the price level have decreased. This is the new short-run equilibrium.

But, as we move to the long run, the expected price level comes into line with the actual price level as firms, producers, and workers adjust their expectations. When this occurs, the short-run aggregate supply curve shifts down along the aggregate demand curve until the long-run aggregate supply curve, the short-run aggregate supply curve, and the aggregate demand curve all intersect. This is represented by point C and is the new equilibrium where short-run aggregate supply curve 2 meets the long-run aggregate supply curve and aggregate demand curve 2. Thus, contractionary

policy causes output and the price level to decrease in the short run, but only the price level to decrease in the long run.

This is the logic that is applied to all shifts in aggregate demand. The long-run equilibrium is always dictated by the intersection of the vertical long-run aggregate supply curve and the aggregate demand curve. The short-run equilibrium is always dictated by the intersection of the short-run aggregate supply curve and the aggregate demand curve. When the aggregate demand curve shifts, the economy always shifts from the long-run equilibrium to the short-run equilibrium and then back to a new long-run equilibrium. By keeping these rules and the examples above in mind it is possible to interpret the effects of any aggregate demand shift in both the short run and in the long run.

Shifts in Aggregate Supply in the AS-AD Model.

Shifts in the short-run aggregate supply curve are much rarer than shifts in the aggregate demand curve. Usually, the short-run aggregate supply curve only shifts in response to the aggregate demand curve. But, when a supply shock occurs, the short-run aggregate supply curve shifts without prompting from the aggregate demand curve. Fortunately, the correction process is exactly the same for a shift in the short-run aggregate supply curve as it is for a shift in the aggregate demand curve. That is, when the short-run aggregate supply curve shifts, a short-run equilibrium exists where the short-run aggregate supply curve intersects the aggregate demand curve. Then the aggregate demand curve shifts along the short-run aggregate supply curve until the aggregate demand curve intersects both the short-run and the long-run aggregate supply curves. Once the economy reaches this new long-run equilibrium, the price level is changed but output is not.

There are two types of supply shocks. Adverse supply shocks include things like increases in oil prices, a drought that destroys crops, and aggressive union actions. In general, adverse supply shocks cause the price level for a given amount of output to increase. This is represented by a shift of the short-run aggregate supply curve to the left. Positive supply shocks include things like decreases in oil

prices or an unexpected great crop season. In general, positive supply shocks cause the price level for a given amount of output to decrease. This is represented by a shift of the short-run aggregate supply curve to the right.

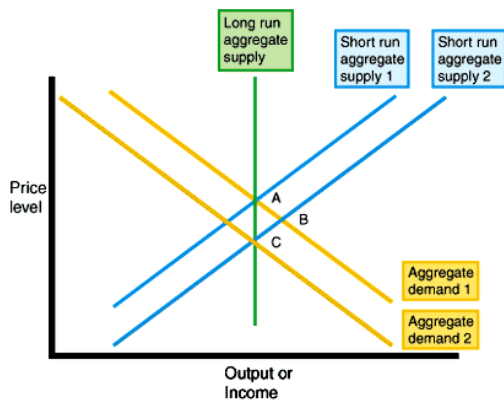


Figure 11.6 – Graph of a positive supply shock in the AS- AD model

Let's work through an example. For this example, refer to . Notice that we begin at point A where short-run aggregate supply curve 1 meets the long-run aggregate supply curve and aggregate demand curve 1. Thus, we are in long-run equilibrium to begin.

Now say that a positive supply shock occurs: a reduction in the price of oil. In this case, the short-run aggregate supply curve shifts to the right from short-run aggregate supply curve 1 to short-run aggregate supply curve 2. The intersection of short-run aggregate supply curve 2 and aggregate demand curve 1 has now shifted to the lower right from point A to point B. At point B, output has increased and the price level has decreased. This is the new short-run equilibrium.

However, as we move to the long run, aggregate demand adjusts to the new price level and output level. When this occurs, the aggregate demand curve shifts along the short-run aggregate supply curve until the long-run aggregate supply curve, the short-run

aggregate supply curve, and the aggregate demand curve all intersect. This is represented by point C and is the new equilibrium where short-run aggregate supply curve 2 equals the long-run aggregate supply curve and aggregate demand curve 2. Thus, a positive supply shock causes output to increase and the price level to decrease in the short run, but only the price level to decrease in the long run.

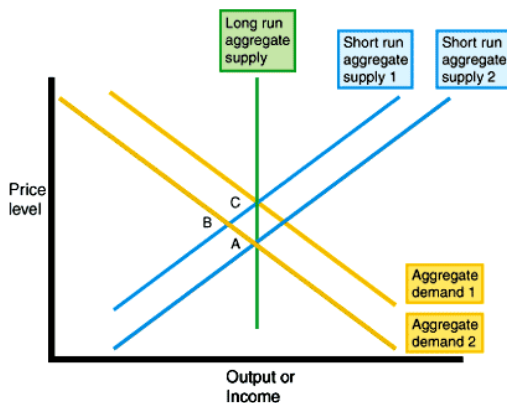


Figure 11.7 – Graph of an adverse supply shock in the AS–AD model

Let's work through another example. For this example, refer to . Notice that we begin at point A where short-run aggregate supply curve 1 meets the long run aggregate supply curve and aggregate demand curve 1. Thus, we are in long-run equilibrium to begin.

Now say that an adverse supply shock occurs: a terrifying increase in the price of oil. In this case, the short-run aggregate supply curve shifts to the left from short-run aggregate supply curve 1 to short-run aggregate supply curve 2. The intersection of short-run aggregate supply curve 2 and aggregate demand curve 1 has now shifted to the upper left from point A to point B. At point B, output has decreased and the price level has increased. This condition is called stagflation. This is also the new short- run equilibrium.

However, as we move to the long run, aggregate demand adjusts to the new price level and output level. When this occurs, the aggregate demand curve shifts along the short-run aggregate supply curve until the long-run aggregate supply curve, the short-run aggregate supply curve, and the aggregate demand curve all intersect. This is represented by point C and is the new equilibrium where short-run aggregate supply curve 2 equals the long-run aggregate supply curve and aggregate demand curve 2. Thus, an adverse supply shock causes output to decrease and the price level to increase in the short run, but only the price level to increase in the long run.

Conclusions from the AS-AD Model.

This section has served a number of purposes. First, we covered how and why the short-run aggregate supply curve shifts. Second, we reviewed how and why the aggregate demand curve shifts. Third, we introduced the mechanism that moves the economy from the long run to the short run and back to the long run when there is a change in either aggregate supply or aggregate demand. At this stage, you have the ability to use the highly realistic model of the macroeconomy provided by the AS-AD diagram to analyze the effects of macroeconomic policies. This will prove to be the most powerful tool in your collection for understanding the macroeconomy. Use it wisely!

Theme 12 THE MACROECONOMIC INSTABILITY

12.1 Economic Growth.

The real gross domestic product (GDP) growth rate since 1970 has averaged around 3% per year. Over the last 30 years this corresponds to a 242% increase in the real GDP. The economy has clearly grown during this period. Interestingly, the actual year-to-year growth rate of real GDP is highly inconsistent. In 1985, real GDP grew by almost 7%. But in 1982, just a few years earlier, it fell by nearly 2%. There are evidently many factors that affect how the economy grows over time. But what makes the economy grow? Why does the economy grow at different rates, seemingly in fits and starts? What affects how the economy grows over the long term?

When the economy grows, what happens to the standard of living? If price levels increase significantly, then the nominal GDP may increase but the real GDP is unchanged. For economic growth to be helpful to the population, the price level must remain relatively unchanged. In other words, the real GDP must increase. When the economy can grow significantly and inflation is held stable, the increased income is spread to the population. This often results in an increase in the standard of living. An increase in the standard of living entails that people are better off because they have more money to spend on goods and services sold at a relatively stable price level. What are the factors that lead to an increased standard of living? How are increases in the real GDP spread to the population?

When a number of economies are examined over time, an interesting phenomenon becomes evident. Groups of countries seem to converge in terms of real GDP per capita. Instead of the rich getting richer and the poor getting poorer, in terms of economies, similarly organized economies approach one another in the long run. What are the factors that allow this to occur? How can an economic advisor help a country to converge with others?

This SparkNote will cover the topic of economic growth. Within and between economies, economic growth is very important because it directly affects the wellbeing of the people involved in

these economies. This SparkNote will introduce the important factors in economic growth over time as well as in the phenomenon of convergence. Through a grounding in these subjects, a better understanding of how the economy grows over time is within reach.

12.2 Labor productivity growth.

Increasing productivity.

When looking at what makes an economy grow in the long run, it is imperative to begin by examining how output is created. Firms use a combination of labor and capital to produce their output. Labor consists of the workers and employees who produce, manage, and process production. Capital describes both the ideas needed for production and the actual tools and machines used in production. Ideas and other intellectual property are called human capital. Machinery and tools are called physical capital.

Firms use some combination of labor and capital to produce output. In particular, the labor utilizes the capital in the production process. For example, when making cars, workers use tools and an assembly line to produce a finished product. The workers are the labor and the machines are the capital.

In order to increase productivity, each worker must be able to produce more output. This is referred to as labor productivity growth. The only way for this to occur is through an increase in the capital utilized in the production process. This increase can be in the form of either human capital or physical capital.

An example will help to illustrate the basic way that labor productivity growth works through increases in the capital stock. Say there is a riveter named Joe. Joe works in a factory that makes metal boxes that are riveted together. He has a riveting tool that can rivet at a rate that allows Joe to finish 4 metal boxes every hour. Joe's labor productivity is thus 4 boxes per hour. One day, Joe gets a second riveting tool. With two tools, Joe can produce 8 metal boxes every hour. Now Joe's labor productivity has increased from 4 boxes per hour to 8 boxes per hour. The increase in the physical capital available to Joe, that is, a second tool, allowed this increase in Joe's

labor productivity. For every hour of work Joe puts in, he can produce 100% more output due to an increase in the physical capital available to him.

Another example may also be of use. Say there is a chef named Susan. Susan can cook 10 hamburgers in an hour. One day, she decides to go to the Hamburger Cooking School to learn how to cook hamburgers faster. When she returns to work, she is able to cook 40 hamburgers per hour by utilizing the new tricks she learned. By attending the cooking school, Susan increased her human capital and thus increased her labor productivity.

It is important to remember that increases in capital can take the form of both quantity and quality increases. From these two examples, it is clear that the only way to achieve labor productivity growth is to increase the amount of capital, physical and/or human, available to workers. And in the long run, the only way for overall productivity to increase is through increases in the capital used in production.

Growth level vs. growth rate.

When discussing growth, there is an important distinction that must be made. The growth level is the starting value of whatever is growing; the growth rate is the change in the growth level from year to year. These distinctions allow for accurate descriptions of economic policies on long-run growth.

An example will help to illustrate the level vs. rate distinction. Let's use the idea of capital presented in the preceding section. Say a company owns 50 riveting tools like the one used by Joe. In order to increase output, the company decides to purchase 5 new riveting tools next year. In this case, the level of capital is 50 because this is the amount that the firm began with. The growth rate of capital is 10% because from one year to the next the amount of capital used by Joe's firm increased by 10%.

Changes in growth rate vs. changes in the growth level over time.

Now that the growth rate vs. growth level distinction is clear, let's apply it to the way that economic policies affect productivity.

The most important number in increasing economic productivity is the growth level. The growth level shows where the economy is relative to long term positioning. For instance, we know that the economy tends to grow at about 2% per year in the long run. This is the economy's growth level. When the economy grows at an increased amount, say 6% per year, the 4% difference between this and the growth level is called the growth rate.

An economy with a low growth level will not grow very much in the long run even if the growth rate is high at times. For instance, over a 30-year period, an economy that has a steady growth level of 3% will far outgrow an economy that has an unpredictable growth rate but a growth level of 1%. In this way, it is important to keep both the growth rate and the growth level as high as possible, but if one is to be preferred over the other, a stable and high growth level is more desirable than an unpredictably fluctuating growth rate.

Why is this distinction important? Many people are shortsighted. When politicians manipulate economic variables, they may do so to create desirable short terms effects or to create desirable long-term effects. If they enact policies that temporarily increase economic growth, then they are affecting the growth rate. If, on the other hand, they enact policies that permanently increase economic growth, then they are affecting the growth level. As long as there is not a tradeoff between policies that affect the growth level and those that affect the growth rate, there is no conflict of interest. On the other hand, if increasing economic growth now results in relatively poorer long term economic growth, politicians may be tempted to trade an increase in their approval now for a slightly lower economic growth level. Here is where the difference between growth level and growth rate is most important, as evaluating economic interventions in the long run is difficult without employing this differentiation.

12.3 Requirements for increased growth.

Capital expenditure.

In the previous section we learned that increasing capital, both human and physical, is the only way to create productivity

growth in the long run. One way to directly increase the amount of capital in an economy, also called the capital stock, is by increasing the spending on capital.

In order to understand how increasing the spending on capital works, it is necessary to understand how money is spent on capital. In order for most firms to increase their capital stock, they must purchase additional machinery, tools, and education for their employees. Because firms do not often have the large sums of cash necessary for these types of purchases readily available, they must go to banks to get funding for their capital expenditures. Remember that when banks make loans, they are simply matching up savers and borrowers. Thus, the amount of savings by individuals directly affects the amount of money available for capital expenditures by firms. In this way, the savings rate in a country is the single most important determinant of the expenditures made by firms on capital.

How much money should be saved in an economy and how much should be invested in capital? This question is difficult to answer. Some countries, like Japan, have very high savings rates. Others, like the US, have very low savings rates. In both cases, the exact effect on the growth of productivity is unclear. In general, the savings rate that corresponds to the golden rule level of capital is considered optimal. This is defined as the savings rate that maintains the level of capital associated with the higher per worker consumption rate. In general, a savings rate that is as high as possible without significantly reducing the standard of living of the population is desirable.

Regardless of the savings rate, expenditures on capital directly affect the growth rate of an economy. They inject the economy with new tools, machinery, and training. These forms of capital are basic necessities of production. For a given amount of labor, such an increase in capital will increase possible output.

Technological progress.

Of course, spending money to simply increase the amount of capital in an economy is not the only way to increase productivity. Increases in the quality of capital can also affect growth. The major

way the quality of capital is increased is through technological progress, the fruit of research and development. Technological advances can allow a given unit of capital to enable a given unit of labor to increase production. This increase is contrasted to the increase created by simply enlarging capital expenditures. In the latter case, a given unit of labor has more capital to work with and can thus produce more output; while in the former case a given unit of labor can produce more output with a given unit of capital.

How does technological progress come about? The major ways are through innovation and invention. Every year, billions of dollars are spent on research and development by firms and government agencies, like NASA. This money leads to improvements in existing technology and to the creation of new technologies. While innovation and invention may not always be immediately profitable, in the long run they can prove very lucrative for the researchers and the developers--as well as for the economy as a whole, as new, more efficient production technologies become available.

Capital expenditures vs. technological progress.

Let's look at a classic example of technological progress. Say that Sam is a scribe. He spends his days hand copying books and manuscripts. It takes him an average of 1 day to copy a book. Then the printing press is invented. These new devices allow books to be issued at a rate of 10 per day. The output is the book. In this case, an improvement in the technology used to produce output (from quill pen to printing press) leads to an increase in the output quantity. The invention and implementation of the printing press thus qualifies as technological progress.

Let's now consider an example of capital expenditures. Say Sam now runs a printing press and puts out 10 books per day. Then Sam purchases 3 more printing presses, all of which he can operate simultaneously. Now Sam can use more of the same technology to increase his daily output to 40 books. Notice here that output increased, but the quantity--not the quality--of the capital created this

increase. The new upsurge in output is due to an increase in capital expenditures, and not due to technological progress.

To claim that either increased capital expenditures or increased technological progress are superior is improper. Instead, each is required for sustained economic growth. Because technological progress is unpredictable - that is, it is present and very important at times and not at others - capital expenditures are able to increase productivity with current capital. When technological progress is ready to provide new capital for production, then the importance shifts. In this way, the forces of capital expenditures and technological progress work hand in hand to increase productivity.

12.4 Inflation and Unemployment.

Inflation.

Things cost more today than they used to. In the 1920's, a loaf of bread cost about a nickel. Today it costs more than \$1.50. In general, over the past 300 years in the United States the overall level of prices has risen from year to year. This phenomenon of rising prices is called inflation.

While small changes in the price level from year to year may not be that noticeable, over time, these small changes add up, leading to big effects. Over the past 70 years, the average rate of inflation in the United States from year to year has been a bit under 5 percent. This small year-to-year inflation level has led to a 30-fold increase in the overall price during that same period.

Inflation plays an important role in the macroeconomic economy by changing the value of a dollar across time. This section on inflation will deal with three important aspects of inflation. First, it will cover how to calculate inflation. Second, it will cover the effects of inflation calculations using the CPI and GDP measures. Third, it will introduce the effects of inflation.

Calculating inflation.

Inflation is the change in the price level from one year to the next. The change in inflation can be calculated by using whatever price index is most applicable to the given situation. The two most

common price indices used in calculating inflation are CPI and the GDP deflator. Know, though, that the inflation rates derived from different price indices will themselves be different.

Calculating Inflation Using CPI.

The price level most commonly used in the United States is the CPI, or consumer price index. Thus, the simplest and most common method of calculating inflation is to calculate the percentage change in the CPI from one year to the next. The CPI is calculated using a fixed basket of goods and services; the percentage change in the CPI therefore tells how much more or less expensive the fixed basket of goods and services in the CPI is from one year to the next. The percentage change in the CPI is also known as the percentage change in the price level or as the inflation rate.

Fortunately, once the CPI has been calculated, the percentage change in the price level is very easy to find. Let us look at the following example of "Country B."

Table 12.4.1 – Goods and Services Consumed in Country B

| Year | Price of bananas | Quantity of bananas | Price of backrubs | Quantity of backrubs |
|------|------------------|---------------------|-------------------|----------------------|
| 1 | 1\$ | 5 | 6\$ | 5 |
| 2 | 1\$ | 5 | 6\$ | 7 |
| 3 | 2\$ | 10 | 6\$ | 9 |

Over time the CPI changes only as the prices associated with the items in the fixed basket of goods change. In the example from Country B, the CPI increased from 100 to 141 to 182 from time period 1 to time period 2 to time period 3. The percent change in the price level from the base year to the comparison year is calculated by subtracting 100 from the CPI. In this example, the percent change in the price level from time period 1 to time period 2 is $141 - 100 = 41\%$. The percent change in the price level from time period 1 to time period 3 is $182 - 100 = 82\%$. In this way, changes in the cost of living

can be calculated across time. These changes are described by the inflation rate. That is, the rate of inflation from period 1 to period 2 was 41% and the rate of inflation from period 1 to period 3 was 82%. Notice that the inflation rate can only be calculated using this method when the same base year is used for all of the CPI's involved.

While it is simple to calculate the inflation rate between the base year and a comparison year, it is a bit more difficult to calculate the rate of inflation between two comparison years. To make this calculation, first check that both comparison years use the same base year. This is necessary to ensure that the same fixed basket of goods and services is used. Next, to calculate the percentage change in the level of the CPI, subtract the CPI for the later year from the CPI for the earlier year and then divide by the CPI for the earlier year.

In the example from Country B, the CPI for period 2 was 141 and the CPI for period 3 was 182. Since the base year for these CPI calculations was period 1, we must use the method of calculating inflation that takes into account the presence of two comparison years. We need to subtract the CPI for the later year from the CPI for the earlier year and then divide by the CPI for the earlier year. That gives $(182 - 141) / 141 = 0.29$ or 29%. Thus, the rate of inflation from period 2 to period 3 was 29%. Notice that this method works for calculating the rate of inflation between a base year and a comparison year as well. For instance, the CPI for period 1 was 100 and the CPI for period 2 was 141. Using the formula above gives $(141 - 100) / 100 = 0.41$ or 41%.

Calculating Inflation Using the GDP Deflator.

The other major price index used to determine the price level is the GDP deflator, a price index that shows how much of the change in the GDP from a base year is reliant on changes in the price level. As covered in the previous SparkNote, the GDP deflator is calculated by dividing the nominal GDP by the real GDP (the details for calculating the nominal GDP and the real GDP are presented in Part 1 of this SparkNote).

For example, let's calculate, using the table above, the GDP deflator for Country B in period 3 using period 1 as the base year. In

order to find the GDP deflator, we first must determine both nominal GDP and real GDP in period 3. Nominal GDP in period 3 is $(10 \times \$2) + (9 \times \$6) = \$74$ and real GDP in period 3 using period 1 as the base year is $(10 \times \$1) + (9 \times \$6) = \$64$. The ratio of nominal GDP to real GDP is $(\$74 / \$64) - 1 = 16\%$. This means that the price level rose 16% from period 1, the base year, to period 3, the comparison year. Thus, the inflation rate from period 1 to period 3 was 16%. Notice that it is important to use the earlier year that you want to compare as the base year in the calculation of real GDP.

CPI vs. GDP Measures of Inflation.

The inflation rate calculated from the CPI and GDP deflator are usually fairly similar in value. In theory, there is a significant difference between the abilities of each index to capture consumer's consumption choices when a change in price occurs. The CPI uses a fixed basket of goods from some base year, meaning that the quantities of goods and services consumed remains the same from year to year in the eyes of the CPI, whereas the price of goods and services changes. This type of index, where the basket of goods is fixed, is called a Laspeyres index.

The GDP deflator, on the other hand, uses a flexible basket of goods that depends on the quantities of goods and services produced within a given year, while the prices of the goods are fixed. This type of index, where the basket of goods is flexible, is called a Paasche index. While both of these indices work for the calculation of inflation, neither is perfect. The following example will help to illustrate why.

Let's say that a major disease spreads throughout the country and kills all of the cows. By dramatically limiting supply, this happenstance would cause the price of beef products to jump substantially. As a result, people would stop buying beef and purchase more chicken instead. However, given this situation, the GDP deflator would not reflect the increase in the price of beef products, because if very little beef was consumed, the flexible basket of goods used in the computation would simply change to not include beef. The CPI, on the other hand, would show a huge

increase in cost of living because the quantities of beef and milk products consumed would not change even though the prices shot way up.

When the prices of goods change, consumers have the ability to substitute lower priced goods for more expensive ones. They also have the ability to continue buying the more expensive ones if they like them enough more than the less expensive ones. The GDP deflator takes into account an infinite amount of substitution. That is, because the index is a Paasche index where the basket of goods is flexible, the index reflects consumers substituting less expensive goods for more expensive ones. The CPI, on the other hand, takes into account zero substitution. That is, because the index is a Laspeyres index where the basket of goods is fixed, the index reflects consumers buying the more expensive goods regardless of the changes in prices. Thus, the GDP deflator method underestimates the impact of a price change upon the consumer because it functions as if the consumer always substitutes a less expensive item for the more expensive one. On the other hand, the CPI method overestimates the impact of a price change upon the consumer because it functions as if the consumer never substitutes. While neither the CPI nor the GDP deflator fully captures consumers' actions resulting from a price change, each captures a unique portion of the change.

The Effects of Inflation.

There are two general categories of effects due to inflation. The first group of effects are caused by expected inflation. That is, these effects are a result of the inflation that economists and consumers plan on year to year. The second group of effects are caused by unexpected inflation. These effects are a result of inflation above and beyond what was expected by economics and consumers. In general, the effects of unexpected inflation are much more harmful than the effects of expected inflation.

Expected Inflation.

The major effects of expected inflation are simply inconveniences. If inflation is expected, people are less likely to hold cash since, over time, this money loses value due to inflation.

Instead, people will put cash into interest earning investments to combat the effects of inflation. This can be a bit of a nuisance, since people need money to take care of business. Thus, if consumers expect inflation, they are likely to hold less cash and travel more often to the bank to withdrawal a smaller amount of money. This phenomenon of changed consumer patterns is called the shoeleather cost of inflation, referring to the fact that more frequent trips to the bank will lessen the time it takes to wear out a pair of shoes. The second major inconvenient effect of expected inflation strikes companies that print the prices of their goods and services. If expected inflation makes the real value of the dollar fall over time, firms need to increase their nominal prices to combat the effects of inflation. Unfortunately, this is not always easy, as changing menus, catalogues, and price sheets takes both time and money. The problems of this sort are called the menu costs of inflation. Thus, the two major effects of expected inflation are merely inconveniences in the form of shoeleather costs and menu costs.

Unexpected Inflation.

If the rate of inflation from one year to the next differs from what economists and consumers expected, then unexpected inflation is said to have occurred. Unlike expected inflation, unexpected inflation can have serious consequences for consumers ranging well beyond inconvenience. The major effect of unexpected inflation is a redistribution of wealth either from lenders to borrowers, or vice versa. In order to understand how this works, it is important to remember that inflation reduces the real value of a dollar (the dollar will not buy as much as it once did). Thus, if a bank lends money to a consumer to purchase a home, and unexpected inflation is high, the money paid back to the bank by the consumer will have less purchasing power or real value than it did when it was originally borrowed because of the effects of inflation. If a bank lends money and inflation turns out to be lower than expected, then the shoe is on the other foot and the lender gains wealth, since the money paid back at interest is of more value than the borrower expected. In volatile circumstances, when inflation seems to be moving unexpectedly,

neither lenders nor borrowers will want to risk the chance of hurting themselves financially, and this hesitancy to enter the market will hurt the entire economy.

12.5 Unemployment.

Unemployment is a macroeconomic phenomenon that directly affects people. When a member of a family is unemployed, the family feels it in lost income and a reduced standard of living. There is little in the realm of macroeconomics more feared by the average consumer than unemployment. Understanding what unemployment really is and how it works is important both for the economist and for the consumer, as it is often discussed.

The Costs of Unemployment.

Because most people rely on their income to maintain their standard of living, the loss of a job will often directly threaten to reduce that standard of living. This creates a number of emotional problems for the worker and the family. In terms of society, unemployment is harmful as well. Unemployed workers represent wasted production capability. This means that the economy is putting out less goods and services than it could be producing. It also means that there is less money being spent by consumers, which has the potential to lead to more unemployment, beginning a cycle. However, in general, while unemployment is harmful for individuals, there are some circumstances in which unemployment is both natural and beneficial for the economy as a whole.

Okun's law.

We know that when there is unemployment, the economy is not producing at full output since there are people who are not working. But, what exactly is the relationship between unemployment and national output or GDP? How much would we expect the GDP to increase if unemployment fell 1%? These are useful and important questions to ask when trying to understand the costs of unemployment.

An economist named Arthur Okun looked at the relationship between unemployment and national output over the past 50 years.

He noticed a general pattern and stated an equation to explain it. His equation, Okun's Law, relates the percentage change in real GDP to changes in the unemployment rate. In particular, the equation states:

$\% \text{ change in real GDP} = 3\% - 2 \times (\text{change in unemployment rate})$

This equation basically says that real GDP grows at about 3% per year when unemployment is normal. For every point above normal that unemployment moves, GDP growth falls by 2%. Similarly, for every point below normal that unemployment moves, GDP growth rises by 2%. This equation, while not exact, provides a good estimate of the effects of unemployment upon output.

For example, let's say a country had an unemployment rate of 8% in one year and 6% in the next. Using Okun's law, it would be hypothesized that the percentage change in the real GDP would be $3\% - 2 * (-2\%) = 7\%$. Because 2% fewer people were unemployed the nation produced 7% more output.

Types of Unemployment.

While unemployment is a general term that describes people who wish to work but cannot find jobs, there are actually a number of specific types of unemployment. Three particular types of unemployment stand out as most important, frictional unemployment, structural unemployment, and cyclically unemployment

Some people who are not working are simply between jobs. This may be the result of being hired elsewhere or simply relocating. They are not actively searching for a job, but instead just waiting to begin their next job. This is called frictional unemployment because these workers are literally between jobs.

Other workers have a mismatch of skills for the job or geographic area that they want to work. If a welder is displaced by a robot or if a nuclear engineer is simply no longer needed in a lab, these workers become unemployed. This type of unemployment is called structural unemployment because the structure of the job is incompatible with the skills offered by the worker.

Finally, some workers may be laid off as the economy slows down. These workers possess the necessary skills, but there is simply not enough demand for their firms to continue to employ them. This type of unemployment is called cyclical unemployment because it is attributable to changes in output due to the cycles of the economy.

Calculating Unemployment.

The Bureau of Labor Statistics (BLS) regularly gathers data from 60,000 households to compute a number of macroeconomic figures. One of these figures is the unemployment rate.

To compute the unemployment rate, the first step is to place people into one of three categories: employed, unemployed, or out of the labor force. People who are employed are currently working. People who are unemployed are not currently working, but are actively searching for a job and would work if they found a job. People who are out of the labor force are either not currently looking for a job or would not work if they found a job.

Once people have been placed into the appropriate categories, the total labor force can be calculated as the total number of workers who are either employed or unemployed. The unemployment rate is the ratio of the number of people unemployed over the total number of people in the labor force.

For example, let's say that a survey by the BLS reveals 20 people employed, 5 people unemployed, and 40 people out of the labor force. Then the labor force would be the sum of the employed plus the unemployed or $20 + 5 = 25$ people. The unemployment rate is the ratio of the unemployed to the total labor force or $(5 / 25) = 20\%$.

Full Employment and the Natural Rate of Unemployment.

The term full employment sounds as though it means everybody is working. And indeed, full employment refers to an economic situation in which unemployment is very low. However, when the economy is at full employment there is a still small amount of normal unemployment. This unemployment exists because people are always changing between jobs creating frictional unemployment. Similarly, when new workers enter the labor market, they do not

immediately gain jobs. Instead, they must search for jobs, even if only for a short period of time. This causes there to be some unemployment even when the economy is theoretically at full employment.

The natural rate of unemployment is the rate of unemployment that corresponds to full employment. Economists theorize that this is around 6% unemployment due to frictional unemployment and structural unemployment. Cyclical unemployment causes a slight variation above and below this natural rate. In general, the economy is said to be operating at full capacity when the unemployment rate is at the natural rate of unemployment. Similarly, when the unemployment rate is below the natural rate of unemployment, the economy is said to be operating above full capacity. Finally, when the unemployment rate is above the natural rate of unemployment, the economy is said to be operating below full capacity.

The Causes of Unemployment.

Now that we have covered the types of unemployment and how to calculate the unemployment rate, let's go over what causes unemployment. There are four basic causes of unemployment in a healthy, working economy. These reasons for unemployment are: minimum wage laws, labor unions, efficiency wages, and job search. In the real world economy all four of these forces work together to create the unemployment that is reflected in the unemployment rate.

Minimum Wage Laws.

In microeconomics, we learned that in an efficient market, the price of a good changes to equilibrate the quantity demanded and the quantity supplied (See the SparkNote on Supply and Demand.) The labor market, in its natural form, is just like any other market. If there are unemployed workers who want jobs, the price of labor or the wage will simply drop until all of the labor force is employed. That is, this would happen if there were not government intervention into the labor market. In order to help maintain a certain standard of living among all workers, the government implements a minimum wage, which artificially inflates the wages of the workers at the

bottom of the wage scale above what the firm would normally pay at equilibrium. This in turn causes the people above the minimum wage workers to demand more pay and for the people above them to do the same. Eventually, the minimum wage causes the wages of all workers to increase above the market-clearing level. When the wage demanded is greater than the wage offered, workers earn more; but in response firms will cut jobs to recoup the money they are losing, increasing unemployed workers. Raising the minimum wage therefore also increases unemployment. (The factors playing into this dynamic are more closely examined in the microeconomics SparkNote on Labor Markets.)

Labor Unions.

A second, and closely related, cause of unemployment, lies with the actions of labor unions. Labor unions are collectives of workers who rally together for higher wages, better working conditions, and more benefits. These unions force firms to spend more money on each worker, some in the form of wage and some in the form of benefits. Overall, this has an effect similar to the minimum wage law, where workers are demanding wages greater than the firms are willing to pay. Again, this raises the wages of workers above the market clearing level and creates a situation in which there are more people who want to work at the wage than there are firms who want to hire at the wage. In this way, labor unions increase the wages and benefits of workers who are employed, but may simultaneously increase the number of workers who are unemployed.

Efficiency Wages.

A third reason for unemployment is based on the theory of efficiency wages. The basic idea behind efficiency wages is that firms benefit by paying their workers above the equilibrium wage, since higher wages produce happier, healthier, and more productive workers, and may even increase worker loyalty. But, when the firms pay efficiency wages that are above the equilibrium level, they also create an excess in the labor supply: more people want to work for the wage than there are positions. Efficiency wages, like the

minimum wage and labor unions, therefore increase the wages for workers who are employed but also increase overall unemployment.

Job Search.

The fourth cause of unemployment, job search, is unrelated to the labor market. Instead, it is based on ideas similar to the frictional, structural, and cyclical unemployment discussed earlier. When a person decides that he wants to work, he cannot simply become employed. Instead he must find a job. This job search often takes a bit of time. During the process of looking for the right job, the person is considered as an unemployed member of the labor force. Simply looking for a job or moving from one job to the next causes some unemployment.

Unemployment is in reality much more complex than the average consumer appreciates. For this reason, most people do not understand that some unemployment in the economy is not a problem. In fact, unemployment of certain low levels indicate that the economy is functioning neither above nor below its potential output level, at a sustainable level.

12.6 The Tradeoff Between Inflation and Unemployment.

Okun's Law describes a clear relationship between unemployment and national output, in which lowered unemployment results in higher national output. Such a relationship makes intuitive sense: as more people in a nation work it seems only right that the output of the nation should increase. Building on Okun's law, another economist, A. W. Phillips, discovered a relationship between unemployment and inflation. The chain of basic ideas behind this belief follows: as more people work the national output increases, causing wages to increase, causing consumers to have more money and to spend more, resulting in consumers demanding more goods and services, finally causing the prices of goods and services to increase. In other words, Phillips showed that unemployment and inflation shared an inverse relationship: inflation rose as unemployment fell, and inflation fell as unemployment rose. Since two major goals for economic policy makers are to keep both

inflation and unemployment low, Phillip's discovery was an important conceptual breakthrough, but also posed a troublesome challenge: how to keep both unemployment and inflation low, when lowering one results in raising the other?

The Phillips Curve.

Phillips' discovery can be represented in a curve, called, aptly, a Phillips curve.



Figure 12.5.1 – The Phillips Curve

It is important to remember that the Phillips curve depicted above is simply an example. The actual Phillips curve for a country will vary depending upon the years that it aims to represent.

Notice that the inflation rate is represented on the vertical axis in units of percent per year. The unemployment rate is represented on the horizontal axis in units of percent. The curve shows the levels of inflation and unemployment that tend to match together approximately, based on historical data. In this curve, an unemployment rate of 7% seems to correspond to an inflation rate of 4% while an unemployment rate of 2% seems to correspond to an inflation rate of 6%. As unemployment falls, inflation increases.

The Phillips curve can be represented mathematically, as well. The equation for the Phillips curve states

$$\text{inflation} = [(\text{expected inflation}) - B] \times [(\text{cyclical unemployment rate}) + (\text{error})]$$

where B represents a number greater than zero that represents the sensitivity of inflation to unemployment.

While the Phillips curve is theoretically useful, however, it is less practically helpful. The equation only holds in the short term. In the long run, unemployment always returns to the natural rate of unemployment, making cyclical unemployment zero and inflation equal to expected inflation.

Problems with the Phillips Curve and Stagflation.

In fact, the Phillips curve is not even theoretically perfect. In fact, there are many problems with it if it is taken as denoting anything more than a general relationship between unemployment and inflation. In particular, the Phillips curve does a terrible job of explaining the relationship between inflation and unemployment from 1970 to 1984. Inflation in these years was much higher than would have been expected given the unemployment for these years.

Such a situation of high inflation and high unemployment is called stagflation. The phenomenon of stagflation is somewhat of a mystery, though many economists believe that it results from changes in the error term of the previously stated Phillips curve equation. These errors can include things like energy cost increases and food price increases. But no matter its source, stagflation of the 1970's and early 1980's seems to refute the general applicability of the Phillips curve.

The Phillips curve must not be looked at as an exact set of points that the economy can reach and then remain at in equilibrium. Instead, the curve describes a historical picture of where the inflation rate has tended to be in relation to the unemployment rate. When the relationship is understood in this fashion, it becomes evident that the Phillips curve is useful not as a means of picking an unemployment and inflation rate pair, but rather as a means of understanding how unemployment and inflation might move given historical data.

Relationship between productivity and unemployment.

In the previous section we learned that increases in productivity allow a given amount of labor to produce a greater amount of output than was possible before the productivity increase. Popular wisdom dictates that increases in productivity thus reduce the number of jobs available, because less labor is required to produce the same amount of output. Fortunately, this is not the case suggested by the historical economic data. Rather, increased productivity seems to help the economy overall to a much greater extent than it hurts workers, especially in the long run.

A historical example will serve to demonstrate this. Since the early 20th century, there has been an over 1000% increase in output per hour in the US. This means that, on average, workers today can produce more than 10 times more than what workers, on average, could produce around the turn of the century. With productivity increases this high, it seems that unemployment should be very high, too, as all of the goods and services used in the early 1900's can be produced now by a much smaller workforce.

But, as productivity increases, so do the number of products and markets available. Similarly, as products become less expensive, due to more efficient production methods, the quantity demanded for some of those products also increases. Overall, in the long run, increases in productivity are offset by increases in demand, so those jobs are not lost.

Costs of lagging productivity.

We just demonstrated how increases in productivity do not necessarily result in a rise in unemployment. But what is the other side of this coin? That is, what are the effects of lagging productivity? In general, a country that lags in productivity will have both lower wages and lower living standards than a country with higher productivity.

This assumption is based on the idea that all economies trade on the open market. If a country that lags in productivity produces a good to sell on the international market, it must price the good at the same level that more productive countries. In this case, the only way for the lagging country to produce the good at a low price is to pay

labor a low wage. Thus, if labor receives a low wage, the workers are unable to provide or enjoy a high standard of living.

Let's work this out through an example. Say that there is an international market for widgets. The going price is \$5 per widget. Most productive countries are able to produce widgets and sell them for this price. One country, which is lagging in productivity, can only produce widgets at half the speed of the other countries. But, because the lagging country is only able to sell widgets at \$5 each, it must reduce its costs of production. Since labor is the only cost that can be changed, as the machines are paid for and their maintenance cannot be put off, workers are paid less to make the country that lags in productivity competitive in the international marketplace.

Prosperity.

What does a high standard of living entail? This judgement is relatively subjective, but there are a number of factors that seems to be common to most economists' ideals. These include physical possessions, nutrition, health care, and life expectancy. The more prosperous an economy, the better off the citizens of that economy are in terms of material possessions and health. Thus, prosperity is attainable when wages are high and countries are highly productive.

This is not to say that prosperity is static. Instead, over time different countries becomes more and less prosperous. An economic boom in one country may bring temporary prosperity to that country. Similarly, a depression may wipe out some hard won gains in prosperity. Overall, prosperity is a relatively subjective judgement once the basic necessities of life are in place.

GDP per capita.

There is a scientific way of measuring prosperity that, while not fully descriptive, is useful in comparing the standard of living across countries. This is called the GDP per capita measure. This is simply calculated by dividing the nominal GDP in a common currency, say US dollars, by the total number of people in the country. This gives the average amount of income that each member of the population potentially has access to. In other words, the more

money each individual is able to access the higher the potential standard of living.

This is a useful means of comparing economic wellbeing-- that is, prosperity-- across countries. For instance, the GDP per capita in the US is around \$25,000 while in Mexico it is around \$7000. It stands to reason that by and large, the standard of living in the US is higher than the standard of living in Mexico. This same logic can be used to compare the standard of living between any countries.

As mentioned earlier, the GDP per capita measure is the nominal GDP divided by the population. Thus, for a give amount of output, a country with a smaller population will have a higher standard of living than a country with a larger population. This is a problem often encountered in countries with very low GDP per capita measures of the standard of living. When GDP grows slowly and the population increases rapidly, the GDP per capita and thus the standard of living tends to decline over time. Thus, a major way of increasing the standard of living in a country is to control the population growth rate and thus increase the GDP per capita.

Theme 13 WORLD ECONOMY AND CURRENT TRENDS OF ITS DEVELOPMENT

13.1 Trade Basics.

Take a minute and look around. You might be surprised to discover how many of the everyday items in your life are made overseas. Your shirt might be made in China. Perhaps your stereo was assembled in Japan. The watch you're wearing could be from Switzerland. And yes, the shoes that you are sporting might have been assembled in the United States.

The importing and exporting of goods is big business in today's global economy. When goods are produced in one country and sold in another, international trade occurs. It is so common to find items produced worldwide that people rarely even think about it. Not too long ago, countries consumed goods predominately produced within their borders. As transportation has become increasingly less expensive and telecommunications have improved, international trade has flourished.

In general, international trade allows countries to focus on the industries in which they can be most productive and efficient. In this way, trade often raises the standard of living of both producers and consumers. International trade also has a dark side.

This SparkNote will address many of the questions about international trade that are probably looming in your mind. Why should countries trade? How does trade work? What is the effect of international trade? How do exchange rates affect trade? Can the government interfere in free trade? What is the trade deficit?

The benefits and pitfalls of trade affect the economy at its core. Everything from output to standard of living to interest rates remains under the partial control of international trade. By understanding international trade, we will uncover one of the most important real life applications of macroeconomics.

Why Trade?

Why should countries trade? Simply put, if a country can produce a good for less than another country, then the opportunity for

advantageous trade exists. Of course, the opportunity for advantageous trade also exists when a country can produce a good that another country is unable to produce. In each of these cases, both the consuming country and the producing country will be better off with trade than without it.

Let's use an example to explain. Say Jim lives on an island with a coconut tree. Sally lives on another island with a banana tree. Jim tires of eating coconuts and desires something new to eat. Surprisingly enough, Sally is tired of bananas and would love some nice sweet coconut. In this example, trade would benefit both parties.

This example presents only one of the two cases in which trade is advantageous. In the other case, a country can produce goods at an absolutely or relatively lower price than another country. These conditions are called the absolute advantage and the comparative advantage respectively.

Advantages in Trade.

A country may have two advantages over another country (or countries) regarding trade. Absolute advantage occurs when a producer can use the smallest amount of inputs to produce a given amount of output compared to other producers. Absolute advantage may apply to many countries. Comparative advantage happens when a producer has a lower opportunity cost of production than another producer. Comparative advantage may also apply to many countries, but in this SparkNote it will be restricted to cases of two countries and two goods. Each of these two cases will be discussed in detail in the following paragraphs.

Farmer John has a pistachio farm. It takes him five hours worth of work to harvest one pound of nuts. Farmer Rick also has a pistachio farm. It takes him four hours worth of work to harvest one pound of nuts. Farmer Erica owns a third pistachio farm. She can harvest one pound of nuts in three hours. In this example, Farmer Erica is said to have the absolute advantage in pistachio production since she is able to produce the largest amount of output in the smallest amount of time.

In terms of trade, it is always most beneficial for the producer with the absolute advantage in the production of a good to specialize in the production of that good. For instance, in the above example, it was far more productive for Farmer Erica to spend time harvesting pistachios than it was for Farmer Rick or Farmer John to do the same. Farmer Erica therefore has a lower cost of production than either of the other two producers. Applying this idea to international trade leads us to the conclusion that goods should be produced for which the cost of production is lowest.

In a more complex model though, producers can produce many different goods. Often times, if a producer chooses to produce one good, he or she must give up the opportunity to produce another good. This is called the opportunity cost of producing a good. The opportunity cost describes what is sacrificed or relinquished when one choice is taken over another.

Let's use another example. Revisiting the farms belonging to Farmer Erica and Farmer Rick, we discover that they are both able to produce pistachios and soybeans. Farmer Erica can harvest 1 pound of pistachios in 2 hours and she can harvest 5 pounds of soybeans in 2 hours. Farmer Rick, on the other hand, can harvest 1 pound of pistachios in 10 hours and 50 pounds of soybeans in 2 hours.

Looking at this information in terms of the total amount of time each farmer takes to harvest a pound of each product is the next step to understanding comparative advantage. Farmer Erica can harvest 1 pound of pistachios in an hour while it takes Farmer Rick 10 hours to harvest 1 pound of pistachios. On the other hand, Farmer Rick can harvest 1 pound of soybeans in about 2.5 minutes, but it takes Farmer Erica about 24 minutes to harvest a pound of soybeans.

Since each of these farmers only has a fixed number of hours to spend harvesting, each hour spent harvesting pistachios cannot be spent harvesting soybeans, and similarly, each hour spent harvesting soybeans cannot be spent harvesting pistachios. For every hour Farmer Erica spends picking soybeans, she gives up 0.5 pounds of pistachios; and for every hour that Farmer Erica spends picking pistachios, she gives up 0.1 pounds of soybeans. Farmer Rick gives

up 25 pounds of soybeans for every hour that he spends harvesting pistachios, and for every hour that Farmer Rick spends harvesting soybeans, he gives up 0.1 pounds of pistachios.

We can reexamine this example in terms of opportunity costs. Farmer Erica has an opportunity cost of 0.1 pounds of soybeans for every 0.5 pounds of pistachios harvested, or similarly, 5 pounds of pistachios for every 1 pound of soybeans harvested. Farmer Rick has an opportunity cost of 0.1 pounds of pistachios for every 25 pounds of soybeans harvested, or 250 pounds of soybeans for every pound of pistachios harvested.

Table 13.1.1 – Opportunity costs of production

| | Opportunity cost of pistachios in terms of soybeans | Opportunity cost of soybeans in terms of pistachios |
|--------------|---|---|
| Farmer Erica | 1/5 | 5 |
| Farmer Rick | 250 | 1/250 |

Figure 1 depicts the situation described above. Notice that for Farmer Erica, the opportunity cost of harvesting pistachios is lower than the opportunity cost of harvesting soybeans. Similarly, for Farmer Rick, the opportunity cost of harvesting soybeans is lower than the opportunity cost of harvesting pistachios. In both of these cases, this means that both farmers are better off spending their time harvesting the product that they can produce most efficiently.

The producer with the lower opportunity cost of production is said to have the comparative advantage. Notice that in a case with two producers and two products, each producer must have a comparative advantage in one, and not both, products. Figure 1 makes finding the comparative advantage easy. Simply represent the opportunity cost of one product in terms of the other product for both producers, and then compare these numbers. Whichever producer has the lower opportunity cost has the comparative advantage and should produce that product.

Absolute advantage and comparative advantage are theoretically straightforward. When a producer has an absolute advantage, he can produce a given output by using fewer inputs than any competing producer. When a producer has a competitive advantage, he can produce one product with a smaller amount of inputs than the competition. He therefore must produce another product with a greater amount of inputs than the competitor, hence the designation of comparative advantage. When either an absolute advantage or a comparative advantage exists, benefits from trade are guaranteed.

13.2 The Means of Trade.

Flows of Capital and Goods.

In the first macroeconomics SparkNote on measuring the economy, we learned the identity $Y = C + I + G + NX$ to describe the output of an economy. In this equation, Y is the nominal output, C is money spent on consumption, I is money spent on investment, G is money spent by the government, and NX is net exports or exports less imports. The sum of these costs is the total amount of both income and output in a country.

To understand how capital and goods flow in and out of countries, we should keep the $Y = C + I + G + NX$ identity in mind. NX is of particular interest. NX is defined as the total amount of exports less the total amount of imports. NX is positive if a country exports more than it imports, negative if a country imports more than it exports, and zero if exports and imports are equal.

Let's work through each of these examples in turn. First we'll examine the simplest case, in which exports and imports are equal. In this example, there are two countries, Country A and Country B. If Country A exports 1 million dollars worth of coconuts to Country B and imports 1 million dollars worth of bananas from Country B, then the NX for both countries is equal to zero since exports equal imports. In this case, goods are traded for goods and at the end of the term, the trade balance is equal.

When countries import less than they export or import more than they export, the situation becomes significantly more complicated. Now let's examine the case when a country imports more than it exports. If Country A exports 0.5 million dollars worth of coconuts to Country B and imports 1 million dollars worth of bananas from Country B, then Country A has a negative trade balance, called a trade deficit. In this case, Country A owes Country B money for the imported bananas beyond the 0.5 million dollars worth of exported coconuts. If this is a short-term debt, nothing of consequence would occur since Country A has the ability to export more coconuts quickly to make up for the difference.

If the debt is long term, however, Country A must somehow repay Country B for the imported bananas. The easiest way to think of this exchange is to imagine Country A giving Country B interest in the future coconuts produced by Country A. To repay the debt that Country A owes to Country B, Country B becomes invested in Country A. Any amount of exports that exceeds the total amount of imports results in foreign investment. The opposite occurs when exports exceed imports as the exporting country becomes a foreign investor in the importing country.

This leads us to another important international trade identity: $NX = NFI$ where NX is net exports or exports less imports and NFI is net foreign investment. Simply put, the difference between what a country exports and imports is equal to the amount of foreign investment. The trade balance can remain fairly even if a country imports more than it exports--it must make up the difference through foreign investment.

If net exports remain equal to net foreign investment, a few tendencies arise:

- countries with few imports and many exports will tend to have significant foreign investment;
- countries with few exports and many imports will also tend to have significant foreign investment;

- countries with exports equal to imports will tend to have little investment in foreign countries and little foreign investment

Understanding the identity $NX = NFI$ and the means by which capital and goods flow between countries helps to clarify the workings of international trade.

13.3 Trade and the Country.

Barriers to Trade

It may seem odd, but governments often step in to restrict trade. Why might a government want to restrict trade? If domestic industries cannot compete against foreign industries, the government will restrict trade to help the domestic industries develop. Governments may also restrict trade to foster business at home rather than encouraging business to move out of the country. These protectionist policies encourage prices to stay high and help domestic industries to develop.

Trade Interferences.

Governments three primary means to restrict trade: quota systems; tariffs; and subsidies.

A quota system imposes restrictions on the specific number of goods imported into a country. Quota systems allow governments to control the quantity of imports to help protect domestic industries.

Tariffs are fees paid on imported goods. Tariffs increase the price that consumers pay for the good, thus reducing the quantity of the good demanded and making the price more in line with the price charged by domestic producers. Tariff profits may go to the government or to developing industries.

Subsidies are grants given to domestic industries to help them develop and compete with foreign producers. Through subsidies, domestic producers can charge less for their goods without losing money due to outside grants.

Through judicious use of quotas, tariffs, and subsidies, governments are able to improve the domestic economy. This may increase the price that domestic consumers pay for goods, though this

small annoyance is usually outweighed by significantly bolstered overall economic levels and long-term economic growth.

Trade Deficit.

In the section on net exports we learned that net exports equal exports minus imports. The difference between exports and imports is referred to as the trade deficit or the trade surplus. When exports exceed imports, a trade surplus exists. When imports exceed exports, a trade deficit exists.

There often talk about the effects of the trade deficit on the economy. What is the actual effect of the trade deficit though? Remember that when there is a trade deficit, net foreign investment fills the gap between exports and imports, as $NX = NFI$. Thus, if a large trade deficit exists, foreign investment must be high. This is slightly problematic as domestic companies often enjoy domestic ownership--a large trade deficit threatens this condition. A trade deficit is often matched with a large governmental budget deficit. Though the specific effects of a trade deficit are nebulous, in general a large trade deficit is thought to stunt long-term economic growth slightly.

How can the trade deficit be resolved? First, exports can be increased to make annual net exports positive. When employed, this method will cause a trade deficit decrease over time. Second, funds can be used to pay off foreign investors, reducing balance due from trade and causing a lower trade deficit.

Theme 14 THE BALANCE OF PAYMENTS. THE RATE OF EXCHANGE

14.1 Balance of Payments.

Few subjects in economics have caused so much confusion – and so much groundless fear—in the past four hundred years as the thought that a country might have a deficit in its balance of payments. This fear is groundless for two reasons: (1) there never is a deficit, and (2) it would not necessarily hurt anything if there was one.

The balance-of-payments accounts of a country record the payments and receipts of the residents of the country in their transactions with residents of other countries. If all transactions are included, the payments and receipts of each country are, and must be, equal. Any apparent inequality simply leaves one country acquiring assets in the others. For example, if Americans buy automobiles from Japan, and have no other transactions with Japan, the Japanese must end up holding dollars, which they may hold in the form of bank deposits in the United States or in some other U.S. investment. The payments Americans make to Japan for automobiles are balanced by the payments Japanese make to U.S. individuals and institutions, including banks, for the acquisition of dollar assets. Put another way, Japan sold the United States automobiles, and the United States sold Japan dollars or dollar-denominated assets such as treasury bills and New York office buildings.

Although the totals of payments and receipts are necessarily equal, there will be inequalities - excesses of payments or receipts, called deficits or surpluses - in particular kinds of transactions. Thus, there can be a deficit or surplus in any of the following: merchandise trade (goods), services trade, foreign investment income, unilateral transfers (foreign aid), private investment, the flow of gold and money between central banks and treasuries, or any combination of these or other international transactions. The statement that a country has a deficit or surplus in its “balance of payments” must refer to some particular class of transactions. As Table 1 shows, in 2004 the

United States had a deficit in goods of \$665.4 billion but a surplus in services of \$48.8 billion.

Many different definitions of the balance-of-payments deficit or surplus have been used in the past. Each definition has different implications and purposes. Until about 1973 attention was focused on a definition of the balance of payments intended to measure a country's ability to meet its obligation to exchange its currency for other currencies or for gold at fixed exchange rates. To meet this obligation, countries maintained a stock of official reserves, in the form of gold or foreign currencies, that they could use to support their own currencies. A decline in this stock was considered an important balance-of-payments deficit because it threatened the ability of the country to meet its obligations. But that particular kind of deficit, by itself, was never a good indicator of the country's financial position. The reason is that it ignored the likelihood that the country would be called on to meet its obligation and the willingness of foreign or international monetary institutions to provide support.

After 1973, interest in official reserve positions as a measure of balance of payments greatly diminished as the major countries gave up their commitment to convert their currencies at fixed exchange rates. This reduced the need for reserves and lessened concern about changes in the size of reserves. Since 1973, discussions of "the" balance-of-payments deficit or surplus usually refer to what is called the current account. This account contains trade in goods and services, investment income earned abroad, and unilateral transfers. It excludes the capital account, which includes the acquisition or sale of securities or other property.

Because the current account and the capital account add up to the total account, which is necessarily balanced, a deficit in the current account is always accompanied by an equal surplus in the capital account, and vice versa. A deficit or surplus in the current account cannot be explained or evaluated without simultaneous explanation and evaluation of an equal surplus or deficit in the capital account.

A country is more likely to have a deficit in its current account the higher its price level, the higher its gross national product, the higher its interest rates, the lower its barriers to imports, and the more attractive its investment opportunities - all compared with conditions in other countries - and the higher its exchange rate. The effects of a change in one of these factors on the current account balance cannot be predicted without considering the effect on the other causal factors. For example, if the U.S. government increases tariffs, Americans will buy fewer imports, thus reducing the current account deficit. But this reduction will occur only if one of the other factors changes to bring about a decrease in the capital account surplus. If none of these other factors changes, the reduced imports from the tariff increase will cause a decline in the demand for foreign currency (yen, deutsche marks, etc.), which in turn will raise the value of the U.S. dollar (see foreign exchange). The increase in the value of the dollar will make U.S. exports more expensive and imports cheaper, offsetting the effect of the tariff increase. The net result is that the tariff increase brings no change in the current account balance.

Table 14.1 – The U.S. Balance of Payments, 2004

| | |
|--|--------|
| Goods | -665.4 |
| Services | +48.8 |
| Investment income | +30.4 |
| Balance on goods, services, and income | -587.2 |
| Unilateral transfers | -80.9 |
| Balance on current account | -668.1 |
| Nonofficial capital* | +270.6 |
| Official reserve assets | +397.5 |
| Balance on capital account | +668.1 |
| Total balance | 0 |

* Includes statistical discrepancy.

Source – U.S. Department of Commerce, Survey of Current Business.

Contrary to the general perception, the existence of a current account deficit is not in itself a sign of bad economic policy or bad economic conditions. If the United States has a current account deficit, all this means is that the United States is importing capital. And importing capital is no more unnatural or dangerous than importing coffee. The deficit is a response to conditions in the country. It may be a response to excessive inflation, to low productivity, or to inadequate saving. It may just as easily occur because investments in the United States are secure and profitable. Furthermore, the conditions to which the deficit responds may be good or bad and may be the results of good or bad policy; but if there is a problem, it is in the underlying conditions and not in the deficit per se.

During the 1980s there was a great deal of concern about the shift of the U.S. current account balance from a surplus of \$5 billion in 1981 to a deficit of \$161 billion in 1987. This shift was accompanied by an increase of about the same amount in the U.S. deficit in goods. Claims that this shift in the international position was causing a loss of employment in the United States were common, but that was not true. In fact, between 1981 and 1987, the number of people employed rose by more than twelve million, and employment as a percentage of population rose from 60 percent to 62.5 percent.

Many people were also anxious about the other side of the accounts - the inflow of foreign capital that accompanied the current account deficit - fearing that the United States was becoming owned by foreigners. The inflow of foreign capital did not, however, reduce the assets owned by Americans. Instead, it added to the capital within the country. In any event, the amount was small relative to the U.S. capital stock. Measurement of the net amount of foreign-owned assets in the United States (the excess of foreign assets in the United States over U.S. assets abroad) is very uncertain. At the end of 1988, however, it was surely much less than 4 percent of the U.S. capital stock and possibly even zero. Later, there was fear of what would happen when the capital inflow slowed down or stopped. But after

1987 it did slow down and the economy adjusted, just as it had adjusted to the big capital inflow earlier, by a decline in the current account and trade deficits.

These same concerns surfaced again in the late 1990s and early 2000s as the current account went from a surplus of \$4 billion in 1991 to a deficit of \$666 billion in 2004. The increase in the current account deficit account, just as in the 1980s, was accompanied by an almost equal increase in the deficit in goods. Interestingly, the current account surpluses of 1981 and 1991 both occurred in the midst of a U.S. recession, and the large deficits occurred during U.S. economic expansions. This makes sense because U.S. imports are highly sensitive to U.S. economic conditions, falling more than proportionally when U.S. GDP falls and rising more than proportionally when U.S. GDP rises. Just as in the 1980s, U.S. employment expanded, with the U.S. economy adding more than twenty-one million jobs between 1991 and 2004. Also, employment as a percentage of population rose from 61.7 percent in 1991 to 64.4 percent in 2000 and, although it fell to 62.3 percent in 2004, was still modestly above its 1991 level.

How about the issue of foreign ownership? By the end of 2003, Americans owned assets abroad valued at market prices of \$7.86 trillion, while foreigners owned U.S. assets valued at market prices of \$10.52 trillion. The net international investment position of the United States, therefore, was \$2.66 trillion. This was only 8.5 percent of the U.S. capital stock.

The balance of payment is defined as a systematic record of all economic transactions between the residents of a country and residents of foreign countries during a certain period of time. Although the above definition of balance of payments is quite revealing certain terms used in the definition may require some clarification. The term's systematic record does not refer to any particular system. However, the system generally adopted is double entry book-keeping system. Economic transactions include all such transactions that involve the transfer of title or ownership. While some transactions involve physical transfer of goods, services, assets

and money along with the transfer of title while other transactions do not involve transfer of title. For example, suppose that a subsidiary company of a foreign undertaking is operating in India and making profit. This company may pay all its profits as dividend to the shareholders abroad, or it may, alternatively reinvest its profit in India instead of paying dividends to its parent company abroad. Both kinds of transactions are recorded in the balance of payments accounts. The time period for balance of payments is not specifically defined, it can be of any period. The generally period is one financial year of calendar.

14.2 Purpose of Balance of Payments.

The balance of payment serves a very useful purpose as it yields necessary information for the future policy formulation in regard to domestic monetary and fiscal policies and foreign trade policy.

Following are the important uses of balance of payments:

It provides useful data for the economic analysis of country's weakness and strength as a partner in the international trade. By comparing the statements contained in the balance of payments for several successive years, one can find out whether international economic position of the country is improving or deteriorating. In case it is deteriorating, necessary corrective measures can be taken.

It reveals the changes in the composition and magnitude of foreign trade. The changes that curb economic well-being of a country are taken care by the government.

It also provides indications of future repercussions based on countries past trade performances. If balance of payments shows continuous and large deficits over time then it indicates growing international indebtedness, which ultimately leads to financial bankruptcy. Similarly, a continuous large-scale surplus in the balance of payments, particularly when its magnitude goes beyond the absorption capacity of the country indicates impending dangers of inflation.

Detailed balance of payments accounts also reveal weak and strong points in the country's foreign trade relations and thereby invite government attention to the need for corrective measures against the weak spots.

14.3 Balance of Payments Accounts.

The economic transactions between a country and the rest of the world may be grouped under two broad categories:

Current transactions: Current transactions pertain to export and import of goods and services that change the current level of consumption in the country or bring a change in the current level of national income.

Capital transactions: Capital transactions are those transactions, which increase or decrease country's total stock of capital, instead of affecting the current level of consumption or national income. In other words, current transactions are flow transactions. In accordance with the two kinds of transactions, balance of payments account is divided into two major accounts:

Current Account.

The items, which are entered in the current account of balance of payments, are listed in the following Table, in the order of their importance. The categories of items presented in the table were published by the IMF and are currently followed in India. In the 'credit' column values receivable are entered and in 'debt' column values payable are entered. The net balance shows the excess of credit over the debit for each item, can be negative (-) or positive (+). The items listed in current account can be further grouped into visible and invisible items. Merchandise trade, i.e., export and imports of goods, fall under the visible items. Rest all other items in the current account payment and receipt for the services, such as banking, insurance and shipping are termed as invisible. Sometimes another category, i.e., un-required transfer, is created to give a separate treatment to the items like gifts, donations, military aid, and technical assistance. These are different from other invisible items since they involve unilateral transfers.

The net balance on the visible items, i.e., the excess of merchandise exports (X_g) over the merchandise imports (M_g) is called as balance of trade. If $X_g < M_g$ it is unfavorable. The overall balance on the Current Account is known as 'Balance on Current Account.' The 'Balance on the Current Account' either surplus or deficit is carried over to the Capital Account.

Table 14.2 – The Current Account component in Balance of Payments (BoP)

| Transactions | Credit | Debit |
|---|----------|-----------|
| 1. Merchandise | Export | Import |
| 2. Foreign travel | Earnings | Payments |
| 3. Transportation | Earnings | Payments |
| 4. Insurance (premium) | Receipts | Payments |
| 5. Investment | Dividend | Dividends |
| 6. Government (purchases and sales of goods and services) | Receipts | Payments |
| 7. Miscellaneous | Receipts | Payments |
| Current Account Balance | - | Payments |

Capital Account.

As mentioned earlier, the items entered in the capital account of balance of payments are those items, which affect the existing stock of capital of the country. The broad categories of capital account items are: (a) short-term capital movements; (b) long-term capital movements; and (c) changes in the gold and exchange reserves.

Short-term capital movements include (i) purchase of short-term securities such as treasury bills, commercial bills and acceptance bills, etc.; (ii) speculative purchase of foreign currency; and (iii) cash balances held by foreigners for such reasons as fear of war and political instability. An item of short-term capital results often from the net balances (positive or negative) in the Current Account.

Long-term capital movements include: (i) direct investments in shares, bonds, real estate and physical assets such as plant, building and equipment's in which investors hold a controlling power; (ii) portfolio investments including all other stocks and bonds such as government securities, securities of firms which do not entitle the holder with a controlling power; and (iii) amortization of capital, i.e., repurchase and resale of securities earlier sold to or purchased from the foreigners. Direct export or import of capital goods fall under the category of direct investment. It should be noted that export of capital is a debit item whereas export of merchandise is a credit item. Export of goods result in inflow of foreign currency, which is an addition to the circular flow of money income, whereas export of capital results in outflow of foreign exchange which, amounts to withdrawal from the foreign exchange reserves.

Gold and foreign exchange reserves make the third major category of items in the capital account. Gold and foreign exchange reserves are maintained to stabilize the exchange rate of the home currency and to make payments to the creditors in case there exists payment deficits on all other accounts.

14.4 Balance of Payments always Balances.

The balance of payments accounting is based on the double-entry book-keeping system in which both sides of a transaction, i.e., receipts and payments are recorded. For example, exports involve out-flow of goods and inflow of foreign currency. Similarly, imports involve inflow of goods and outflow of foreign currency. Both, inflow and outflow are recorded in this system. International borrowing and lending give rise to credit to the lender and debit to the borrower. Both are recorded in the balance of payments. However, donations, gifts, aids and assistance are unilateral transfers and do not involve transfer of an equivalent value. In regard to these items, there is only credit and no debit since they are nonrefundable. Yet, the receiving country is debited to keep the record of nonrefundable amounts and donator is credited for the record purposes. Such entries have information value for non-economic

purposes. Besides, these transactions reduce the deficit in the current account of the reporting country. Since in this system of balance of payments accounting international transactions are entered on both debit and credit sides. Balance of payments always balances from the accounting point of view.

14.5 Exchange Rates.

Nominal Exchange Rates versus Real Exchange Rates.

As we begin discussing exchange rates, we must make the same distinction that we made when discussing GDP. Namely, how do nominal exchange rates and real exchange rates differ?

The nominal exchange rate is the rate at which currency can be exchanged. If the nominal exchange rate between the dollar and the lira is 1600, then one dollar will purchase 1600 lira. Exchange rates are always represented in terms of the amount of foreign currency that can be purchased for one unit of domestic currency. Thus, we determine the nominal exchange rate by identifying the amount of foreign currency that can be purchased for one unit of domestic currency.

The real exchange rate is a bit more complicated than the nominal exchange rate. While the nominal exchange rate tells how much foreign currency can be exchanged for a unit of domestic currency, the real exchange rate tells how much the goods and services in the domestic country can be exchanged for the goods and services in a foreign country. The real exchange rate is represented by the following equation: $\text{real exchange rate} = (\text{nominal exchange rate} \times \text{domestic price}) / (\text{foreign price})$.

Let's say that we want to determine the real exchange rate for wine between the US and Italy. We know that the nominal exchange rate between these countries is 1600 lira per dollar. We also know that the price of wine in Italy is 3000 lira and the price of wine in the US is \$6. Remember that we are attempting to compare equivalent types of wine in this example. In this case, we begin with the equation for the real exchange rate of $\text{real exchange rate} = (\text{nominal exchange rate} \times \text{domestic price}) / (\text{foreign price})$.

Substituting in the numbers from above gives real exchange rate = $(1600 \times \$6) / 3000 \text{ lira} = 3.2$ bottles of Italian wine per bottle of American wine.

By using both the nominal exchange rate and the real exchange rate, we can deduce important information about the relative cost of living in two countries. While a high nominal exchange rate may create the false impression that a unit of domestic currency will be able to purchase many foreign goods, in reality, only a high real exchange rate justifies this assumption.

Net Exports and the Real Exchange Rate.

An important relationship exists between net exports and the real exchange rate within a country. When the real exchange rate is high, the relative price of goods at home is higher than the relative price of goods abroad. In this case, import is likely because foreign goods are cheaper, in real terms, than domestic goods. Thus, when the real exchange rate is high, net exports decrease as imports rise. Alternatively, when the real exchange rate is low, net exports increase as exports rise. This relationship helps to show the effects of changes in the real exchange rate.

PRACTICAL PART:

MODULE I. THE MAIN REGULARITIES OF FUNCTIONING OF THE ECONOMY

Theme 1. Economic theory: subject and method

The contents of educational material:

Economics as a sphere of vital activity of society.

Economic science. Shared and private economic science.

Matter and functions of economic theory. Sections of economic theory.

Methods of economic science: General and specific.

Economic categories and general economic laws. Systemic approach to the study of economic processes. The marginal, functional and equilibrium analysis.

The economic theory and the economic policy. The positive and normative economic theory.

The basic scientific schools and modern trends of development of economic theory.

Practical tasks:

1. Match each definition with the correct term. Write the letter on the line provided:

| | |
|--|-------------------|
| 1.1 human effort that goes into the making of goods and providing services; | A. capital; |
| 1.2 goods and services that a consumer may desire or want to buy but that are not necessities; | B. demand; |
| 1.3 an individual who creates something new and earns a profit by combining land, labor, and capital resources to produce goods or services; | C. durable goods; |
| 1.4 the study of people trying to satisfy their wants in a world of scarcity; | D. economics; |
| 1.5 goods and services that are necessities, such as food, clothing, shelter, and medical care; | E. entrepreneur; |
| | F. labor; |
| | G. needs; |
| | H. services; |
| | I. supply; |
| | J. wants. |

- 1.6 goods used to produce other goods and services;
- 1.7 the amount of goods or services that producers are willing and able to produce;
- 1.8 activities performed for others for money such as teaching and selling;
- 1.9 the amount of goods or services that consumers are willing and able to buy;
- 1.10 goods that are not used up and do not quickly wear out.

2. Use the list below to complete the following statements.

- | | | |
|---------------|----------|------------------|
| capital | labor | economic rent |
| goods | scarcity | needs |
| resources | demand | entrepreneur |
| consumer good | natural | opportunity cost |
| wants | services | |

2.1. Most parents try to satisfy their children's, _____ which include food, shelter, clothing, and medical attention.

2.2 Parents are less likely to satisfy their children's _____, which often include many toys and games.

2.3. Before the _____ combined different resources to begin making a remote-controlled lawn mower, she did a survey of consumers to see if there was a _____ for her new product.

2.4. Abdul is a skilful engineer who designs drawbridges in Miami and Tampa. He is able to charge a high _____ for his.

2.5. Every society has to choose how it will use its limited _____; this basic economic problem is known as _____.

2.6. Consumers also must make choices and decide which goods and services they will give up so they can buy other goods and services. This trade-off is called _____.

2.7. Most carpenters take care of the hammers, saws, tape measures, and other resources they use _____ for building and repair.

2.8. Rivers, wind power, and anything else that occurs naturally and is used to produce goods or services are called _____ resources.

2.9. A capital good increases in value over time or creates more wealth for its owner. A _____ satisfies personal needs and wants, and tends to lose value over time.

2.10. People who work in factories help to produce _____ - objects that can be bought or sold. People who sell, cut hair, or take care of lawns provide to consumers _____.

3. Explain what is meant by the term “freeconomics”.

4. The basic economic problem is one of scarcity of productive resources. Explain how resources are allocated between competing uses in a market economy.

5. Written questions:

5.1 study of economics involving value judgments about what the economy should be like or what particular policy actions should be recommended to achieve a desirable goal;

5.2 study of economics focusing on facts and cause-and-effect relationships, including description, theory development, and theory testing (also: avoids value judgments, deals with what the economy is actually like);

5.3 the want-satisfying power of a good or service; the satisfaction or pleasure a consumer obtains from the consumption of a good or service (or from the consumption of a collection of goods and services);

5.4 economic theories, principles, and laws relating to economic behavior or to the economy itself.

6. True/False questions:

6.1 economics → the social science concerned with the efficient use of scarce resources to achieve the maximum satisfaction of economic wants;

6.2 post hoc, ergo propter hoc → study of economics focusing on facts and cause-and-effect relationships, including description, theory development, and theory testing (also: avoids value judgments, deals with what the economy is actually like);

6.3 utility → the social science concerned with the efficient use of scarce resources to achieve the maximum satisfaction of economic wants.

7. What is the scientific method and how does it relate to theoretical economics? What is the difference between a hypothesis and an economic law or principle?

8. Why is it significant that economics is not a laboratory science? What problems may be involved in deriving and applying economic principles?

9. Explain the following statements:

9.1 good economic policy requires good economic theory;

9.2 generalization and abstraction are nearly synonymous;

9.3 facts serve to sort out good and bad hypotheses;

9.4 the *other things equal assumption* helps isolate key economic relationships.

10. Explain in detail the interrelationships between economic facts, theory, and policy. Critically evaluate this statement: “The trouble with economic theory is that it is not practical. It is detached from the real world”.

11. Identify each of the following as either a positive or a normative statement:

11.1 the high temperature today was 30 degrees;

11.2 it was too hot today;

11.3 other things equal, higher interest rates reduce the total amount of borrowing;

11.4 interest rates are too high.

12. Explain and give an example of (a) the fallacy of composition, and (b) the “after this, therefore because of this” fallacy. Why are cause-and-effect relationships difficult to isolate in economics?

13. Suppose studies show that students who study more hours receive higher grades. Does this relationship guarantee that any particular student who studies longer will get higher grades?

14. Studies indicate that married men on average earn more income than unmarried men of the same age. Why must we be

cautious in concluding that marriage is the *cause* and higher income is the *effect*?

1. A statement from Exxon-Mobile that their third quarter profits were down 15% from last year is an example of:

- a) normative economics
- b) positive economics
- c) macroeconomics
- d) differentiated economics

2. What do most economists view as the main economic problem facing the world, the reason for the study of economics?

- a) scarcity;
- b) currency inflation;
- c) trade imbalance;
- d) recession.

3. Which of the following would not be associated with the study of macroeconomics?

- a) inflation;
- b) national unemployment rates;
- c) production factors;

Test:

d) individual consumer practices.

4. Which of the following is the least likely to contribute to economic growth?

- a) technological advances;
- b) labor force education;
- c) increased access to resources;
- d) tighter government regulation.

5. In a market economy, households are prevented from consuming "too much" of very scarce commodities by:

- a) government regulations;
- b) long line waiting to buy these goods;
- c) not being able to find them;
- d) high prices charged for these goods;

e) some combination
all of the above.

6. In a market economy, decisions about what goods to be produced reflect:

- a) the government's preferences;
- b) the dollar votes of consumers;
- c) the dollar votes of producers;
- d) the preferences of the owners of productive resources;
- e) the lack of coordination of decisions.

7. Which of the following is not omitted from the basic circular flow model?

- a) steel industry sales to the automobile industry;
- b) intermediate goods;
- c) goods and services produced within households that are used by households;
- d) households sales of factors of production to businesses.

8. Economies of large-scale production:

a) lead to greater specialization;

b) offset the effects of the law of comparative advantage;

c) cause firms to use more capital and less labor;

d) undermine the efficiency of the price system.

9. Macroeconomics is the study of:

a) large firms and consumers;

b) industries as a whole rather than individual firms;

c) the economy as a whole;

d) large groups of firms and households;

e) individual firms and households.

10. Which of the following is least important in the study of macroeconomics?

a) the general price level;

b) relative prices level;

c) the unemployment rate;

d) the interest rate;

e) total output of goods and services.

11. If the total adult population is 22 million and 99 million workers are employed and 11 million unemployed, then the total labor force is:

- a) 220 million;
- b) 110 million;
- c) 99 million;
- d) 11 million;

e) impossible to determine from the data given.

12. Economics deals primarily with the concept of:

- a) change;
- b) power;
- c) poverty;
- d) scarcity.

13. Scarcity exists when:

- a) the price of a good rises;
- b) society can meet the wants of every individual;
- c) there is less of a good or resource available than people wish to have;

d) there is less than an infinite amount of a resource or good.

14. The fundamental problem of economics is:

a) The law of increasing opportunity costs;

b) The scarcity of resources relative to human wants;

c) How to get government to operate efficiently;

d) How to create employment for everyone.

15. Which of the following is not one of the three core economic issues that must be resolved?

a) How to produce the goods and services we select;

b) What to produce with unlimited resources;

c) Who should get the goods and services we produce;

d) What to produce with limited resources.

16. Microeconomics is concerned with issues such as:

a) the demand for bottled water by individuals;

b) the level of inflation in the economy;

c) maintaining a strong level of economic growth;

d) all of the choices.

17. The study of microeconomic theory focuses on the:

a) structure and performance of markets and the operation of the price system;

b) operation of the entire economy;

c) role of the banking system in the economy;

d) interaction of international trade and domestic production of goods and services.

18. Macroeconomics focuses on the performance of:

a) individual consumers;

b) government agencies;

c) the overall economy;

d) all of the above.

19. If market signals result in pollution beyond the optimal level then:

a) the economy experiences government failure;

b) a laissez-faire approach will reduce the level of pollution;

c) the market mechanism has failed to achieve social efficiency;

d) the government is allocating resources inefficiently.

20. Which of the following is not a basic decision that all nations must confront?

a) Should we have economic growth?

b) How should we produce goods and services?

c) For whom should goods and services be produced?

d) What goods and services should we produce?

Theme 2. Needs and resources. The problem of choice in the economy

The contents of educational material:

Needs as a prerequisite production. Classification and main characteristics of needs. The law mounting The law of increasing wants. Economic interests and their classification.

The factors of production. The labor. The land and non-renewable natural resources. The capital. Fixed and working capital. Depreciation of fixed capital and depreciation. Entrepreneurial ability. Production efficiency and its indicators. Factors increasing the efficiency of production. Social division of labor and its forms.

Limited resources.

Economic benefits: types, characteristics. Substitutability and complementarity of goods.

The problem of choice in the economy. The fundamental economics questions of society. The production possibility frontier. The production possibilities curve. The opportunity (opportunity) costs. The law of increasing opportunity costs.

Production, reproduction and growth.

Practical tasks:

1. Written questions:

1.1 the choices necessitated because society's economic wants for goods and services are unlimited but the resources available to satisfy these wants are limited (scarce);

1.2 the land, labor, capital, and entrepreneurial ability that are used in the production of goods and services; productive agents; factors of production;

1.3 economic resources: land, capital, labor, and entrepreneurial ability.

2. True/False questions:

2.1 entrepreneurial ability → the human resource that combines the other resources to produce a product, makes nonroutine decisions, innovates, and bears risks

2.2 land → natural resources ("free gifts of nature") used to produce goods and services

3. Quick Quiz:

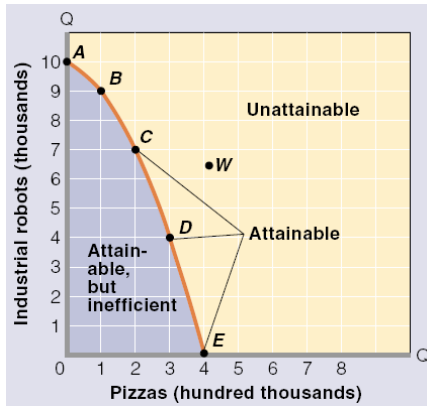


Figure: The production possibilities curve

3.1 Production possibilities curve $ABCDE$ is bowed out from the origin (concave to the origin) because:

- the marginal benefit of pizzas declines as more pizzas are consumed;
- the curve gets steeper as we move from E to A ;
- it reflects the law of increasing opportunity costs;
- resources are scarce.

3.2 The marginal opportunity cost of the second unit of pizzas is:

- 2 units of robots;
- 3 units of robots;
- 7 units of robots;
- 9 units of robots.

3.3 The total opportunity cost of 7 units of robots is:

- 1 unit of pizza;
- 2 units of pizza;
- 3 units of pizza;
- 4 units of pizza.

3.4 All points on this production possibilities curve necessarily represent:

- a) allocative efficiency;
- b) less than full use of resources;
- c) unattainable levels of output;
- d) productive efficiency.

4. Explain this statement: “If resources were unlimited and were freely available, there would be no subject called *economics*.”

5. Comment on the following statement from a newspaper article: “Our junior high school serves a splendid hot meal for \$1 without costing the taxpayers anything, thanks in part to a government subsidy.”

6. Critically analyze: “Wants aren’t insatiable. I can prove it. I get all the coffee I want to drink every morning at breakfast.” Explain: “Goods and services are scarce because resources are scarce.” Analyze: “It is the nature of all economic problems that absolute solutions are denied to us.”

7. What are economic resources? What are the major functions of the entrepreneur?

8. Why is the problem of unemployment part of the subject matter of economics? Distinguish between productive efficiency and allocative efficiency. Give an illustration of achieving productive, but not allocative, efficiency.

9. Here is a production possibilities table for war goods and civilian goods:

| Production alternatives | | | | | |
|-------------------------|----|----|----|----|---|
| Type of production | A | B | C | D | E |
| Automobiles | 0 | 2 | 4 | 6 | 8 |
| Rockets | 30 | 27 | 21 | 12 | 0 |

9.1 show these data graphically. Upon what specific assumptions is this production possibilities curve based?

9.2 if the economy is at point C, what is the cost of one more automobile? One more rocket? Explain how the production possibilities curve reflects the law of increasing opportunity costs.

9.3 what must the economy do to operate at some point on the production possibilities curve?

1. The basic factors of production include:

a) land, labor, money, and capital.

b) land, labor, money, and inputs.

c) labor and capital.

d) land, labor, capital, and entrepreneurship.

2. A consequence of the economic problem of scarcity is that:

a) choices have to be made about how resources are used;

b) there is never too much of any good or service produced;

c) the production of goods and services must be controlled by the government;

d) the production-possibilities curve is bowed outward.

3. The principle of substitution assures that households will substitute corn for beans if:

Test:

a) the money price of beans rises;

b) the money price of corn rises;

c) the relative price of corn in terms of beans rises;

d) the relative price of corn in terms of beans falls;

e) the money price of beans falls.

4. Which of the following is probably a public good?

a) parcel delivery service;

b) clean streets;

c) airline tickets;

d) taxi service;

e) electricity.

5. According to the principle of substitution:

a) many goods have no effective substitutes;

b) households are good substitutes for firms;

c) nearly all goods have substitutes;

d) the price of substitutes goods must be the same;

e) buyers will stop buying a good if its price rises.

6. If productivity is the amount of output that is generated per unit of input, what would the productivity of labor be if ABC Sprockets produced 2,000,000 sprockets in two weeks, while employing 10 workers each working 40 hours per week?

- a) 2500 per hour;
- b) 400,000 per worker;
- c) 4,000,000 per week;
- d) 400 per week.

7. The reason why professional football players should not strike is:

- a) their opportunity costs are relatively low;
- b) no one can replace them;
- c) they do not earn economic rent as football players;
- d) the federal antitrust laws prohibit unions in sports.

8. An increase in the market rate of interest causes the rate of return on any specific capital project to:

- a) increase;
- b) decrease;
- c) change unpredictably;
- d) increase by exactly the same amount;
- e) not change.

9. According to the law of increasing opportunity costs:

- a) greater production leads to greater inefficiency;
- b) greater production means factor prices rise;
- c) greater production of one good requires increasingly larger sacrifices of other goods;
- d) higher opportunity costs induce higher output per unit of input.

10. If an economy experiences increasing opportunity costs with respect to two goods, then the production-possibilities curve between the two goods will be:

- a) bowed outward;

b) a straight, downward-sloping line;
c) bowed inward;
d) bowed outward until the two goods are equal, and then bowed inward.

11. When an economy is producing efficiently it is:

- a) producing a combination of goods and services beyond the production-possibilities curve;
- b) getting the most goods and services from the available resources;
- c) experiencing decreasing opportunity costs;
- d) producing equal amounts of all goods.

12. Which of the following is true when an economy is producing efficiently?

- a) the economy is producing on the production-possibilities curve
- b) goods and services are being produced using the most resources;
- c) the economy is getting the fewest goods and services from the available resources.

d) everyone in the economy is happy.

13. The points on a production-possibilities curve show:

- a) desired output;
- b) actual output;
- c) potential output;
- d) all of the above.

14. In terms of the production-possibilities curve, inefficiency is represented by:

- a) all points on the curve;
- b) all points outside the curve;
- c) all points inside the curve;
- d) a rightward shift of the curve.

15. If an economy is producing inside the production-possibilities curve, then:

- a) there is full employment of resources.
- b) it is operating efficiently.
- c) it can produce more of one good without giving up some of another good.

d) there are not enough resources available to produce more output.

16. A technological advance would best be represented by:

a) a shift outward of the production-possibilities curve;

b) a shift inward of the production-possibilities curve;

c) a movement from inside the production-possibilities curve to a point on the production possibilities curve;

d) a movement from the production-possibilities curve to a point inside the production-possibilities curve.

17. Which of the following events would allow the production-possibilities curve to shift outward?

a) the economy's capital stock declines;

b) more teenagers enter the labor force;

c) technology is lost;

d) people begin to retire at earlier ages.

18. Economic growth would best be represented by a:

a) shift outward of the production-possibilities curve;

b) shift inward of the production-possibilities curve;

c) movement from inside the production-possibilities curve to a point on the production-possibilities curve;

d) movement from the production-possibilities curve to a point inside the production-possibilities curve.

19. Which of the following will cause the production-possibilities curve to shift inward?

a) an increase in population;

b) a decrease in the size of the labor force;

c) a technological advance;

d) an increase in knowledge.

20. The production-possibilities curve illustrates:

a) the limitations that exist because of scarce resources;

b) that there is no limit to what an economy can produce;

c) that there is no limit to the level of output;

d) the existence of unlimited wants and resources.

Theme 3. Economic Systems

The contents of educational material:

The economic system of society: the concept, subjects, and structure. Criteria classification of economic system.

Institutions: formal and informal. Economic institutions. The concept of ownership. Subjects and objects of ownership. Types and forms of ownership. Modern theory of property. The reform of the property. The transformation of property relations in the Republic of Belarus.

Ways of coordination of economic life: traditions, the market, team. Classification of economic systems. The traditional economy. Classical capitalism. The command economy. The mixed economy. Transformational economy.

Practical tasks:

1. Match each definition with the correct term. Write the letter on the line provided:

| | |
|---|----------------------------------|
| _____1.1 an economic system in which the government decides what goods or services to produce, how to produce them, and for whom to produce them; | A. barter; |
| _____1.2 the total value of goods and services produced in one year within the borders of a nation by whoever produces them; | B. command economic system |
| _____1.3 an economic system based upon private property and free enterprise; | C. capitalism; |
| _____1.4 an economic system in which goods and services are exchanged; | D. gross domestic product (GDP); |
| _____1.5 an economic system in which the types and costs of goods and services are determined by consumers and producers; | E. market economic system; |
| _____1.6 a system of exchange in which one type of good or service is traded for another type of good or service without the | F. traditional economic system |

use of money.

2. Use the list below to complete the following statements.

command
four
money

economic elements
market
pure market

economist
mixed economies
traditional

2.1 Most countries today use _____ as a medium of exchange to buy and sell goods.

2.2 The former Soviet Union has gone from a _____ economic system to a _____ economic system.

2.3 Tribes had a _____ economic system.

2.4 There are _____ main economic systems.

2.5 A(n) _____ is someone who studies economics.

2.6 Most countries use different _____ to develop their own unique economies.

2.7 Nearly all countries now have _____ that use basic elements and combine them in different ways.

2.8 Not even the United States, a country which encourages free enterprise and entrepreneurship, has a _____ system.

3. Write *True* if the statement is correct. Write *False* if the statement is not correct:

3.1 a market economic system uses money as the medium of exchange;

3.2 many pure command economies and pure market economies are still operating in the world;

3.3 in command economic systems, the government restricts its citizens from starting their own businesses or investing their incomes;

3.4 under capitalism, people are free to buy and sell goods of their choice;

3.5 most large countries using the command economic systems are converting to market economic systems;

3.6 specialization → the use of the resources of an individual, a firm, a region, or a nation to concentrate production on one or a small number of goods and services

3.7 roundabout production → the payment made by a firm to obtain and retain entrepreneurial ability; the minimum income entrepreneurial ability must receive to induce it to perform entrepreneurial functions for a firm;

3.8 private property → the right of private persons and firms to obtain, own, control, employ, dispose of, and bequeath land, capital, and other property;

3.9 money → the exchange of one good or service for another good or service;

3.10 creative destruction → the presence in a market of independent buyers and sellers competing with one another and the freedom of buyers and sellers to enter and leave the market.

4. Matching questions:

4.1 competition;

4.2 barter;

4.3 dollar votes;

4.4 dollar votes;

4.5 freedom of enterprise.

a

the presence in a market of independent buyers and sellers competing with one another and the freedom of buyers and sellers to enter and leave the market

b

the exchange of one good or service for another good or service

c

the total revenue of a firm less its economic costs (which include both explicit costs and implicit costs); also called "pure profit" and "above-normal profit."

d

the freedom of firms to obtain economic resources, to use those resources to produce products of the firm's own choosing, and to sell their products in markets of their choice

e
the "votes" that consumers and entrepreneurs cast for the production of consumer and capital goods, respectively, when they purchase those goods in product and resource markets

5. Written questions:

5.1 the ability of price changes to bring about changes in the quantities of products and resources demanded and supplied;

5.2 the demand for a resource that depends on the demand for the products it helps to produce;

5.3 a payment that must be made to obtain and retain the services of a resource; the income a firm must provide to a resource supplier to attract the resource away from alternative use; equal to the quantity of other products that cannot be produced when resources are instead used to make a particular product;

5.4 an industry whose firms earn economic profits and for which an increase in output occurs as new firms enter the industry;

5.5 determination by consumers of the types and quantities of goods and services that will be produced with the scarce resources of the economy; consumers' direction of production through their dollar votes.

Test:

1. A _____ economic system uses only barter.
- a) command;
b) traditional;
c) market.

2. Democracies have a _____.

a) command economic system

b) traditional economic system

c) market economic system.

3. Countries in which the government controls all or most economic decisions have a _____.

a) command economic system;

b) traditional economic system;

c) market economic system.

4. An economic system describes how _____.

a) people produce goods and services;

b) governments attempt to satisfy their people's wants and needs;

c) goods and services are transported.

5. A pure market system _____.

a) has no government rules;

b) does not exist;

c) both a and b.

6. The gross national product measures the _____.

a) total amount of taxes paid in one year

b) total amount of goods and services consumers buy in one year;

c) total amount of all goods and services produced in one year.

7. Which best defines laissez-faire capitalism?

a) business activity and natural resource usage and distribution are not regulated by the government

b) government controlled distribution of natural resources with little involvement in other sectors of the economy

c) ownership of the means of production is split between public and private entities

d) existence of extensive legislation governing internal trade

8. Which best describes the economy of the United Kingdom of Great Britain?

- a) traditional economy;
- b) command economy;
- c) market economy;
- d) mixed economy.

9. In a capitalist market economy, a primary role of government is to:

- a) regulate all key industries to insure consumer advantage in pricing and availability;
- b) protect core services not naturally supplied by market forces;
- c) regulate the distribution and use of scarce resources;
- d) monitor foreign competition and limit imports to improve domestic production.

10. Which of the following is not part of the institutional arrangements that characterize an economic system?

a) whether property is owned by individuals or the state;

b) at what level economic decisions are made;

c) how government officials are selected;

d) what incentives are used to motivate economic behavior;

e) how resources are allocated.

11. When resources are allocated by government planning:

a) capitalism is usually the result;

b) the economy is normally more efficient;

c) decision making is decentralized;

d) decision making is decentralized;

e) both a. and b .are correct.

12. In a socialist economy. The invisible hand:

a) guides most resource allocation decisions.

b) operates effectively only in the labor market

c) operates effectively only in the market for capital

d) operates effectively only in the market for capital
e) is prevented from operating effectively

13. Is prevented from operating effectively:

a) is prevented from operating effectively;

b) were forced to pay very high prices for consumer goods;

c) had difficulty finding enough desirable goods to buy. Were told by the government which goods buy;

d) were told by the government which goods buy;

e) faced the situations described in both a. and b.

14. Government planners play a central role in allocating resources:

a) only under socialism;

b) only under capitalism;

c) under both capitalism and socialism;

d) under neither capitalism nor socialism.

15. Consumers play a central role in allocating resources

a) only under socialism;

b) only under capitalism;

c) under both capitalism and socialism;

d) under neither capitalism nor socialism.

16. Economic incentives are important:

a) only under socialism;

b) only under capitalism;

c) equally under capitalism and socialism;

d) more under capitalism than socialism;

e) more under socialism than capitalism.

17. Karl Marx:

a) led the Russian revolution;

b) provided the theoretical basis for socialism;

c) developed his theory in response to the great depression of the 1930 s;

d) played the roles described in both a. and b;

e) played the roles described in both b. and c.

18. As nearly as we can estimate it. Soviet productivity growth:

a) was subject to severe cycles;

b) accelerated in the 1980s;

c) had nothing to do with the decline of socialism;

d) was stagnant or declining after about 1965;

e) was never positive.

19. Soviet managers:

a) were left little to do under central planning;

b) pursued economically efficient choice;

c) had incentives to reduce product quality and variety;

d) had incentives to reduce production levels;

e) had both the incentives described in c. and d.

20. Which of the following is not a major aspect of the transition of socialist to market economies?

a) freeing of prices;

b) redefinition of property rights;

c) development of market institutions;

d) establishment of stronger moral incentives for efficiency;

e) disestablishment of large state enterprises.

Theme 4. Market economy and its model

The contents of educational material:

The market: concept, emergence conditions. Market functions. Institutional bases of functioning of the market: private property, free pricing, competition.

Classification of the markets. The market infrastructure. Imperfections (fiasco) of the market and need of the state intervention in economy. Models of market economy.

Features of the Belarusian economic model. National strategy of sustainable social and economic development of Republic of Belarus till 2020.

Practical tasks:

1. Explain the differences between monopolistic competition and oligopoly as market structures.

2. Discuss the differences between a collusive and a non-collusive oligopoly.

3. Explain how the monopolist determines the profit-maximizing level of output and price.

4. Discuss the view that competitive markets are always more efficient than monopolies.

5. To what extent is the perfectly competitive market likely to exist in the real world?

6. What are positive externalities and how do they arise? Illustrate your answer with examples.

7. To what extent should governments attempt to influence markets where positive externalities exist?

8. Assume a monopolist has $MC = 10$ and no fixed costs. The monopolist faces a demand curve of $P = 100 - 3Q$. Find the equilibrium quantity and price.

9. Assume a monopolist has $MC = 10$ and no fixed costs. The monopolist faces a demand curve of $P = 100 - 2Q$. The government imposes a tax of 10 dollars for every unit sold. Find the equilibrium quantity and price.

10. True or False: A monopolist who faces a monotonically decreasing demand curve will always make profits.

11. Assume a monopolist has $MC = 20$ and no fixed costs. The monopolist faces a demand curve of $P = 100 - 4Q$. Calculate the deadweight loss.

12. For a non-Giffen good (a good with a non-increasing demand curve), show that price can never be less than marginal revenue.

Test:

1. In the United States which industry could best be defined as an oligopoly?

- a) shoe manufacturing;
- b) automobile manufacturing;
- c) publishing;
- d) home construction.

2. Which of the following industries in the United States is not an example of monopolistic competition?

- a) electric service providers;
- b) fast food restaurants;
- c) cosmetics companies;
- d) athletic shoe manufacturers.

3. Which action would support the principle of supply side economics?

- a) a business slashes prices to move excess inventory;
- b) the government cuts taxes to encourage increased investment;
- c) the government imposes trade restrictions to increase imports;
- d) industry leaders collaborate on pricing strategies.

4. Choose the best answer in the following question.

4.1 In a market economy, what will be produced is determined by consumer evaluation of each good relative to its opportunity cost.

4.2 In a market economy, those who supply a large amount of highly valued resources will have high incomes and therefore will be able to consume more goods and services than those with lower incomes.

a) 4.1 is true, 4.2 is false;

b) both are true;

c) 4.1 is false, 4.2 is true;

d) both are false.

5. Which of the following is not necessarily a characteristic of a perfectly competitive market?

a) there is perfect information about prices;

b) all participants in the market are small relative to the size of the overall market;

c) there are many buyers and sellers;

d) buyers and sellers do not know each other;

c) a uniform price prevails throughout the market.

6. Good is bought and sold in a (n):

a) perfectly competitive market;

b) imperfect, national market;

c) imperfect, international market;

d) perfectly competitive, local market;

c) perfectly competitive, national market.

7. Used cars are sold in a (n)

a) perfectly competitive, local market;

b) perfectly competitive, national market;

c) imperfect, national market;

d) imperfect, international market;

e) imperfect, local market.

8. In a perfectly competitive market, suppliers must know

a) the incomes of consumers;

b) the price of the good;

c) what other commodities households could substitute for the good;

- d) consumers' expectations of the future;
- e) all of the above.

9. Which of the following transactions would not enter the circular flow of transactions between households and firms?

- a) your purchase of this study guide;
- b) hiring of household maid service;
- c) the employment of janitors by your school;
- d) the purchase of paper to print this book;
- e) the rental payments of apartment dwellers.

10. Important technological innovations are developed:

- a) almost exclusively in laboratories of large companies;
- b) mostly by firms in highly competitive industries;
- c) almost entirely in universities;
- d) mostly by private inventors;
- e) in large measure in each of the above situations.

11. Which of the following is not a characteristic of the competitive markets?

- a) the price of a measure its marginal benefit to society;
- b) marginal private costs always equal marginal social costs;
- c) goods are produced at minimum cost;
- d) goods are produced where marginal benefit just balances marginal cost.

12. Imperfect competition exists if:

- a) all buyers know the price of the good;
- b) new firms are free to enter the market;
- c) each buyers faces an upward -sloping supply curve;
- d) each seller faces a horizontal demand curve;
- e) the product of each seller is identical.

13. By increasing the price of its product about those of its competitors, a perfectly competitive seller

- a) can sell more;

b) can still sell as much;
c) reduces its costs;
d) increases its revenues;
e) can sell nothing.

14. Differential rents earned by firms are:
a) explicit costs;
b) implicit costs;
c) economic profits;
d) zero in the long run;
e) impossible under perfect competition.

15. Which of the following is inconsistent with pure monopoly?
a) significant barriers to entry;
b) economies of scale;
c) price-taking buyers;
d) producers suffering losses;
e) close substitutes for the good.

16. Monopolistic competition is:
a) like perfect competition except the product is differentiated;

b) like pure monopoly except the product is differentiated;
c) like perfect competition except there are few sellers;
d) like pure monopoly except there are two sellers;
e) like perfect competition except information is imperfect.

17. A monopolistically competitive firm is a:

a) price taker who can make profits only in the short run;
b) price taker who can make profits in the long run;
c) price searcher who can make profits only in the short run;
d) price searcher who can make profits in the long run;
e) price searcher who cannot make profits in the short run.

18. The short-run profit -maximization problem of a monopolistic competitor is:

a) similar to that of a perfectly competitive firm;

b) similar to its long-run profit-maximization problem;

c) similar to that of a pure monopolist;

d) unlike either that of the perfectly competitive firm or the pure monopolist;

e) uninteresting because it cannot earn a profit.

19. Which of the following is not an example of nonprice competition?

a) lobbying for stricter licensing laws;

b) advertising;

c) offering a reduced scale price;

d) repackaging the produce as "new and improved";

e) offering longer warranties on a product.

20. When the patents on prescription drugs expire, it is normal for:

a) quantity produced to all;

b) price to drop;

c) firms to leave the industry;

d) consumers to use less of the product.

QUESTIONS ON THE MODULE I

Dear students as the teacher has the right to choose a various form of reception of delivery of quality of preparation of the Module I, the problem field of the module on which to you and tasks will be made by the teacher is offered to you, that is you need to know everything according to each phrase below (to the thesis, the offer).

Good luck!

Module I. The main regularities of functioning of the economy

Theme 1. Economic theory: subject and method

Economics as a sphere of vital activity of society.

Economic science. Shared and private economic science.

Matter and functions of economic theory. Sections of economic theory.

Methods of economic science: General and specific. Economic categories and general economic laws. Systemic approach to the study of economic processes. The marginal, functional and equilibrium analysis.

The economic theory and the economic policy. The positive and normative economic theory.

The basic scientific schools and modern trends of development of economic theory.

Theme 2. Needs and resources. The problem of choice in the economy

Needs as a prerequisite production. Classification and main characteristics of needs. The law mounting The law of increasing wants. Economic interests and their classification.

The factors of production. The labor. The land and non-renewable natural resources. The capital. Fixed and working capital. Depreciation of fixed capital and depreciation. Entrepreneurial ability. Production efficiency and its indicators. Factors increasing the efficiency of production. Social division of labor and its forms.

Limited resources.

Economic benefits: types, characteristics. Substitutability and complementarity of goods.

The problem of choice in the economy. The fundamental economics questions of society. The production possibility frontier. The production possibilities curve. The opportunity (opportunity) costs. The law of increasing opportunity costs.

Production, reproduction and growth.

Theme 3. Economic systems

The economic system of society: the concept, subjects, and structure. Criteria classification of economic system.

Institutions: formal and informal. Economic institutions. The concept of ownership. Subjects and objects of ownership. Types and forms of ownership. Modern theory of property. The reform of the property. The transformation of property relations in the Republic of Belarus.

Ways of coordination of economic life: traditions, the market, team. Classification of economic systems. The traditional economy. Classical capitalism. The command economy. The mixed economy. Transformational economy.

Theme 4. Market economy and its model

The market: concept, emergence conditions. Market functions. Institutional bases of functioning of the market: private property, free pricing, competition.

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MODULE II. FUNDAMENTALS OF MICROECONOMICS

Theme 5. Demand, supply and market equilibrium

The contents of educational material:

The demand. The law of demand. The demand function and its graphic interpretation.

Not price demand factors. The individual and market demand.

The supply. The law of supply. The supply function and its graphic interpretation. Not price supply factors.

The market equilibrium. Consequences of a deviation of the price from equilibrium level. Commodity deficiency and commodity surplus. Changes of supply and demand and their influence on the price. Prize from an exchange: surplus of the consumer and producer.

Practical tasks:

1. Write True if the statement is correct. Write False if the statement is not correct:

1.1 the law of supply and demand does not describe the interaction that goes on between buyer and seller;

1.2 the law of supply and demand states that as demand increases, supply will decrease;

1.3 net profit is the money a company has after paying all its costs, including taxes;

1.4 private goods are owned by individual people;

1.5 public goods are managed by the government;

1.6 the government uses tax revenue to pay for and maintain private goods;

1.7 examples of private goods are parks, water, and most local bus systems;

1.8 examples of public goods are homes and cars owned by individuals;

1.9 change in supply → a change in the quantity demanded of a good or service at every price; a shift of the demand curve to the left or right;

1.10 determinants of demand → factors other than price that determine the quantities demanded of a good or service;

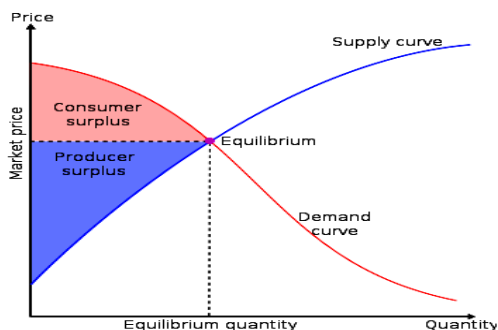
1.11 surplus → a schedule showing the amounts of a good or service that sellers (or a seller) will offer at various prices during some period;

1.12 demand → a schedule showing the amounts of a good or service that sellers (or a seller) will offer at various prices during some period;

1.13 equilibrium quantity → the price in a competitive market at which the quantity demanded and the quantity supplied are equal, there is neither a shortage nor a surplus, and there is no tendency for price to rise or fall;

2. Explain which non-price determinant of demand is affecting the market.

3. Using a diagram, explain the concept of community surplus.



4. Explain the difference between a movement along the demand curve and a shift in the demand curve.

5. If the demand and supply curve for computers are:

$$D = 100 - 6P, S = 28 + 3P$$

where P is the price of computers, what is the quantity of computers bought and sold at equilibrium.

6. The quantity demanded of Good Z depends upon the price of Z (P_z), monthly income (Y), and the price of a related Good W (P_w). Demand for Good Z (Q_z) is given by equation 1 below: $Q_z = 150 - 8P_z + 2Y - 15P_w$. Find the demand equation for Good Z in terms of the price for Z (P_z), when Y is \$50 and $P_w = \$6$.

7. Beef supplies are sharply reduced because of drought in the beef-raising states, and consumers turn to pork as a substitute for beef. How would you illustrate this change in the beef-market in supply-and-demand terms?

8. In December, the price of Christmas trees rises and the quantity of trees sold rises. Is this a violation of the law of demand?

9. A firm charges \$800 for its unique word processor. If total revenue is \$56,000 in July, how many word processors were sold that month?

10. Find the slope of an assumed linear demand curve for theater tickets, when persons purchase 1,000 at \$5.00 per ticket and 200 at \$15.00 per ticket.

11. Given the following data:

$$\text{WIDGETS } P = 80 - Q \text{ (Demand)}$$

$$P = 20 + 2Q \text{ (Supply)}$$

Given the above demand and supply equations for widgets, find the equilibrium price and quantity.

12. Given the following data:

$$\text{WIDGETS } P = 80 - Q \text{ (Demand)}$$

$$P = 20 + 2Q \text{ (Supply)}$$

Now suppliers must pay a tax of \$6 per unit. Find the new equilibrium price-inclusive price and quantity.

13. Given the following data:

$$\text{WIDGETS } P = 80 - Q \text{ (Demand)}$$

$$P = 20 + 2Q \text{ (Supply)}$$

We saw in the last question the equilibrium quantity will now be 18 (instead of 20) and the equilibrium price is now 62 (instead of 20). Which of the following statements is true: a) tax revenue will

equal \$108; b) price increases by \$4; c) quantity decreases by 4 units; d) consumers pay \$70; e) producers pay \$36.

14. Which of the following factors will cause the demand curve for labor to shift to the right? a) the demand for the product by labor declines; b) the prices of substitute inputs falls; c) the productivity of labor increases; d) the wage rate declines; e) none of the above.

15. Matching questions:

| | | |
|---------------------------|---|--|
| 15.1 equilibrium price; | a | Products and services that are used together. When the price of one falls, the demand for the other increases (and conversely); |
| 15.2 complementary goods; | b | a good or service whose consumption declines as income rises (and conversely), price remaining constant; |
| 15.3 change in demand; | c | a change in the quantity demanded of a good or service at every price; a shift of the demand curve to the left or right; |
| 15.4 inferior goods; | d | the price in a competitive market at which the quantity demanded and the quantity supplied are equal, there is neither a shortage nor a surplus, and there is no tendency for price to rise or fall; |
| 15.5 normal good. | e | a good or service whose consumption increases when income increases and falls when income decreases, price remaining constant. |

Test:

1. A market is a place where people _____.

- a) manufacture high-tech equipment;
- b) buy and sell goods;
- c) observe a manufacturing process;
- d) grow produce.

2. The two different kinds of markets that exist on the national level are the _____.

- a) fruit market and produce market;
- b) farmers' market and manufacturers' market;
- c) factor market and product market;
- d) vertical market and horizontal market.

3. The basic principle that drives our economy is the _____.

- a) law of supply and demand;
- b) law of want and need;
- c) golden rule;
- d) law of elastic and demand.

4. The price at which the consumer is willing to buy and the producer is willing to sell is called the _____.

- a) inelastic demand;

b) traditional economic price;

- c) fair market price;
- d) factor market.

5. _____ is the difference between money received and money spent.

- a) Market clearing price;
- b) Loss;
- c) Inelastic demand;
- d) Profit.

6. Private goods are those things that people own for themselves, _____, whereas _____ goods are available for everyone's use.

- a) taxable;
- b) public;
- c) inexpensive;
- d) risk.

7. If demand for a good is _____, sales of the good will increase as its price decreases.

- a) elastic;
- b) inelastic;
- c) profit;
- d) revenue;

8. A _____ is something you can eat, drink, wear, smell, touch, feel, and take with you.

- a) service;
- b) good;
- c) public good;
- d) public service.

9. A _____ is something you pay someone to do for you, such as cleaning your clothes or washing your car.

- a) service;
- b) good;
- c) public good;
- d) profit good;

10. When raising or lowering the price of a good does not change the amount sold, the demand for the good is called _____.

- a) elastic;
- b) inelastic;
- c) profit;
- d) revenue.

11. Economist and philosopher Adam Smith's expression, "the invisible hand" refers to a theory or belief that:

- a) the greed of capitalists seeking wealth actually helps the poor in society;
- b) the world economy is governed by a series of natural laws;
- c) outside forces beyond human control influence the economy;

d) governments should not impose economic regulation.

12. In graphing supply and demand, at what point is market equilibrium achieved?

- a) when supply is slightly above demand;
- b) when supply is slightly below demand;
- c) when supply and demand intersect;
- d) when demand is significantly above supply.

13. According to the law of demand, the relationship between price and quantity of goods demanded is:

- a) inverse;
- b) reciprocal;
- c) converse;
- d) equal.

14. In a free enterprise economy, the market forces of supply and demand that determine the pricing of products and commodities are known as:

- a) income effect;
- b) capitalism;
- c) price mechanism;

d) shortage.

15. A shift in the demand for a product is likely to result from a change in:

- a) the product's price;
- b) the price of other products which could be produced using similar resources;
- c) expectations;
- d) the price of resources used to produce it;
- e) production technology.

16. The law of demand is most directly a result of:

- a) the law of comparative advantage;
- b) the law of diminishing returns;
- c) the principle of substitution;
- d) economies of large-scale production;
- e) the law of increasing costs.

17. If the price of cheese increases, then:

- a) the demand for cheese will increase;
- b) the demand for cheese will decrease;

c) the quantity of cheese demand will decrease;

d) both the demand and the quantity of cheese demand will decrease.

18. If the price of a good rises and household incomes go up exactly the same proportion then quantity of the good demanded will:

- a) increase;
- b) stay the same;
- c) decrease;
- d) decrease or stay the same, but not increase;
- e) be unpredictable based on information given.

19. If a good is an inferior good, then an increase in incomes with everything else held constant will:

- a) increase demand for the good;
- b) increase supply of the good;
- c) leave demand and supply unchanged;
- d) reduce the equilibrium price of the good;
- e) have a unpredictable effect on the market.

20. The supply curve

would probably shift to the right if:

a) resources used in production became more costly;

b) the technology of production improved;

c) the of price of the good decreased;

d) consumer' incomes increased;

e) some sellers left the market.

Theme 6. The demand and supply elasticity

The contents of educational material:

The elasticity. The price elasticity of demand. Coefficients of price elasticity of demand. The point and arc elasticity of price demand. Factors of elasticity of demand at the price.

The cross elasticity of demand. Coefficients of cross elasticity of demand.

The income elasticity of demand. Coefficients of elasticity of demand according to the income.

The supply elasticity. Coefficients of elasticity of the offer. Factors of elasticity of the supply. The immediate, short-run and long-run equilibrium and the supply elasticity.

Practical value of the analysis of elasticity. The price elasticity of demand and revenue of a producer. Influence of elasticity on surplus of the consumer and surplus of the producer.

The demand and supply elasticity and tax burden.

Practical tasks:

1) Use the list below to complete the following statements.

| | | |
|---|---------------------------------|-----------------------------------|
| cottages factor market product market | cottage industries factories | specialization of labor factor |
|---|---------------------------------|-----------------------------------|

1.1. In the _____, companies pay money to people in return for labor or natural resources;

1.2. In the _____, manufacturers sell goods and consumers buy them;

1.3. The entrepreneur is someone who organizes people's labor and combines it with other resources to produce a product. Another name for the entrepreneur in the history of industry was the _____.

1.4. In times past, the entrepreneur brought work to workers' homes, where workers labored on a product. Because workers lived

in _____, these home workplaces were called _____;

1.5. Each family completed one of the many tasks necessary to produce a good. The separation of an entire job into its parts is called _____.

1.6. Eventually the entrepreneur moved all workers to a building near a power source such as water. These buildings are still called _____.

2. Identify the following statements as describing an elastic demand (E) or an inelastic demand (I). Write the correct letter on the line provided.

2.1 Although the price of the board game Clear Thinking changed constantly, its sales remained the same.

2.2 However, after another toy company came up with an equally exciting game called Sharp Thinking, the sales of Clear Thinking dropped when its price was raised.

2.3 There was only one product on the market for a serious condition called I-Can't-Get-Going-in-the-Morning.

2.4 Whereas 30 years ago the only basketball shoe worn in the United States was made by Converse, today there are many companies selling equally good basketball shoes.

2.5 There is just no good substitute for treating a clogged wormhole in space other than Trek's Space Wash.

2.6 The gas stations are having a gas war: each station keeps lowering its price to keep pace with the others. 3. Что понимается под полной занятостью?

3. With the use of examples, explain why some products have a low price elasticity while others have a high elasticity.

4. If you were employed as an economist by a business, discuss why a knowledge of the price elasticity of demand of your product would be useful.

5. True/false questions:

5.1 total revenue (TR) → a test to determine elasticity of demand between any two prices: demand is elastic if total revenue moves in the opposite direction from price; it is inelastic when it

moves in the same direction as price; and it is of unitary elasticity when it does not change when price changes;

5.2 long run → a period of time in which producers are able to change the quantities of some but not all of the resources they employ; a period in which some resources (usually plant) are fixed and some are variable;

5.3 cross elasticity of demand → The ratio of the percentage change in quantity demanded of one good to the percentage change in the price of some other good. A positive coefficient indicates the two products are substitute goods; a negative coefficient indicates they are complementary goods;

5.4 market period → a period in which producers of a product are unable to change the quantity produced in response to a change in its price and in which there is a perfectly inelastic supply.

6. Written questions:

6.1 the ratio of the percentage change in quantity demanded of one good to the percentage change in the price of some other good. A positive coefficient indicates the two products are substitute goods; a negative coefficient indicates they are complementary goods;

6.2 the ratio of the percentage change in quantity demanded of a product or resource to the percentage change in its price; a measure of the responsiveness of buyers to a change in the price of a product or resource;

6.3 product or resource demand in which price can be of any amount at a particular quantity of the product or resource demanded; quantity demanded does not respond to a change in price; graphs at a vertical demand curve;

6.4 product or resource demand whose price elasticity is greater than 1. This means the resulting change in quantity demanded is greater than the percentage change in price;

6.5 a test to determine elasticity of demand between any two prices: demand is elastic if total revenue moves in the opposite direction from price; it is inelastic when it moves in the same direction as price; and it is of unitary elasticity when it does not change when price changes.

7. Yesterday, the price of envelopes was \$3 a box, and Julie was willing to buy 10 boxes. Today, the price has gone up to \$3.75 a box, and Julie is now willing to buy 8 boxes. Is Julie's demand for envelopes elastic or inelastic? What is Julie's elasticity of demand?

8. If Neil's elasticity of demand for hot dogs is constantly 0.9, and he buys 4 hot dogs when the price is \$1.50 per hot dog, how many will he buy when the price is \$1.00 per hot dog?

9. Which of the following goods are likely to have elastic demand, and which are likely to have inelastic demand?

10. If supply is unit elastic and demand is inelastic, a shift in which curve would affect quantity more? Price more?

11. Katherine advertises to sell cookies for \$4 a dozen. She sells 50 dozen, and decides that she can charge more. She raises the price to \$6 a dozen and sells 40 dozen. What is the elasticity of demand? Assuming that the elasticity of demand is constant, how many would she sell if the price were \$10 a box?

To find the elasticity of demand, we need to divide the percent change in quantity by the percent change in price.

12. Why would demand for oxygen be more inelastic than demand for caviar (assuming that you have to buy both goods in order to have them)?

13. From each pair of goods, pick the good for which demand will most likely be more elastic:

14. How is it possible for the elasticity of demand to change over time (in the long run)?

15. Why would a government tax on cigarettes be an ineffective method to decrease consumption of cigarettes if demand for cigarettes is inelastic?

Test:

1. The amount of change in quantity demanded that will result from a given change in price (due to a shift in supply) is determined by:

a) how far to the left the demand curve is;

b) how price-elastic demand is;

- c) how price-elastic supply is;
- d) how income -elastic demand is;
- e) how elastic demand is to other prices.

2. The collection of the price elasticity of demand is computed as the absolute value of the percentage change in quantity demanded divided by:

- a) the change of price;
- b) the change in supply;
- c) the percentage change in supply;
- d) the percentage change in quantity supplied;
- e) the percentage change in price.

3. The coefficient of the price elasticity of demand is:

- a) negative as long as the law of demand holds;
- b) always negative or zero;
- c) always positive or zero;
- d) positive only when the supply curve slopes upward;

- e) sometimes positive and sometimes negative.

4. Demand is elastic when:

- a) the coefficient of elasticity is great than zero;
- b) the coefficient of elasticity is less than one;
- c) the coefficient of elasticity is negative;
- d) the coefficient of elasticity is greater than one
- e) the demand curve is steeper than forty-five degrees.

5. If the demand curve is inelastic, then:

- a) it may be nearly vertical;
- b) sellers will receive less for the good if they reduce supply;
- c) quantity demanded is very sensitive to income;
- d) demand is hardly affected by income;
- e) close substitutes for the good are abundant.

6. If the demand for a good is inelastic and its price rises from \$4 due to a shift in

supply, then quantity demanded:

- a) increases;
- b) decreases by less than 33 percent;
- c) decreases by less than 40 percent;
- d) decreases by more than 40 percent;
- e) decreases by more than 50 percent.

7. If the demand for a good is inelastic and its price rises from \$6 due to a shift in supply, then sellers' total revenue:

- a) increases;
- b) decreases by less than 33 percent;
- c) decreases by less than 40 percent;
- d) decreases by more than 40 percent;
- e) decreases by more than 50 percent.

8. If the price of a good falls from 90 cents to 70 cents and quantity demanded increases from 35 units, then the coefficient of the price elasticity of demand is:

- a) 0.5;
- b) 0.25;

- c) 1;
- d) 0.78;
- e) -1.

9. If the coefficient of the price elasticity of the demand for grapefruit is 1.5, and the price of grapefruit rises from \$8 per case to \$12, then the quantity demanded will:

- a) decrease by 75 percent;
- b) decrease by 6 percent;
- c) decrease by 50 percent;
- d) decrease by 40 percent;
- e) decrease by 60 percent.

10. Moving down along a linear demand curve:

- a) demand becomes less elastic;
- b) demand does not change;
- c) demand has unitary elasticity;
- d) demand becomes more elastic;
- e) demand approaches perfect elasticity.

11. Perfectly elastic demand curves

- a) are positively sloped;
- b) are vertical;
- c) slope slightly downward;
- d) are very steep;
- e) are horizontal.

12. A good tends to have relatively inelastic demand if

- a) it is a large part of consumers' budgets;
- b) close substitutes are available;
- c) it is a luxury;
- d) it has no very close substitutes;
- e) it has a high price.

13. Which of the following should have the most elastic demand?

- a) dole bananas;
- b) bananas;
- c) fresh fruit;
- d) fresh produce;
- e) food.

14. The cross -price elasticity of the demand for orange juice with respect to

the price of apple juice is probably:

- a) negative;
- b) near infinity;
- c) zero;
- d) positive;
- e) insignificant.

15. Economists define luxuries as goods with:

- a) positive income elasticities;
- b) income elasticities greater than one;
- c) zero income elasticities;
- d) highly elasticities;
- e) negative income elasticities.

16. Which of the following is not true at the equilibrium price?

- a) quantity demanded equals quantity supplied;
- b) the supply and demand curves intersect;
- c) consumers are satisfied with the quantity they purchase given its price;
- d) the good is not scarce;
- e) Producers are content with the price they

receive for the product, given the quantity they produce.

17. If, at the prevailing price, more of a good is desired than is available for sale:

- a) the price is below equilibrium;
- b) the price is at equilibrium;
- c) the price must fall;
- d) the price system cannot allocate the good efficiently;
- e) we cannot tell anything about the price.

18. In a pure monopoly, then a firm may make a long-run profit because:

- a) monopoly firms are more efficient than competitive ones;
- b) barriers prevent new firms from entering the market;
- c) a monopoly can buy input more cheaply;

- d) it will operate at minimum average cost;
- e) its demand curve is highly elastic.

19. The supply curve of a pure monopoly is:

- a) its marginal cost curve above average variable cost;
- b) its marginal cost curve above marginal revenue;
- c) its marginal cost curve above average total cost;
- d) its marginal cost curve above average revenue;
- e) nonexistent.

20. Product or resource demand in which quantity demanded can be of any amount at a particular product price; graphs as a horizontal demand curve:

- a) elastic demand;
- b) perfectly elastic demand;
- c) perfectly inelastic demand;
- d) inelastic demand.

Theme 7. Bases of behavior of subjects of market economy

The contents of educational material:

Economic subjects: household, firm (company), government. The household. Concept of the rational consumer. The conception of utility. The total and marginal utility.

The law of diminishing marginal utility. Weighed marginal utility. The consumer equilibrium and profit maximization utility. The organization as the managing subject. Classification of the organizations. Concept of the rational producer. Production periods: short-term and long-term. Constant and variable factors of production. Production and technology.

The production function and of its property. Production choice of firm in the short-term period. Production with one variable factor. The total, average, marginal product of a factor: concept, measurement, interrelation. The law of diminishing marginal productivity. Production choice of firm in the long-term period. Production with two variable factors.

The isoquants. The map of isoquants. The marginal rate of technical substitution. Interchangeability of factors of production. Concept and classification of expenses. The external and internal costs. The accounting and economic costs.

Costs of production in the short-term period. The fixed and variable costs. The total, average, marginal costs, their dynamics and interrelation. Costs of production in the long-term period. Scale effects. Problem of the optimum size of the enterprise. The isocosts. Balance of a producer. The least-cost rule. Trajectory of growth of firm.

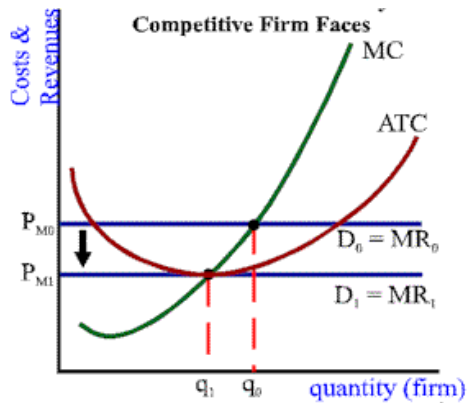
The revenue and profit of firm. The total, average, marginal revenue. The normal profit. The economic profit and the accounting profit. The profit maximization rule. State as economic subject. Microeconomic regulation, its directions and tools.

Practical tasks:

1. How can firms afford to make goods and services available for free?

2. Anderson's idea is that "the internet, by reducing marginal costs, encourages businesses to make their money by offering free goods or services to an extent we have not witnessed before". Discuss the extent to which doing business over the internet reduces marginal costs.

3. Using a suitable diagram, explain the difference between short-run equilibrium and long-run equilibrium in perfect competition.



4. Explain the relationship in the short run between the marginal costs of a firm and its average total costs.

5. Define the law of diminishing returns and assess the likelihood that it will be experienced by a firm producing a product in a consumer good market.

6. What is the effect of price controls on allocative efficiency?

7. Evaluate the effectiveness of rent control.

8. The choice between military products and the provision of healthcare illustrates the problem of 'opportunity cost'. Explain the nature of this problem, using a Production Possibility Curve.

9. To what extent does the Production Possibilities Curve model accurately represent the scarcity faced by less developed countries in the world today?

10. If there are only five people in a certain economy, and their weekly paychecks are \$100, \$300, \$600, \$1000, and \$1600, what is the cumulative percentage of income generated by the bottom 60% of wage earners?

Test:

1. Which of the following defines the opportunity cost of production?

a) using a resource in one capacity in production eliminates the ability to use it in another;

b) loss of potential profit in order to capture a larger market share;

c) streamlining production costs to maximize profit;

d) increasing overhead costs in order to expand production.

2. If you purchase a 10 year, \$15000.00 bond with an annual coupon rate of 6%, what is your total return at maturity?

a) \$900.00;

b) \$9000.00;

c) \$15900.00;

d) \$24000.00 .

3. If utility is the measure of satisfaction gained by consuming a good or service, then according to the principle of diminishing marginal utility:

a) five doughnuts makes you happier than four, but the fifth doughnut does not make you as happy as the first;

b) five doughnuts makes you happier than four and the third doughnut makes you happier than the first;

c) five doughnuts does not make you as happy as four because utility has been maximized;

d) five doughnuts make you happier than one and each additional doughnut makes you happier than the last.

4. If a firm desires to improve productivity and

expand economic growth over time, the best action to take is:

- a) increase capital expenditure;
- b) acquire new technology;
- c) avoid any new debt;
- d) A and B are equally important.

5. Moving along the budget line leaves the consumer:

- a) better off;
- b) worse off;
- c) neither better nor worse off;
- d) either better or worse off but one cannot tell which without more information;
- e) in equilibrium.

6. Moving along an indifference curve leaves the consumer

- a) better off;
- b) worse off;
- c) neither better nor worse off;
- d) either better or worse off but one cannot tell which without more information;
- e) in equilibrium.

7. At every level of consumption, the marginal rate of substitution tells:

- a) which indifference curve the consumer is on;
- b) how much of one good the consumer can exchange for another in the market;
- c) what the price of the goods are;
- d) how much the consumer wants to buy of each goods;
- e) how much of one goods the consumer is willing sacrifice to obtain one of the other.

8. An increase in the consumers income causes:

- a) the budget line to get steeper;
- b) the budget line to shift parallel to the right;
- c) the indifference curves to shift up;
- d) the budget line to get flatter;
- e) the indifference curves to get flatter.

9. An increase in the price of the good measured on the horizontal axis causes:

- a) the budget line to get steeper;

b) the budget line to shift parallel to the right;

c) the indifference curves to shift up;

d) the budget line to get flatter;

e) the indifference curves to get flatter.

10. In equilibrium the consumer is not

a) on the highest indifference curve attainable with his income;

b) achieving his existing level of utility at the cheapest possible cost;

c) spending all of his income;

d) maximizing his utility given his income;

e) on his highest indifference curve;

11. Indifference curves reflect:

a) preferences;

b) income;

c) prices;

d) both income and prices;

e) consumption.

12. If a household's income is \$900, the price of compact discs (on the vertical axis) is

\$15, and the price of cassette tapes (on the horizontal axis) is \$10, then the budget line intersects the vertical axis at a value of:

a) 900;

b) 15;

c) 60;

d) 0;

e) an indeterminate magnitude based on the data given.

13. For which of the following would households' preferences be most stable over time?

a) hamburgers;

b) big mace;

c) beef;

d) meat;

e) food.

14. The law of diminishing marginal utility implies that the marginal utility of a good decreases as:

a) a household consumes more of it;

b) it gets more expensive;

c) a household's income goes up;

d) preferences change;

e) preferences change.

15. The law of diminishing marginal utility implies that the marginal utility of a good decreases as:

- a) a household consumes more of it;
- b) it gets more expensive;
- c) a household's income goes up;
- d) preferences change;
- e) preferences change;

16. Which of the following would be least likely to cause a consumer to eat less beef?

- a) an increase in the price of beef;
- b) an increase in the price of lamb;
- c) a reduction in the consumers' income;
- d) a reduced preference for beef;
- e) a reduced preference for beef.

17. Diamonds are more expensive than water because:

- a) they yield higher total utility;
- b) they yield higher marginal utility;
- c) they are more useful;
- d) markets do not always reflect value;

e) households are irrational;

18. If two goods have the same marginal utility for a consumer who is maximizing utility, then:

- a) she will consume only one of them;
- b) she will consume equal quantities of them;
- c) she will be willing to pay the same price for each of them;
- d) the total utility gained from each of them is equal;
- e) the total utility gained from each of them is equal.

19. The total utility gained from each of them is equal.

- a) changes in preferences;
- b) changes in income;
- c) changes in the prices of small versus large cars;
- d) changes in the prices of small versus large cars;
- e) changes in the prices of small versus large cars.

20. If the marginal utility of nutmeg to a consumer exceeds that of ginger, then the consumer:

- a) is not in consumer equilibrium;
- b) will not buy any ginger;
- c) will buy some ginger but less than he buys of nutmeg;
- d) is willing to pay more for nutmeg than for ginger;
- e) will not buy any nutmeg.

21. The amount of income left over for a consumer in equilibrium is:

- a) her consumer surplus;
- b) zero;
- c) allocated to all goods evenly;
- d) excess demand;
- e) allocated to the goods with higher marginal utility.

22. Allocated to the goods with higher marginal utility.

- a) 10;
- b) 6;
- c) 16;
- d) 26.
- e) Impossible to determine from table 1

23. If fish cost \$3each. Then the marginal utility per dollar of the third fish consumed by the Catt family in table 1is

- a) 2;

b) 4;

c) 6;

d) 15.3.

e) Impossible to determine from table 1

24. If fish and milk cost\$3 and \$2 respectively and the income of the Catt family in table1 increases to\$15 ten it should consume:

- a) 1fish and 6 gallons of milk;
- b) 5 fish and no milk;
- c) 2 fish and 4 gallons of milk;
- d) 3 fish and 3 gallons of milk.

e) an amount that cannot be determined from table1

25. With the income of the Catt family in table 1 held constant at\$15 and the price of fish at \$3, suppose that the price of milk rises to \$3 per gallon. The combination of milk and fish that maximizes utility is now:

- a) 3 fish and 2 gallon of milk;
- b) 2 fish and 3gallon of milk;

c) 1 fish and 4 gallon of milk.

26. The total cost to consumers in figure 4 of eating 50 watermelons is:

- a) the area abc (\$250);
- b) the area b0gc (\$500);
- c) the area b0gc (\$500);
- d) the area b0gc (\$500);
- e) the distance 0b (\$ 10).

27. The consumer surplus of all consumers in figure 4 from 50 watermelons is:

- a) the area abc (\$250);
- b) the area b0gc (\$500);
- c) the area b0gc (\$500);
- d) the distance 0a (\$20);
- e) the distance 0b (\$10);

28. The value of the 50th watermelon to consumers in figure 4 is:

- a) the area abc (\$250);
- b) the area b0gc (\$500);
- c) the area aogc (\$750);
- d) the distance 0a (\$20);
- e) the distance 0b (\$10).

29. Which of the following is not a direct result of the law of diminishing marginal utility?

- a) season tickets often cost less per event than single tickets;
- b) stores often offer buy one get one free rather than half price sales;
- c) many companies offer volume discounts;
- d) few people eat five or more hamburgers in the same day.

30. When the price of a good rises, the income effect is most likely to:

- a) increase consumption of the good and other similar goods;
- b) decrease consumption of the good and other similar goods;
- c) decrease consumption of the good and not change consumption of other similar goods;
- d) decrease consumption of the good and increase consumption of other similar goods;
- e) not change consumption of any goods.

31. When the price of good rises, the substitution effect is most likely to:

a) increase consumption of the good and other similar goods;

b) decrease consumption of the good and other similar goods;

c) decrease consumption of the goods and not change consumption of other similar goods;

d) decrease consumption of the goods and not change consumption of other similar goods;

e) not change consumption of any goods.

32. For which of the following goods would an increase in price lead to the largest income effect on quantity demanded?

a) housing;

b) soft drinks;

c) refrigerators;

d) gasoline;

e) fruit.

33. If a household in consumer equilibrium spends

\$40 per month on beef and \$20 per month on pork, then:

a) beef is more expensive than pork;

b) beef gives more total utility than pork;

c) the last pound of beef yields the same marginal utility as the last pound of pork;

d) the last dollar spent on beef yields the same marginal utility as the last dollar spent on pork;

e) beef has a higher marginal utility than pork.

34. If the marginal utility of a commodity wear negative then:

a) less of it would be preferred to more;

b) the household would only consume it if it were free;

c) the household should buy more of it to make its marginal utility positive;

d) the law of diminishing marginal utility would be violated;

e) the household's consumer surplus must be large.

35. The payments received by the owners of capital are called:

- a) pure rents;
- b) rent;
- c) quasi rents;
- d) interest;
- e) profits.

36. A company's computer system would depreciate more quickly in an economic sense as a result of:

- a) hiring less labor to work with the computer;
- b) a revolutionary innovation in computer hardware;
- c) a change in tax laws allowing greater depreciation expenses;
- d) an increase in the price of computers;
- e) a reduction in the demand for the company's product.

37. A capital good that produces for only year, has a marginal revenue product of \$1,000 for that year, and costs \$800, has a rate of return of:

- a) 8 percent;
- b) 10 percent;
- c) 25 percent;

- d) 12.5 percent;
- e) 20 percent.

38. Which of the following would be most likely to result from an increase in the interest rate?

- a) households buy more cars;
- b) firms increase new plant construction;
- c) more workers quit and go back to college;
- d) households substitute future for current consumption;
- e) firms substitute capital for labor.

39. A piece of improved land that has a marginal revenue product of \$10,000 per year in perpetuity and that costs \$50,000 has a rate of return of:

- a) 50 percent;
- b) 20 percent;
- c) 25 percent;
- d) 5 percent;
- e) 10 percent.

40. In equilibrium, firms will undertake those investment projects that have:

a) rate of return
greater than the interest rate;
b) positive rates of
return;
c) rates of return less
the interest rate;

d) marginal revenue
product greater than the
interest rate;
e) marginal revenue
product greater than their cost.

QUESTIONS ON THE MODULE II

Dear students as the teacher has the right to choose a various form of reception of delivery of quality of preparation of the Module I, the problem field of the module on which to you and tasks will be made by the teacher is offered to you, that is you need to know everything according to each phrase below (to the thesis, the offer).

Good luck!

Module II. Fundamentals of microeconomics

Theme 5. Demand, supply and market equilibrium

The demand. The law of demand. The demand function and its graphic interpretation.

Not price demand factors. The individual and market demand.

The supply. The law of supply. The supply function and its graphic interpretation. Not price supply factors.

The market equilibrium. Consequences of a deviation of the price from equilibrium level. Commodity deficiency and commodity surplus. Changes of supply and demand and their influence on the price. Prize from an exchange: surplus of the consumer and producer.

Theme 6. The demand and supply elasticity

The elasticity. The price elasticity of demand. Coefficients of price elasticity of demand. The point and arc elasticity of price demand. Factors of elasticity of demand at the price.

The cross elasticity of demand. Coefficients of cross elasticity of demand.

The income elasticity of demand. Coefficients of elasticity of demand according to the income.

The supply elasticity. Coefficients of elasticity of the offer. Factors of elasticity of the supply. The immediate, short-run and long-run equilibrium and the supply elasticity.

Practical value of the analysis of elasticity. The price elasticity of demand and revenue of a producer. Influence of elasticity on surplus of the consumer and surplus of the producer.

The demand and supply elasticity and tax burden.

Theme 7. Bases of behavior of subjects of market economy

Economic subjects: household, firm (company), government. The household. Concept of the rational consumer. The conception of utility. The total and marginal utility.

The law of diminishing marginal utility. Weighed marginal utility. The consumer equilibrium and profit maximization utility. The organization as the managing subject. Classification of the organizations. Concept of the rational producer. Production periods: short-term and long-term. Constant and variable factors of production. Production and technology.

The production function and of its property. Production choice of firm in the short-term period. Production with one variable factor. The total, average, marginal product of a factor: concept, measurement, interrelation. The law of diminishing marginal productivity. Production choice of firm in the long-term period. Production with two variable factors.

The isoquants. The map of isoquants. The marginal rate of technical substitution. Interchangeability of factors of production. Concept and classification of expenses. The external and internal costs. The accounting and economic costs.

Costs of production in the short-term period. The fixed and variable costs. The total, average, marginal costs, their dynamics and interrelation. Costs of production in the long-term period. Scale effects. Problem of the optimum size of the enterprise. The isocosts. Balance of a producer. The least-cost rule. Trajectory of growth of firm.

The revenue and profit of firm. The total, average, marginal revenue. The normal profit. The economic profit and the accounting profit. The profit maximization rule. State as economic subject. Microeconomic regulation, its directions and tools.

MODULE III. BASES OF THE THEORY OF MACROECONOMIC AND INTERNATIONAL ECONOMY

Theme 8. Main macroeconomic indicators

The contents of educational material:

National economy and its general characteristic.

The open and close economy. National account system (NAS). The gross domestic product (GDP). Principles of calculation of gross domestic product.

Service The intermediates and private goods and. The value added. Production method of calculation of gross domestic product. Calculation of gross domestic product for expenses and income. Other indicators of system of national accounts. The nominal and real GDP.

The price index. GNP deflator and index of consumer prices. Price index of the producer. National welfare, its structure and structure. Dynamics of the main macroeconomic indicators of Republic of Belarus.

Practical tasks:

1. Explain the differences between GDP and GNP/GNI as measures of economic activity.

2. Explain the process by which nominal GDP is calculated and distinguish it from real GDP.

3. Written questions:

3.1 money entering the domestic economy - aka exports from abroad, government spending more than collecting and money lent to firms and households;

3.2 a measure of the overall cost of the goods and services bought by a typical consumer;

3.3 spending by households on goods and services, with the exception of purchases of new housing;

3.4 a government program that partially protects workers' incomes when they become unemployed;

3.5 a measure of the price level calculated as the ratio of nominal GDP to real GDP times 100.

4. True/False questions:

4.1 net exports → The total number of workers, including both the employed and unemployed;

4.2 expenditure approach (GDP) → Consumer Spending + Investment Spending + Government Spending + Net Exports (Exports - Imports)

$$\text{GDP} = C + I + G + (X - M)$$

4.3 final goods → The production of goods and services valued at current prices;

4.4 structural unemployment → Unemployment that results because the number of jobs available in some labor markets is insufficient to provide a job for everyone who wants one;

4.5 five Contributors to economic activity of a nation → A model that shows how households and firms circulate resources, goods, and incomes through the economy. This basic model is expanded to include the government and foreign sector.

5. True/False questions:

5.1 national income → The aggregate sum of wages, salaries, rent, interest, profit, proprietors' income, and taxes on production and imports;

5.2 GDP → The production of goods and services valued at constant prices;

5.3 efficiency wages → Goods that are ready for their final use by consumers and firms;

5.4 labor force → The process by which workers find appropriate jobs given their tastes and skills;

5.5 expenditure approach (GDP) → Consumer Spending + Investment Spending + Government Spending + Net Exports (Exports - Imports);

$$\text{GDP} = C + I + G + (X - M)$$

5.6 income must = expenditure for __ to function → if the quantity of a good goes up in one year from the last, the value of a dollar rises, even if the price stays the same;

5.7 disposable personal income → income that household and noncorporate businesses have left after satisfying all their obligations to the government.

6. Matching questions:

| | | |
|-------|----------------------------|--|
| 6.1.1 | cyclical unemployment; | a The deviation of unemployment from its natural rate |
| 6.1.2 | unemployment insurance; | b A government program that partially protects workers' incomes when they become unemployed |
| 6.1.3 | GDP deflator; | c Individuals who would like to work but have given up looking for a job |
| 6.1.4 | discouraged workers; | d The value of a nation's exports minus the value of its imports; also called Trade Balance |
| 6.1.5 | net exports. | e A measure of the price level calculated as the ratio of nominal GDP to real GDP times 100 |

6.2 Matching questions:

| | | |
|-------|----------------------------|--|
| 6.2.1 | gross national product; | a wages rises automatically when CPI rises |
| 6.2.2 | substitution bias; | b 85 billion |
| 6.2.3 | real interest rate; | c interest rate that tells you how fast the purchasing power of your bank account rises over time (corrected for inflation) |
| 6.2.4 | under current | |

expansion in the United States, \$___ per month is put into banks every month;

d total income earned by a nation's permanent residents (called nationals) based on citizenship. Includes income of citizens (domestic and international), but not by foreigners in country

6.2.5 cost of living allowance (COLA).

e the law that consumers substitute towards goods that have become relatively less expensive

7. Table 7 – Goods and Services Produced in Country C:

| Year | Price of com | Quantity of com | Price of candy | Quantity of candy |
|------|--------------|-----------------|----------------|-------------------|
| 1 | \$ | 10 | \$ | 10 |
| 2 | \$ | 15 | \$ | 12 |
| 3 | \$ | 20 | \$ | 15 |

7.1 Calculate the nominal GDP for Country C in year 2.

7.2 Using , calculate the real GDP for Country C in year 2, using year 1 as the base year.

7.3 Using , calculate the GNP for Country C in year 3 if candy is produced by foreigners.

7.4 Using , calculate the GDP deflator for year 2 using year 1 as the base year.

8. What does the CPI measure?

8.1 Table 8 – Goods and Services Consumed in Country C

| Time | Price of corn | Price of candy |
|------|---------------|----------------|
| 1 | \$0.50 | \$1.00 |
| 2 | \$1.00 | \$2.00 |
| 3 | \$1.50 | \$3.00 |

Using the table above, compute the CPI for Country C in year 1 using year 1 as the base year.

8.2 Using table 1, compute the CPI for Country C in year 2 using year 1 as the base year.

8.3 What is the percent increase in the price level in Country C from year 1 to year 2?

8.4 What are 3 problems with CPI?

1. Which best describes the calculation of GNP or Gross National Product?

a) the total value of goods and services produced domestically, plus income earned by citizens outside the country, less foreigner's income from domestic production;

b) the total value of goods and services produced domestically by all workers;

c) the total value of goods and services produced domestically less production costs except wages paid;

d) the total value of goods and services produced domestically, less income from foreign workers producing domestically, less the total value of goods consumed domestically.

2. When the real Gross Domestic Product (GDP) is declining, that period is referred to as a recession. When that trend stops and economic activity begins to rise again it is known as a:

Test:

- a) peak;
- b) cycle;
- c) trough;
- d) gap.

3. Consumer price index is a measure, within a country of:

a) the total cost of living as indicated by total cost of goods and services typically produced;

b) the average consumer cost of goods within a specified industry;

c) the total disposable income consumers have to spend on goods and services;

d) of the effect that consumer demand has had on supply for a specified period of time.

4. Which country has the strongest GDP per capital:

W= GDP of \$152 billion and a total population of 54,553,000;

X = GDP of \$400 billion and a total population of 21,900,000;

Y = GDP of \$595 billion and a total population of 38,500,000;

Z = GDP of \$ 628 billion and a total population of 43,655,000.

- a) country W;
- b) country X;
- c) country Z;
- d) country X and Y are equal.

5. Gross domestic product includes all of the following except:

- a) personal consumption expenditures;
- b) investment expenditures;
- c) government purchases;
- d) government transfer payments;
- e) exports.

6. Which of the following would be part of investment in the national income and product accounts?

- a) social security benefits;
- b) a new post office;
- c) a new apartment building;

- d) a purchase of a new car by a consumer;
- e) both b and c.

7. An accumulation of unsold goods is:

- a) counted in GDP as investment;
- b) counted in GDP as consumption;
- c) counted in GDP, but not as consumption or investment;
- d) not counted in GDP;
- e) counted in GDP, only if they are durable goods.

8. Gross domestic income equals gross domestic product:

- a) only when supply equals demand;
- b) only when there is no government;
- c) only when there is no government or foreign trade;
- d) only when depreciation is ignored;
- e) always.

9. Which of the following is part of the difference between personal

income personal disposable income?

- a) personal income taxes;
- b) transfer payments;
- c) depreciation;
- d) corporate profits;
- e) saving.

10. The largest income share of GDP is:

- a) compensation of employees;
- b) proprietor's income;
- c) undistributed corporate profits;
- d) depreciation;
- e) indirect taxes.

11. If real GDP is a large number than nominal GDP, then:

- a) prices are higher today than in the base year;
- b) the GDP deflator is greater than one;
- c) the GDP is greater than 100;
- d) prices are lower today than in the base year;
- e) the economy is producing less today than in the base year.

12. If you hire a gardener to mow your lawn rather than doing it yourself:

- a) GDP does not change;
- b) GDP decreases;
- c) GDP increases;
- d) GDP increases , unless the gardener does not report the income;
- e) it is impossible to determine what happens to GDP.

13 The production of goods and services valued at current prices:

- a) GDP;
- b) final goods;
- c) real GDP;
- d) nominal GDP.

14. GDP – depreciation; where depreciation accounts for the gradual wearing out of factories and equipment:

- a) income approach (GDP);
- b) output approach (GDP);
- c) Gross National Product (GNP);
- d) Net Domestic Product (NDP).

15. The production of goods and services valued at constant prices:

- a) real GDP;
- b) nominal GDP;
- c) final goods;
- d) Leakages.

16. Households, Firms, Government Sector, Foreign Sector, and Banking Sector:

- a) Net Domestic Product (NDP);
- b) labor-force participation rate;
- c) Five Contributors to economic activity of a nation;
- d) Circular Flow of Economic Activity.

17. Money leaving the domestic economy - aka imports from abroad, taxes paid by households and firms, and money saved in banks:

- a) leakages;
- b) GDP;
- c) real GDP;
- d) final goods.

18. Measurement of GDP that includes inflation (production of good + services at current prices):

- a) components of GDP;
- b) GDP;
- c) nominal GDP;
- d) real GDP.

19. Income that household and noncorporate businesses have left after satisfying all their obligations to the government:

- a) gross national product;
- b) disposable personal income;
- c) retained earnings;
- d) depreciation.

20. Consumption, investment, government purchases, and net exports:

- a) nominal GDP;
- b) components of GDP;
- c) janet yellen;
- d) real GDP;

Theme 9. Monetary market. The monetary and credit system

The contents of educational material:

Evolution of money. The money functions.

The money market. Nominal and real demand for money. The transactions demand for money. The asset demand for money. Offer of money. The monetary aggregates. The monetary equilibrium.

The law of the circulation of money. The monetary and credit system and her structure. The central bank and his functions. The commercial banks and their functions.

Forms of the credit. Specialized credit and financial organizations. The monetary and credit system of Belarus.

Practical tasks:

1. Written questions:

1.1 the amount of money the banking system generates with each dollar of reserves, equal to the reciprocal of the reserve ratio;

1.2 the interest rate at which banks make overnight loans to one another;

1.3 the yardstick people use to post prices and record debts;

1.4 the use of borrowed money to supplement existing funds for purposes of investment;

1.5 an item that buyers give to sellers when they want to purchase goods and services.

2. True/False questions:

2.1 money → the set of assets in an economy that people regularly use to buy goods and services from other people;

2.2 reserve requirements → a government regulation specifying a minimum amount of bank capital;

2.3 monetary policy → the quantity of money available in the economy;

2.4 fractional-reserve banking → a banking system in which banks hold only a fraction of deposits as reserves;

2.5 open-market operations → the purchase and sale of U.S. government bonds by the Fed.

3. Matching questions:

| | | |
|--------------------------|---|--|
| 3.1 capital requirement; | a | the resources a bank's owners have put into the institution; |
| 3.2 store of value; | b | the fraction of deposits that banks hold as reserves; |
| 3.3 liquidity; | c | |
| 3.4 bank capital; | d | an item that people can use to transfer purchasing power from the present to the future; |
| 3.5 reserve ratio. | e | the ease with which an asset can be converted into the economy's medium of exchange; |
| | | a government regulation specifying a minimum amount of bank capital. |

4. Describe the basic functions of money.

5. Describe the basic types of money.

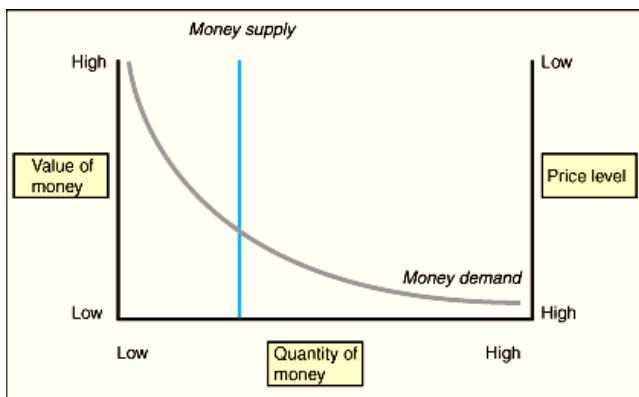
6. Could milk be used as a form of money? Why or why not?

7. Could diamonds be used as a form of money? Why or why not?

8. What element is most important to the successful implementation of fiat money?

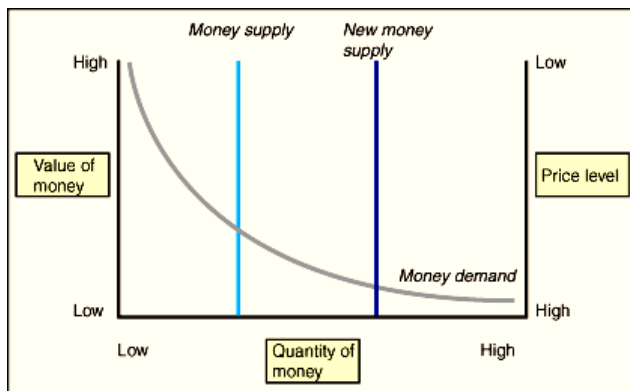
9. Problem : Describe the money market.

10. Draw a diagram depicting the money market.



The money market

11. Describe what happens to the value of money and the money market when the Fed increases the money supply. Diagram the change.



Shift in the money market

12. Describe the quantity theory of money.

13. How are the velocity of money, the money supply, and the nominal GDP related?

14. Problem : Why do lenders require borrowers to pay interest?

15. How much would be due on a \$20,000 loan at 6% interest after 3 years?

16. How does the nominal interest rate differ from the real interest rate?

17. What is the equation that represents the real interest rate? What does this equation show?

18. Explain the Fischer effect.

19. What happens when you deposit money in a bank?

20. How do banks earn money?

21. Explain the advantage of fractional reserve banking.

22. What is the change in the money supply created by an initial deposit of \$2000 if the reserve requirement is 20%?

23. List the major vehicles of monetary policy.

24. Define expansionary monetary policy.

25. Define contractionary monetary policy.

26. What happens to the interest rate under expansionary monetary policy?

27. What happens to the interest rate under contractionary monetary policy?

Test:

1. In the United States changes in the money supply are controlled by:

- a) the U.S. Treasury Department;
- b) the Federal Reserve Bank;
- c) the House Committee on Financial Services;
- d) the Bureau of Engraving and Printing.

rate and a real interest rate is that:

- a) the nominal interest rate is for a fixed period of time;
- b) the real interest rate is legally binding;
- c) the nominal interest rate includes additional costs financed in a loan;
- d) the real interest rate factors in inflation.

2. The difference between a nominal interest

3. Money is defined as:

- a) currency and coin;
- b) anything valuable;

c) anything that can be exchanged;

d) anything widely accepted in exchange for other goods;

e) any financial assets issued by the government.

4. The most common way of controlling the money supply is:

a) change in the required-reserve ratio;

b) changes in the discount rate;

c) moral suasion;

d) open-market operations;

e) selective credit controls.

5. If the aggregate supply curve is vertical, then a 10 percent increase in the money supply leads to:

a) a 10 percent increase in prices;

b) an increase in prices of less than 10 percent;

c) an increase in prices of less than 10 percent;

d) an increase in both prices and output;

e) a 10 percent increase in output.

6. Which of the following is not part of monetary policy?

a) affecting interest rates by changing the monetary base;

b) changing the discount rate;

c) selling bonds to increase government spending;

d) changing reserve requirements;

e) affecting the money supply by the monetary base.

7. When the Federal Reserve purchases a \$10,000 government bond, the money supply:

a) increases by \$10,000;

b) increases by more than \$10,000;

c) decreases by less than \$10,000;

d) decreases by \$10,000;

e) decreases by more than \$10,000.

8. The two important lags in the conduct monetary

policy are the recognition and the:

- a) effectiveness lag;
- b) operation lag;
- c) base lag;
- d) political lag.

9. Keynesian monetary policy has a potential inflationary bias because:

- a) the self-correcting mechanism always lower raises prices;
- b) the correcting mechanism always raises prices;
- c) monetary policy is relied upon more to eliminate inflation gaps;
- d) monetary policy is relied upon to the increase in the money supply.

10. Milton Friedman believes the effectiveness lag to be:

- a) short and variable;
- b) long and variable;
- c) short and constant;
- d) long and constant.

11. The ratio of the money supply to the monetary base increases if:

- a) banks decide to hold a larger fraction of deposits as reserves;
- b) households decide to hold a larger fraction of money as currency;
- c) the Fed expands the monetary base;
- d) banks decide to hold a smaller fraction of deposits as reserves;
- e) households expands their overall demand for money.

12. The size of money supply is determined by the action of:

- a) the Fed;
- b) the Fed and banks;
- c) banks;
- d) the Fed, banks and the public;
- e) the Fed and the public.

13. The verbal that keynes believed is most directly affected by a change in the money supply is:

- a) the price level;
- b) the interest rate;
- c) the inflation rate;
- d) output;
- e) unemployment.

14. An increase in the money supply causes the aggregate demand curve to:

- a) not change;
- b) shift upward in proportion to the increase in the money supply;
- c) shift to the right in proportion to the increase in the money supply;
- d) shift downward in proportion to the increase in the money supply;
- e) shift to the left in proportion to the increase in the money supply.

15. If the aggregate supply curve is horizontal, then a 10 percent increase in the money supply leads to:

- a) a 10 percent increase in prices;
- b) a 10 percent increase in output;
- c) an increase in prices of less than 10 percent;
- d) an increase in both prices and output;
- e) an increase in output of intermediate size.

16. The monetary policy favored by monetarists is:

- a) a steadily increasing rate of monetary growth;
- b) a constant and slow rate of monetary growth;
- c) vigorous monetary expansion during recessions;
- d) a constant (no growing) money supply;
- e) a moderate countercyclical policy of monetary growth.

17. A major drawback to using the reserve requirement to conduct monetary policy is that:

- a) it is an unfair subsidy to the banking system;
- b) it has only weak announcement effects;
- c) it is too powerful to use on a daily basis;
- d) it would require interest rate targeting.

18. The monetary base includes all of the following except:

- a) bank loans and investments;

b) currency in circulation;
c) vault cash;
d) bank deposit at the Fed.

19. According to the Keynesian model, a deflationary gap calls for:

- a) expansionary monetary policy;
- b) contractionary monetary policy;
- c) no change in monetary policy;
- d) an increase in the discount rate credit controls.

20. If the investment demand curve shifts to the left and the Fed maintains a constant interest rate, then the resulting recession will be:

- a) completely eliminated;
- b) less severe than if the Fed held the money supply constant;
- c) the same as if the Fed held the money supply constant;
- d) more severe than if the Fed held the money supply constant;
- e) endless because the self-correction mechanism of the economy will be disabled.

Theme 10. The financial sector of economic and bases of its functioning

The contents of educational material:

The conception of finances and their functions. The financial system and her structure. The publics and corporate finances.

Taxation: essence, principles. Types and functions of taxes. The government budget and his functions. Expenses and income of the state budget. The conception of the budget deficit and budget. The financial system of Belarus.

Practical tasks:

1. Decide whether each tax situation described below is progressive, proportional, or regressive. Write the correct term on the line provided:

_____1.1 Nicholas made \$25,000 in 1991 and paid \$5,000 in taxes. In 1993 he made \$70,000 and paid \$10,000 in taxes;

_____1.2 Amelia discovered that the more money she made, the less she paid in taxes;

_____1.3 Cari earned \$40,000 in 1991 and paid an effective tax rate of 15 percent. In 1992 she worked part-time, earned \$22,000, and paid an effective tax rate of 13 percent;

_____1.4 Xavier paid an effective tax rate of 28 percent on the \$100,000 he earned in 1992. Todd, however, paid an effective tax rate of 19 percent on the \$60,000 he earned in 1992;

_____1.5 the presidential candidate proposed that no matter how much money you earned, you would pay the same effective tax rate.

2. Write True if the statement is correct. Write False if the statement is not correct:

2.1 sales tax is paid on all goods and services;

2.2 property tax is paid by the owners of land and buildings;

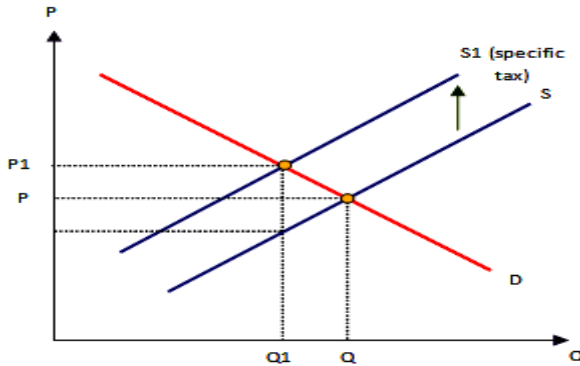
2.3 the tax on money earned is called an income tax;

2.4 the government places an excise tax on certain goods to regulate their sale or to raise additional revenue;

2.5 according to the government, taxpayers should not be able to understand tax laws;

2.6 crowding-out effect → the additional shifts in aggregate demand that result when expansionary fiscal policy increases income and thereby increases consumer spending.

3. Explain, using a diagram, the effect of a specific tax on various stakeholders.



4. Written questions:

4.1 the setting of the level of government spending and taxation by government policymakers;

4.2 changes in fiscal policy that stimulate aggregate demand when the economy goes into a recession without policy-makers having to take any deliberate action.

5. Define expansionary fiscal policy.

6. Define contractionary fiscal policy.

7. How does fiscal policy affect output?

8. What is the equation that shows the total change in output created by a change in tax policy?

9. What is the equation that shows the total change in output created by a change in government spending?

10. What are the tools of monetary policy?

11. What are the tools of fiscal policy?

12. How does active policy differ from passive policy?

13. What are three problems with active policy?

14. What are two problems with passive policy?
15. What is the link between monetary policy and real variables?
16. How does each of the variables in the output equation react to the a rise in the interest rate?
17. What is the effect of expansionary monetary policy on the interest rate?
18. What is the effect of expansionary fiscal policy on the interest rate?
19. What is meant by the term "crowding out"?
20. Problem : What is the budget deficit?
21. Explain the traditionalist view of the budget deficit.
22. Explain the Ricardian view of the budget deficit.
23. Explain the fringe view of the budget deficit.
24. What is the major way in which the national debt negatively impacts the economy in the long run?

Test:

1. A government receives some of its income by _____.

- a) running private industries;
- b) providing services to its citizens;
- c) taxing citizens;
- d) the law of supply and demand.

2. Governments use taxes to _____.

- a) borrow more money;
- b) pay its expenses;
- c) back its currency;

d) all of the above.

3. Governments use _____ to run school districts.

- a) nature taxes;
- b) property taxes;
- c) sales taxes;
- d) income taxes.

4. Tax dollars received by governments are called _____.

- a) government economics;
- b) government reserve system;

c) government factor system;
d) government revenue.

a) regressive;
b) proportional;
c) progressive;
d) intuitive.

5. A(n) _____ is the percentage of a person's income paid in taxes.

- a) effective tax rate;
- b) flexible tax rate;
- c) excise tax rate;
- d) ineffective tax rate.

6. If Martina made \$20,000 and paid \$2000 in taxes, her tax rate was _____.

- a) 5 percent;
- b) 10 percent;
- c) 0.1 percent;
- d) 0.5 percent.

7. If the tax rate a person pays increases as her income increases, the tax is called a(n) _____ tax.

- a) regressive;
- b) proportional;
- c) progressive;
- d) intuitive.

8. If the tax rate a person pays decreases as her income increases, the tax is called a _____ tax.

9. If the tax rate stays the same regardless of a person's income, the tax is called a _____ rate.

- a) regressive;
- b) proportional;
- c) progressive;
- d) intuitive.

10. Taxes should provide the government with adequate revenue, or bring in enough money to _____.

- a) meet government needs;
- b) be understandable;
- c) provide a profit;
- d) be flexible.

11. Which of the following tax types would affect all groups equally regardless of income?

- a) progressive;
- b) proportional;
- c) regressive;
- d) excise.

12. The process of paying of a debt over a fixed

period of time with specified payments and interest rates is known as:

- a) fiscal policy;
- b) appreciation;
- c) amortization;
- d) revolving credit.

13. Sales tax, income tax, and property tax can all be examples of:

- a) ad valorem taxes;
- b) a posteriori taxes;
- c) regressive taxes;
- d) per unit tax.

14. Which of the following would be considered to be fiscal policy? the demise of the Soviet Union;

- a) defense cuts after
- b) new highway construction in Alaska;
- c) expanded Medicare payments to the elderly;
- d) a tax cut enacted to combat a recession;
- e) all of the above.

15. There is growing consensus among economists that discretionary fiscal policy can best be used to:

- a) control the money supply;
- b) help promote economic growth;
- c) moderate the business cycle;
- d) keep interest rates as high as possible.

16. Which of the following would be appropriate fiscal policy to combat an inflationary gap?

- a) increasing government spending;
- b) increasing taxes;
- c) increasing the money supply;
- d) decrease taxes;
- e) decrease the money supply.

17. If fiscal policy used to eliminate an inflationary gap before the self-correcting mechanism begins to work, then

- a) prices do not change;
- b) prices go down;
- c) prices go up by the less than if self-correction is used;

d) prices go up by the same amount as if self-correcting is used;

e) prices go up by more than if self-correcting is used.

18. Which of the following is an automatic stabilizer?

a) an increase in defense spending;

b) an expansion of the money supply during a recession;

c) a legislated tax increase during a boom;

d) an increase in the number of people receiving unemployment benefits during a recession;

e) an increase in taxes due to inflation occurring during recession.

19. In a recession, an automatic stabilizer shifts the aggregate

a) supply curve to the right;

b) demand curve to the right;

c) supply curve to the left;

d) demand curve to the left;

e) demand and supply curve to the right.

20. In an inflationary gap, appropriate discretionary fiscal policy might include:

a) increasing tax rates;

b) increasing government spending;

c) increasing transfer payments;

d) allowing taxes to increase with unchanged with unchanged rates due to higher incomes;

e) increasing the money supply.

Theme 11. The macroeconomic equilibrium: the model of aggregate demand and the aggregate supply (AD-AS model)

The contents of educational material:

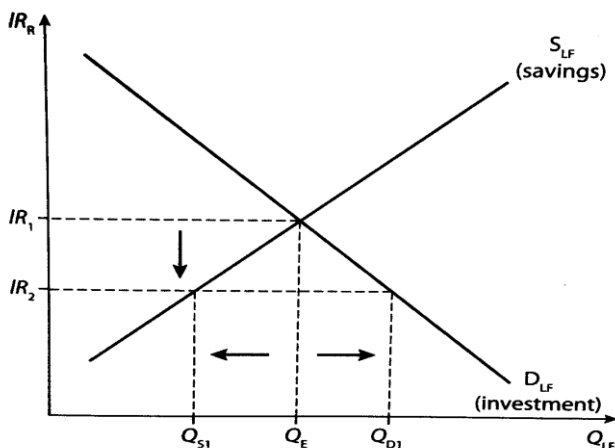
The aggregate demand. The aggregate demand curve. The determinants of aggregate demand.

The aggregate supply. The short-period and long-period ranges of supply curve. The determinants of aggregate supply.

The short-period and long-period equilibrium in model AD-AS. Changes in balance. The ratchet effect.

Practical tasks:

1. Use an AD/AS diagram to analyse the likely effects of an increase in interest rates.



2. Use an AD/AS diagram to analyse the likely effects of an increase in income tax.

3. Identify the components of aggregate demand and briefly explain two factors which might determine each of these components.

4. Using AD/AS diagrams, analyse the likely impact on an economy of the following: a general rise in wage costs; the discovery of new raw material resources; capital stock increases.
5. Give two examples of positive supply shocks and two examples of adverse supply shocks.
6. What are the short-run and long-run effects of an increase in aggregate demand?
7. What are the short-run and long-run effects of a decrease in aggregate demand?
8. What are the short-run and long-run effects of a positive supply shock?
9. What are the short-run and long-run effects of an adverse supply shock?
10. Problem : What are the four major models of aggregate supply?
11. Explain the chain of events that causes the aggregate demand curve to be upward sloping according to the sticky-wage model.
12. Explain the chain of events that causes the aggregate demand curve to be upward sloping according to the worker-misperception model.
13. Explain the chain of events that causes the aggregate demand curve to be upward sloping according to the imperfect-information model.
14. Explain the chains of events that cause the aggregate demand curve to be upward sloping according to the sticky-price model.
15. Problem : What relationship does the aggregate supply curve show?
16. What is the equation for the aggregate supply curve in the short run?
17. What does each of the terms mean in the equation for the short-term aggregate supply curve and what does the equation mean overall?

18. What is the slope of both the short run aggregate supply curve and of the long run aggregate supply curve?

19. Give one reason for why the long-term aggregate supply curve is vertical and four models for why the short-term aggregate supply curve is upward sloping.

20. What are two uses for the aggregate demand curve?

21. What is the effect of a shift in the aggregate demand curve to the left?

22. What is the effect of a shift in the aggregate demand curve to the right?

23. Give three examples of events that will shift the aggregate demand curve to the left?

24. Give three examples of events that will shift the aggregate demand curve to the right?

Test:

1. The Keynesian theory of economics, practiced in the United States promotes the:

a) importance of both public and private roles in the economy;

b) value of laissez-faire policies in building a strong economy;

c) ability of natural market forces to self regulate the economy;

d) idea that man has very little control in preventing recession or depression.

2. As a result of an unanticipated one time increase in the money supply the aggregate demand curve shifts:

a) downward only in the short run;

b) down ward in the short and long run;

c) downward only in the long run;

d) upward in the short and long run;

e) upward only in the short run.

3. Which of the following is not an equivalent statement of Keynesian

equilibrium in the model without government?

- a) aggregate expenditures equal output;
- b) unintended investment is zero;
- c) unintended investment equals saving;
- d) desired investment equal saving;
- e) consumption equals income minus desired investment

4. The aggregate demand curve in the Keynesian model is

- a) vertical because of unemployment;
- b) horizontal because of unemployment;
- c) downward sloping because as any good becomes more expensive, people buy less of it;
- d) downward sloping because as prices rise, real wealth falls, reducing consumption;
- e) downward sloping because households spend less when inflation is high.

5. A Keynesian equilibrium with less than full

employment can occur on the portion of the aggregate supply curve that is:

- a) upward sloping;
- b) downward sloping;
- c) vertical;
- d) horizontal;
- e) horizontal or upward sloping.

6. The existence of bottlenecks in some industries while there is still some unemployment in the economy causes the Keynesian aggregate supply curve to:

- a) have an upward sloping segment;
- b) be shaped like a backward L;
- c) be vertical;
- d) be horizontal;
- e) have a downward sloping segment.

7. If the aggregate supply curve is horizontal, it means that:

- a) firms cannot increase output;
- b) firms are unwilling to increase output;
- c) firms will increase output only if prices rise;

d) firms will increase output at the current price;

e) firms will increase output if prices fall.

8. In the AD-AS quantity theory, a decrease in aggregate demand results in:

a) higher price level;

b) lower price level;

c) higher price GDP;

d) lower real GDP.

9. In the AD-AS quantity theory model, changes in the money supply affect:

a) the price level;

b) the velocity of circulation;

c) real GDP;

d) employment.

10. Which of the following will cause the short-run aggregate supply curve to shift to the right?

a) an increase in the price level;

b) an increase in the government budget deficit;

c) a decrease in the price level;

d) a decrease in wages;

e) a decrease in productivity.

11. The aggregate expenditure curve:

a) is the same as the aggregate demand curve;

b) relates total actual expenditures (including unintended investment) to income;

c) cannot take account of foreign transaction;

d) has both the properties described in a and b.

12. If the money supply is constant, then as the price level falls:

a) the aggregate supply curve shifts up;

b) the aggregate supply curve shifts down;

c) private consumption spending decreases;

d) real money balances increases.

13. In a depression economy along a horizontal aggregate supply curve:

a) wages and prices continuously falling;

b) real GDP cannot be increased or decreased;

c) wages and prices are "sticky" downward;

d) unemployment is relatively low.

14. Entry of new firms into a competitive market will shift:

a) the industry supply curve of the left;

b) the supply curves of firms to the left;

c) the demand curves faced by firms to the left;

d) the industry supply to the right;

e) the supply curves of firms to the right.

15. In a constant-cost industry, an increase in demand:

a) increase price in the short run but not in the long run;

b) increases price in both the short run and long run;

c) does not change price in both the short run or long run;

d) increases output in the short run but not in the long run;

e) does not change output in the short run or long run.

16. The long-run supply curve of an increasing cost industry:

a) is horizontal;

b) is the sum of the marginal cost curve of firms in the industry;

c) slopes upward but is flatter than the short -run supply curve;

d) is steeper than the short -run supply curve;

e) is the sum of the upward -sloping part of firms long-run average cost curves.

17. Assume that the short-run aggregate supply curve is horizontal and the marginal propensity to consume is 0.75. Assuming no crowding out and no international trade, if the government wishes to increase the equilibrium gross domestic product by \$100 million, it should increase government spending by:

- a) \$20 million;
- b) \$25 million;
- c) \$40 million;
- d) \$75 million;
- e) \$100 million.

18. Which of the following is best for the economy?

- a) right shift of the aggregate supply curve;
- b) left shift of the aggregate supply curve;
- c) right shift of the aggregate demand curve;
- d) left shift of the aggregate demand curve.

19. Which of the following is not a possible

result of a right shift of the aggregate supply curve?

- a) left shift of the aggregate demand curve;
- b) lower output;
- c) higher output;
- d) lower price level.

20. What do you call the intersection of the long-run aggregate supply curve and the aggregate demand curve?

- a) long-run equilibrium;
- b) short-run equilibrium;
- c) unstable equilibrium;
- d) need more information.

Theme 12. The macroeconomic instability

The contents of educational material:

The macroeconomic instability and forms of its manifestation.

The cyclic character of economic development and his reasons. The economic (business) cycle.

The employment and unemployment. Unemployment types.

The unemployment rate. Economic expenses of unemployment. Okun's law. The inflation, its definition and measurement. The reasons of inflation. Inflation forms.

Social and economic consequences of inflation. The inflation and unemployment in Belarus.

Practical tasks:

1. Written questions:

1.1 variables measured in monetary units;

1.2 the one-for-one adjustment of the nominal interest rate to the inflation rate;

1.3 the revenue the government raises by creating money;

1.4 the resources wasted when inflation encourages people to reduce their money holdings.

2. True/False questions:

2.1 monetary neutrality → the proposition that changes in the money supply do not affect real variables;

2.2 real variables → variables measured in physical units

2.3 velocity of money → the rate at which money changes hands, equal to (price level * quantity of output) / quantity of money

3. Problem:

Table 3 – Goods and Services Consumed in Country B

| Year | Price of bananas | Quantity of bananas | Price of backrubs | Quantity of backrubs |
|------|------------------|---------------------|-------------------|----------------------|
| 1 | \$1.00 | 5 | \$6.00 | 5 |
| 2 | \$1.00 | 5 | \$6.00 | 7 |
| 3 | \$2.00 | 10 | \$6.00 | 9 |

- 3.1 Compute the inflation in Country B from period 1 to period 2.
- 3.2 Compute the inflation in Country B from period 1 to period 3.
- 3.3 Compute the inflation in Country B from period 2 to period 3, using period 1 as the base year.
- 3.4 Calculate the GDP deflator for Country B in year 3 using year 1 as the base year.
- 3.5 What is the rate of inflation from period 1 to period 3 in the previous problem?
4. List 3 costs of unemployment.
5. Please explain what is meant by Okun's law.
6. Using Okun's law, determine the percent change in real GDP if the unemployment rate goes from 8% to 4%.
7. List the 3 major types of unemployment and the 4 major reasons for unemployment.
8. Find the unemployment rate given that a survey by the BLS reveals 30 people employed, 10 people unemployed, and 40 people out of the labor force.
9. Problem : What relationship does the Phillips curve describe?
10. Explain the chain of events that underlies the relationship between inflation and unemployment described by the Phillips curve.
11. What is the equation for the Phillips curve?
12. Define stagflation and explain its implications.
13. How is the Phillips curve best used?
14. What is the capital stock and how is it increased?
15. What is the single most important factor in determining the annual increase in the capital stock?
16. What is the effect of an increase in the capital stock?
17. How does technological progress come about?
18. What is more important for increasing productivity, increased capital expenditures or increased technological progress?

19. Name and describe five different types of methods the government uses to address income inequality?

1. Demand pull inflation refers to a situation in which:

- a) output greatly exceeds the aggregate demand;
- b) market supply and demand are very close to equilibrium;
- c) output cannot keep up with aggregate demand;
- d) supply exceeds market demand.

2. The tendency of wages to remain stable during periods of high unemployment may be explained by:

- a) unemployment-compensation benefits;
- b) implicit contracting and layoff unemployment;
- c) high marginal tax on income;
- d) unanticipated inflation.

3. Economists believe that both workers and firms search for employment opportunities until:

Test:

- a) there are no longer any benefits to be obtained by additional search;
- b) the cost of additional search is zero;
- c) the marginal benefits and marginal costs of search are equal;
- d) workers stop searching and become discouraged workers.

4. Perhaps the most significant cost of continued job search for the unemployed is the:

- a) opportunity cost of not accepting a job sooner;
- b) cost of newspaper and other job listings;
- c) time spent watching television for job listings;
- d) cost of travel to job interviews.

5. Which of the following may help explain the gradual rise in the unemployment rate?

a) The trend toward multiple earners in a household;

b) Reductions in unemployment -compensation benefits;

c) The additional work incentives provided by a progressive income tax;

d) The decline in the number of teenagers covered by the minimum wage.

6. One measure of the seriousness of unemployment is associated with:

a) frictional unemployment;

b) bottleneck unemployment;

c) salient unemployment;

d) seasonal unemployment.

7. Studies of employer search behavior in labor markets reveal that:

a) employers search more the greater is the level of training that must be given to new workers;

b) larger employers are less efficient at

interviewing than smaller employers;

c) larger employers interview fewer applicants per job than smaller employers;

d) smaller employers tend to spend less time per interview than larger employers.

8. A worker reservation wage for a particular job is the:

a) minimum acceptable wage;

b) maximum acceptable wage;

c) gross wage that the job pays before taxes;

d) net wage that the job pays after taxes.

9. Increases in the unemployment rate above the natural rate are identified with:

a) economic expansion;

b) structural unemployment;

c) cyclical unemployment;

d) frictional unemployment.

10. One major cause of rising unemployment rates in Europe is apparently:

a) unconditional payment of unemployment benefits;

b) government-guaranteed jobs;

c) competition from Japanese imports;

d) tight money policies that kept inflation low but unemployment high.

11. Which of the following is not an important problem concerning the measurement of unemployment?

a) voluntary part-time unemployment;

b) discouraged workers;

c) involuntary part-time employment;

d) differing intensities of job search.

12. Unanticipated inflation can cause people to reduce job search by:

a) increasing the costs of additional search;

b) causing workers to accept job offers;

c) increasing the benefits of additional search;

d) increasing the value of unemployment benefits.

13. Unanticipated inflation causes unemployment to fall if:

a) workers believe real wages are falling;

b) workers believe real wages are rising;

c) firms believe real wages are rising;

d) firms believe their costs are rising.

14. Unanticipated inflation can:

a) lower workers reservation wages;

b) increase the amount of search;

c) make nominal wage offers less attractive;

d) shorten job search in the economy.

15. When the economy reaches a new long-run equilibrium after the one - and -for all increase in the money supply:

a) the interest rate has been lower;

- b) the price level is 100;
- c) the price level is 200;
- d) the natural level of real GDP is lower.

16. As the price level rises:

- a) the interest rate continues to fall;
- b) the interest rate increases;
- c) inflationary expectations are lowered;
- d) real GDP drops below its natural level.

17. Which of the following is not a valid statement about a rigid program of wage and price controls as the solution to inflation?

- a) the productive efficiency of the economy will decline;
- b) the program would operate indefinitely;
- c) supply and evasion of controls;
- d) inflationary expectations will likely be unaffected.

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20. Most economists believe that supply-side tax-rate reductions:

- a) will not have much of an effect on inflation;

b) should increase productivity enough to substantially reduce inflation;

c) should be combined with a return to the gold standard;

d) will support the view that tax changes do not affect aggregate demand.

Theme 13. World economy and current trends of its development

The contents of educational material:

The world economy and prerequisites of its formation. A structure of the world economy. The fundamental forms of the international economic relations: trade in goods and services, the capital movement, the migration of labour, the monetary relations.

The current trends of development of world economy.

The place of Belarus in system of world economic communications.

Practical tasks:

1. Write *True* if the statement is correct. Write *False* if the statement is not correct.

1.1 A downturn in the GDP, GPI, and CPI often means that many people are unemployed.

1.2 To be considered unemployed by the government, a worker must have left his or her old job through no fault of his or her own.

1.3 After a certain number of weeks without a job, a person will no longer be counted as unemployed by the government.

1.4 There are usually fewer people unemployed than are indicated by government statistics.

1.5 Frictional unemployment usually follows a pattern of seasonal shifts that eventually corrects itself.

1.6 In structural unemployment, a person's job has been eliminated because it is no longer valuable or necessary.

1.7 Cyclical unemployment results from a downturn in the economy. It is the easiest type of unemployment to reverse.

2. Why should countries trade?

3. Explain absolute advantage.

4. Explain comparative advantage.

5. Who should produce goods when using trade advantages as criteria?

6. What is an opportunity cost?
7. Problem : What identity describes both output and income?
8. How do we calculate net exports?
9. If a country exports \$300 worth of goods and imports \$200 worth of goods, what is its net export?
10. What happens when net exports are negative?
11. Would you expect a country that has few imports and many exports to have much foreign investment?
12. Problem : Why would a government impede free trade?
13. How do quotas work?
14. How do tariffs work?
15. How do subsidies work?
16. What are two harmful effects of a large trade deficit?
17. Problem : Usually, when gas prices go up in the U.S., it is the result of some action by OPEC. How would you explain this, verbally and graphically, using elasticity as part of your argument?

Test:

1. Which government agency regulates the process for certifying labor unions as representatives of certain groups of workers?

- a) FTC;
- b) AFL;
- c) NLRB;
- d) NTSB.

2. Consumer or investor behavior in which bargains are accepted that are low risk and low potential payoff and bargains are avoided which are higher risk,

but potentially higher payoff is known as:

- a) Risk tolerance;
- b) Risk aversion;
- c) Risk neutral;
- d) Risk premium.

3. Consider the following formula for compound interest: $FV=P(1+I)^N$. Which scenario would represent a better investment (FV= Future Value, P= Principal, I= Interest rate, N= Number of Years)?

1. Invest \$100 for 5 years at 6%

2. \$200 for 4 years at 5%

3. \$300 for 2 years at 5%

4. \$400 for 4 years at 2%

- a) 1;
- b) 2;
- c) 3;
- d) 1 and 3 are equal.

4. People who would rely on a gold standard rather than allowing government to control the printing of money are concerned about the problem of:

- a) inflation;
- b) recession;
- c) running out of gold;
- d) too little money in the economy.

5. The classical school's economic philosophy of laissez-faire was challenged by:

- a) Adam Smith in the Wealth of Nations;
- b) evidence that velocity was not constant;

c) the Great Depression;

d) the actual operation of the gold standard.

6. Aggregate expenditures would rise due to an increase in all of the following except:

- a) consumption;
- b) investment;
- c) government spending;
- d) exports;
- e) imports.

7. An increase in the foreign price level with the nominal exchange rate unchanged causes:

- a) imports and exports to increase;
- b) imports and exports to decrease;
- c) no change in imports or exports;
- d) imports to increase and exports to decrease;
- e) exports to increase and imports to decrease.

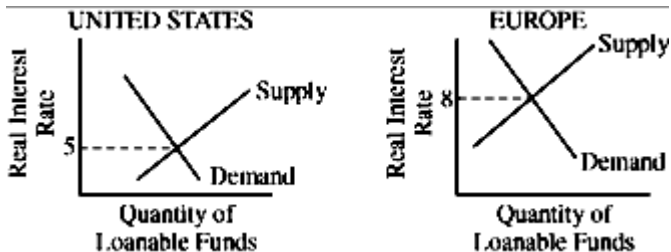
8. Which of the following is an increase in autonomous expenditures?

- a) an increase in government spending;
- b) an increase in taxes;
- c) an increase in the marginal propensity to consume;
- d) an increase in the marginal propensity to save;
- e) an increase in imports.

9. If the United States dollar depreciates in the foreign-exchange market, which of the following will occur?

- a) the price level in the United States will decrease;
- b) United States exports will increase;
- c) goods produced in the United States will become more expensive in foreign countries;
- d) the United States current account deficit will increase;
- e) the United States demand for imports will increase.

10.



The loanable funds markets in the United States and Europe are in equilibrium as shown in the graphs above. Which of the following is most likely to happen?

- a) there will be an outflow of capital from Europe to the United States, lowering interest rates in the United States;
- b) there will be an outflow of capital from Europe to the United States, raising interest rates in the United States;
- c) there will be an inflow of capital to Europe from the United States, raising interest rates in Europe;

d) there will be an inflow of capital to Europe from the United States, lowering interest rates in Europe;

e) there will be no change in the capital flows between Europe and the United States, keeping interest rates in Europe and the United States unchanged.

11. Which of the following is a situation in which trade is advantageous?

a) two countries produce the same goods for the same costs;

b) two countries produce different goods for different costs;

c) two countries are isolated;

d) two countries have the same markets.

12. When one producer can create a given amount of output with fewer inputs, what exists?

a) comparative advantage;

b) comparative disadvantage;

c) absolute advantage;

d) absolute disadvantage;

13. When one producer has a lower opportunity cost of production

than another producer for a given item, what exists?

a) absolute disadvantage;

b) absolute advantage;

c) comparative disadvantage;

d) comparative advantage.

14. What is the equation that describes net exports?

a) net exports = exports – imports;

b) net exports = output - exports;

c) net exports = exports – output;

d) net exports = imports – exports.

15. When a country exports and imports the same amount of goods, what is its net exports?

a) need more information;

b) zero;

c) exports plus imports;

d) output plus exports.

16. When a country exports more than it imports, what is the value of net exports?

a) negative;

b) zero;

c) positive;

d) need more information.

17. When a country imports more than it exports, what is the value of the net exports?

a) need more information;

b) zero;

c) positive;

d) negative.

18. When net exports are negative, what accounts for the difference?

a) net foreign investment;

b) imports;

c) exports;

d) net exports.

19. Which of the following is not a way to cure the trade deficit?

a) increase imports;

b) decrease imports;

c) increase exports;

d) pay balances due.

20. Which of the following is thought to be related to a high trade deficit?

a) a low budget deficit;

b) a high budget deficit;

c) an even balance of trade;

d) protectionist policies.

Theme 14. The balance of payments. The rate of exchange.

The contents of educational material:

The conception of balance of payments of country. The structure of balance of payments: balance of current operations, balance of capital and financial operations. The balance of payments equilibrium.

The rate of exchange as the instrument of regulation of the balance of payments. The conception of the exchange rate. Factors affecting the exchange rate. Types of exchange rate. The balance of payments of Belarus.

Practical tasks:

1. Use an aggregate demand and aggregate supply diagram to illustrate and explain how each of the following will affect the equilibrium price level and real GDP:

1.1 consumers expect a recession;

1.2 foreign income rises;

1.3 foreign price levels fall;

1.4 government spending increases;

1.5 workers expect high future inflation and negotiate higher wages now.

1.6 technological improvements increase productivity.

2. How do we calculate the nominal exchange rate?

3. How do we calculate the real exchange rate?

4. How do the nominal exchange rate and the real exchange rate differ?

5. How do net exports relate to the real exchange rate?

6. If a country has a high real exchange rate, what does this tell you about the nominal exchange rate?

7. Balance of payments.

The balance of payments is a measure of Britain's trading position in relation to the rest of the world. Exports and imports (visible trade) in addition to invisibles (including tourism, banking and insurance) are taken into account in determining the balance of

payments. This balance illustrated whether the UK has a surplus of income over expenditure or deficit:

| Year | Visible Exports | Visible Imports | Visible Balance | Invisible Balance | Current Balance (-deficit/ +surplus) |
|------|-----------------|-----------------|-----------------|-------------------|--|
| 1965 | 4848 | 5071 | -223 | +198 | -27 |
| 1970 | 8121 | 8163 | -42 | +818 | +776 |
| 1975 | 19463 | 22699 | -3236 | +1615 | -1621 |
| 1980 | 47389 | 46211 | +1178 | +228 | +3206 |
| 1981 | 50977 | 47325 | +3652 | +3652 | +7272 |
| 1982 | 55565 | 53181 | +2384 | +3167 | +5551 |
| 1983 | 60658 | 61158 | -500 | +2549 | +2049 |
| 1984 | 70367 | 74751 | -4384 | +5858 | +1474 |
| 1985 | 78111 | 80289 | -2178 | +5097 | +2919 |
| 1986 | 72843 | 81306 | -8463 | +7483 | -980 |
| 1987 | 79421 | 90350 | -10929 | +7106 | -3822 |
| 1988 | 80602 | 101428 | -20826 | +6154 | -14762 |
| 1989 | 92526 | 115638 | -23112 | +2261 | -20851 |
| 1990 | 102038 | 120713 | -18675 | +4295 | -14380 |
| 1990 | 103804 | 113770 | -9966 | +4187 | -5779 |

7.1 How is visible balance calculated, taking 1965 as an example?

7.2 Are the figures of invisible exports and invisible imports given in the table?

7.3 How is current balance calculated?

8. Written questions:

8.1 Visible exports minus visible imports;

8.2 A deficit exists when imports are greater than exports, a surplus exists when exports are greater than imports;

8.3 That part of the balance of payments account where payments for the purchase and sale of goods and services are recorded.

9. True/false questions:

9.1 Current Balance → The difference between total exports (visible and invisible) and total imports. It can also be calculated by adding the balance of trade to the balance on invisible trade;

9.2 visibles → Trade in services, transfers of income and other payments or receipts.

Test:

1. What do you call the number that represents the nominal value of currency in two countries?

- a) interest rate;
- b) output;
- c) exchange rate;
- d) price;

2. What do you call the number that compares the real cost of goods between two countries?

- a) nominal exchange rate;
- b) real interest rate;
- c) nominal interest rate;
- d) real exchange rate.

3. Which is easier to calculate, the nominal exchange rate or the real exchange rate?

- a) nominal exchange rate;
- b) real exchange rate;
- c) need more information;
- d) none of the above.

4. Which of the following is not necessary to calculate the real exchange rate?

- a) domestic price;
- b) domestic interest rate;
- c) foreign price;
- d) nominal exchange rate.

5. What is the equation for the real exchange rate?

- a) real exchange rate = (domestic price) / (foreign price);

b) real exchange rate = (nominal exchange rate X domestic price);

c) real exchange rate = (nominal exchange rate X domestic price) / (foreign price);

d) real exchange rate = (nominal exchange rate X foreign price).

6. How are the nominal exchange rate and the real exchange rate related?

- a) inversely;
- b) indirectly;
- c) directly;
- d) proportionally.

7. What is the real exchange rate if the domestic price is \$5, the foreign price is 3 pounds, and the exchange rate is 1.5?

- a) 2.5;
- b) 3;
- c) 8;
- d) 4.5.

8. What is the real exchange rate if the domestic price is \$2, the foreign price is 2 pounds, and the exchange rate is 1.5?

- a) 1;

b) 1.5;

c) 0;

d) 2.

9. What is the real exchange rate if the domestic price is \$10, the foreign price is 30 pounds, and the exchange rate is 2?

a) 0.5;

b) 0.55;

c) 0.67;

d) 0.70.

10. What can be determined from the real exchange rate?

a) standard of living;

b) interest rate;

c) output;

d) cost of living.

11. Which of the following situations is best if you wish to travel to a foreign country?

a) high nominal exchange rate and high real exchange rate;

b) high nominal exchange rate and low real exchange rate;

c) low nominal exchange rate and high real exchange rate;

d) low nominal exchange rate and low real exchange rate.

12. What is the effect on net exports of an increase in the real exchange rate?

- a) they rise;
- b) they fall;
- c) no effect;
- d) need more information.

13. When the real exchange rate falls, what is likely to increase?

- a) cost of living;
- b) imports;
- c) exports;
- d) standard of living.

14. Trade in services, transfers of income and other payments or receipts:

- a) invisibles;
- b) current Account;
- c) current Balance;
- d) visibles.

15. The difference between total exports (visible and invisible) and total imports. It can also be calculated by adding the

balance of trade to the balance on invisible trade:

- a) current Account;
- b) visibles;
- c) invisibles;
- d) current Balance.

16. A deficit exists when imports are greater than exports, a surplus exists when exports are greater than imports:

- a) capital and financial accounts;
- b) current Account;
- c) current Balance;
- d) current account deficit or surplus.

17. If the costs of transportation are small, the price of the same good should be roughly the same:

- a) balance of trade;
- b) law of one price;
- c) exchange rate;
- d) debtor nation.

18. Net exports of goods plus net exports of services plus net investment income plus net transfer payments.

- a) balance of trade;

- b) balance on current account;
- c) balance of payments;
- d) balance on capital account.

19. In the U.S., the sum of the following (measured in a given period): the change in private assets abroad, the change in foreign private assets in the U.S., the change in U.S. government assets abroad, and the change in foreign government assets in the U.S.:

- a) balance on current account;
- b) balance on capital account;
- c) balance of trade;
- d) balance of payments.

20. A country that has a positive net worth position vis-à-vis the rest of the world:

- a) exchange rate;
- b) trade deficit;
- c) creditor nation;
- d) debtor nation.

QUESTIONS ON THE MODULE III

Dear students as the teacher has the right to choose a various form of reception of delivery of quality of preparation of the Module I, the problem field of the module on which to you and tasks will be made by the teacher is offered to you, that is you need to know everything according to each phrase below (to the thesis, the offer).

Good luck!

Module III. Bases of the theory of macroeconomics and international economy

Theme 8. Main macroeconomic indicators

National economy and its general characteristic.

The open and close economy. National account system (NAS). The gross domestic product (GDP). Principles of calculation of gross domestic product.

Service The intermediates and private goods and. The value added. Production method of calculation of gross domestic product. Calculation of gross domestic product for expenses and income. Other indicators of system of national accounts. The nominal and real GDP.

The price index. GNP deflator and index of consumer prices. Price index of the producer. National welfare, its structure and structure. Dynamics of the main macroeconomic indicators of Republic of Belarus.

Theme 9. Monetary market

The monetary and credit system

Evolution of money. The money functions.

The money market. Nominal and real demand for money. The transactions demand for money. The asset demand for money. Offer of money. The monetary aggregates. The monetary equilibrium.

The law of the circulation of money. The monetary and credit system and her structure. The central bank and his functions. The commercial banks and their functions.

Forms of the credit. Specialized credit and financial organizations. The monetary and credit system of Belarus.

Theme 10. The financial sector of economic and bases of its functioning

The conception of finances and their functions. The financial system and her structure. The publics and corporate finances.

Taxation: essence, principles. Types and functions of taxes. The government budget and his functions. Expenses and income of the state budget. The conception of the budget deficit and budget. The financial system of Belarus.

Theme 11. The macroeconomic equilibrium: the model of aggregate demand and the aggregate supply (AD-AS model)

The aggregate demand. The aggregate demand curve. The determinants of aggregate demand.

The aggregate supply. The short-period and long-period ranges of supply curve. The determinants of aggregate supply.

The short-period and long-period equilibrium in model AD-AS. Changes in balance. The ratchet effect.

Theme 12. The macroeconomic instability

The macroeconomic instability and forms of its manifestation.

The cyclic character of economic development and his reasons. The economic (business) cycle and his фазы.

The employment and unemployment. Unemployment types.

The unemployment rate. Economic expenses of unemployment. Okun's law. The inflation, its definition and measurement. The reasons of inflation. Inflation forms.

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The current trends of development of world economy.

The place of Belarus in system of world economic communications.

Theme 14. The balance of payments. The rate of exchange

The conception of balance of payments of country. The structure of balance of payments: balance of current operations, balance of capital and financial operations. The balance of payments equilibrium.

The rate of exchange as the instrument of regulation of the balance of payments. The conception of the exchange rate. Factors affecting the exchange rate. Types of exchange rate. The balance of payments of Belarus.

QUESTIONS TO EXAMINATION

Theoretical part:

1. Economics as a sphere of vital activity of society.
2. Economic science. Shared and private economic science. Matter and functions of economic theory. Sections of economic theory.
3. Methods of economic science: General and specific. Economic categories and general economic laws. Systemic approach to the study of economic processes. The marginal, functional and equilibrium analysis.
4. The economic theory and the economic policy. The positive and normative economic theory.
5. The basic scientific schools and modern trends of development of economic theory.
6. Needs as a prerequisite production. Classification and main characteristics of needs.
7. The law mounting. The law of increasing wants. Economic interests and their classification.
8. The factors of production. The labor. The land and non-renewable natural resources.
9. The capital. Fixed and working capital. Depreciation of fixed capital and depreciation.
10. Entrepreneurial ability. Production efficiency and its indicators. Factors increasing the efficiency of production. Social division of labor and its forms.
11. Limited resources. Economic benefits: types, characteristics. Substitutability and complementarity of goods.
12. The problem of choice in the economy. The fundamental economics questions of society. The production possibility frontier. The production possibilities curve.
13. The opportunity (opportunity) costs. The law of increasing opportunity costs. Production, reproduction and growth.
14. The economic system of society: the concept, subjects, and structure. Criteria classification of economic system.

15. Institutions: formal and informal. Economic institutions. The concept of ownership. Subjects and objects of ownership. Types and forms of ownership.

16. Modern theory of property. The reform of the property. The transformation of property relations in the Republic of Belarus.

17. Ways of coordination of economic life: traditions, the market, team. Classification of economic systems. The traditional economy. Classical capitalism. The command economy. The mixed economy. Transformational economy.

18. The market: concept, emergence conditions. Market functions. Institutional bases of functioning of the market: private property, free pricing, competition.

19. Classification of the markets. The market infrastructure. Market failure and need of the state intervention in economy. Models of market economy.

20. Features of the Belarusian economic model. National strategy of sustainable social and economic development of Republic of Belarus till 2020.

21. The demand. The law of demand. The demand function and its graphic interpretation. Not price demand factors. The individual and market demand.

22. The supply. The law of supply. The supply function and its graphic interpretation. Not price supply factors.

23. The market equilibrium. Consequences of a deviation of the price from equilibrium level. Commodity deficiency and commodity surplus. Changes of supply and demand and their influence on the price. Prize from an exchange: surplus of the consumer and producer.

24. The elasticity. The price elasticity of demand. Coefficients of price elasticity of demand. The point and arc elasticity of price demand. Factors of elasticity of demand at the price.

25. The cross elasticity of demand. Coefficients of cross elasticity of demand.

26. The income elasticity of demand. Coefficients of elasticity of demand according to the income.

27. The supply elasticity. Coefficients of elasticity of the offer. Factors of elasticity of the supply. The immediate, short-run and long-run equilibrium and the supply elasticity.

28. Practical value of the analysis of elasticity. The price elasticity of demand and revenue of a producer. Influence of elasticity on surplus of the consumer and surplus of the producer. The demand and supply elasticity and tax burden.

29. Economic subjects: household, firm (company), government. The household. Concept of the rational consumer. The conception of utility. The total and marginal utility.

30. The law of diminishing marginal utility. Weighed marginal utility. The consumer equilibrium and profit maximization utility.

31. The organization as the managing subject. Classification of the organizations.

32. Concept of the rational producer. Production periods: short-term and long-term. Constant and variable factors of production. Production and technology.

33. The production function and of its property. Production choice of firm in the short-term period. Production with one variable factor. The total, average, marginal product of a factor: concept, measurement, interrelation.

34. The law of diminishing marginal productivity. Production choice of firm in the long-term period. Production with two variable factors.

35. The isoquants. The map of isoquants. The marginal rate of technical substitution. Interchangeability of factors of production. Concept and classification of expenses. The external and internal costs. The accounting and economic costs.

36. Costs of production in the short-term period. The fixed and variable costs. The total, average, marginal costs, their dynamics and interrelation. Costs of production in the long-term period. Scale effects.

37. Problem of the optimum size of the enterprise. The isocosts. Balance of a producer. The least-cost rule. Trajectory of growth of firm.

38. The revenue and profit of firm. The total, average, marginal revenue. The normal profit. The economic profit and the accounting profit.

39. The profit maximization rule. State as economic subject. Microeconomic regulation, its directions and tools.

40. National economy and its general characteristic. The open and close economy. National account system (NAS). The gross domestic product (GDP). Principles of calculation of gross domestic product.

41. Service The intermediates and private goods and. The value added. Production method of calculation of gross domestic product.

42. Calculation of gross domestic product for expenses and income. Other indicators of system of national accounts. The nominal and real GDP.

43. The price index. GNP deflator and index of consumer prices. Price index of the producer. National welfare, its structure and structure. Dynamics of the main macroeconomic indicators of Republic of Belarus.

44. Evolution of money. The money functions. The money market. Nominal and real demand for money. The transactions demand for money. The asset demand for money.

45. Offer of money. The monetary aggregates. The monetary equilibrium.

46. The law of the circulation of money. The monetary and credit system and her structure. The central bank and his functions. The commercial banks and their functions.

47. Forms of the credit. Specialized credit and financial organizations. The monetary and credit system of Belarus.

48. The conception of finances and their functions. The financial system and her structure. The publics and corporate finances.

49. Taxation: essence, principles. Types and functions of taxes. The government budget and his functions. Expenses and income of the state budget.

50. The conception of the budget deficit and budget. The financial system of Belarus.

51. The aggregate demand. The aggregate demand curve. The determinants of aggregate demand.

52. The aggregate supply. The short-period and long-period ranges of supply curve. The determinants of aggregate supply.

53. The short-period and long-period equilibrium in model AD-AS. Changes in balance. The ratchet effect.

54. The cyclic character of economic development and his reasons. The economic (business) cycle and his фазы.

55. The employment and unemployment. Unemployment types. The unemployment rate. Economic expenses of unemployment. Okun's law.

56. The inflation, its definition and measurement. The reasons of inflation. Inflation forms. Social and economic consequences of inflation. The inflation and unemployment in Belarus.

57. The world economy and prerequisites of its formation. A structure of the world economy.

58. The fundamental forms of the international economic relations: trade in goods and services, the capital movement, the migration of labour, the monetary relations.

59. The current trends of development of world economy. The place of Belarus in system of world economic communications.

60. The conception of balance of payments of country. The structure of balance of payments: balance of current operations, balance of capital and financial operations. The balance of payments equilibrium.

61. The rate of exchange as the instrument of regulation of the balance of payments.

62. The conception of the exchange rate. Factors affecting the exchange rate. Types of exchange rate. The balance of payments of Belarus.

Practical part:

1. With the use of examples, explain why some products have a low price elasticity while others have a high elasticity.

2. If you were employed as an economist by a business, discuss why a knowledge of the price elasticity of demand of your product would be useful.

3. Yesterday, the price of envelopes was \$3 a box, and Julie was willing to buy 10 boxes. Today, the price has gone up to \$3.75 a box, and Julie is now willing to buy 8 boxes. Is Julie's demand for envelopes elastic or inelastic? What is Julie's elasticity of demand?

4. Why would demand for oxygen be more inelastic than demand for caviar (assuming that you have to buy both goods in order to have them)?

5. How is it possible for the elasticity of demand to change over time (in the long run)?

6. Why would a government tax on cigarettes be an ineffective method to decrease consumption of cigarettes if demand for cigarettes is inelastic?

7. Explain the relationship in the short run between the marginal costs of a firm and its average total costs.

8. The choice between military products and the provision of healthcare illustrates the problem of 'opportunity cost'. Explain the nature of this problem, using a Production Possibility Curve.

9. If there are only five people in a certain economy, and their weekly paychecks are \$100, \$300, \$600, \$1000, and \$1600, what is the cumulative percentage of income generated by the bottom 60% of wage earners?

10. Explain the process by which nominal GDP is calculated and distinguish it from real GDP.

11. Calculate the nominal GDP for Country C in year 2.

| Year | Price of com | Quantity of com | Price of candy | Quantity of candy |
|------|--------------|-----------------|----------------|-------------------|
| 1 | \$ | 10 | \$ | 10 |

| | | | | |
|---|----|----|----|----|
| 2 | \$ | 15 | \$ | 12 |
| 3 | \$ | 20 | \$ | 15 |

12. Calculate the real GDP for Country C in year 2, using year 1 as the base year.

| Year | Price of com | Quantity of com | Price of candy | Quantity of candy |
|------|--------------|-----------------|----------------|-------------------|
| 1 | \$ | 10 | \$ | 10 |
| 2 | \$ | 15 | \$ | 12 |
| 3 | \$ | 20 | \$ | 15 |

13. Using table, compute the CPI for Country C in year 2 using year 1 as the base year.

| Time | Price of corn | Price of candy |
|------|---------------|----------------|
| 1 | \$0.50 | \$1.00 |
| 2 | \$1.00 | \$2.00 |
| 3 | \$1.50 | \$3.00 |

14. Using the table above, compute the CPI for Country C in year 1 using year 1 as the base year.

| Time | Price of corn | Price of candy |
|------|---------------|----------------|
| 1 | \$0.50 | \$1.00 |
| 2 | \$1.00 | \$2.00 |
| 3 | \$1.50 | \$3.00 |

15. What is the percent increase in the price level in Country C from year 1 to year 2?

| Time | Price of corn | Price of candy |
|------|---------------|----------------|
| 1 | \$0.50 | \$1.00 |
| 2 | \$1.00 | \$2.00 |
| 3 | \$1.50 | \$3.00 |

16. Draw a diagram depicting the money market.

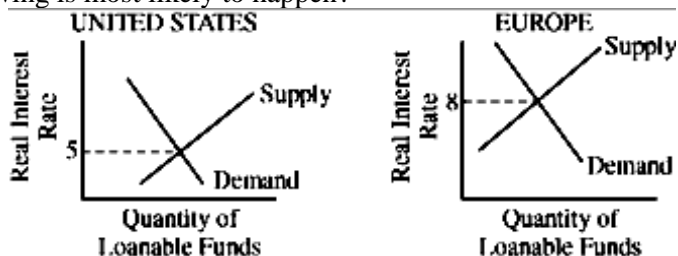
17. Describe what happens to the value of money and the money market when the Fed increases the money supply. Diagram the change.

18. Describe the quantity theory of money.

19. How are the velocity of money, the money supply, and the nominal GDP related?

20. How much would be due on a \$20,000 loan at 6% interest after 3 years?

21. What is the change in the money supply created by an initial deposit of \$2000 if the reserve requirement is 20%?
22. Use an AD/AS diagram to analyse the likely effects of an increase in interest rates.
23. Give two examples of positive supply shocks and two examples of adverse supply shocks.
24. What are the short-run and long-run effects of an increase in aggregate demand?
25. What relationship does the aggregate supply curve show?
26. Give one reason for why the long-term aggregate supply curve is vertical and four models for why the short-term aggregate supply curve is upward sloping.
27. Give three examples of events that will shift the aggregate demand curve to the left?
28. Give three examples of events that will shift the aggregate demand curve to the right?
29. Using Okun's law, determine the percent change in real GDP if the unemployment rate goes from 8% to 4%.
30. Usually, when gas prices go up in the U.S., it is the result of some action by OPEC. How would you explain this, verbally and graphically, using elasticity as part of your argument?
31. The loanable funds markets in the United States and Europe are in equilibrium as shown in the graphs above. Which of the following is most likely to happen?



GLOSSARY OF TERMS

Ability-to-pay principle (of taxation). The principle that one's tax burden should depend upon the ability to pay as measured by income or wealth. This principle does not specify how much more those who are better off should pay.

Absolute advantage (in international trade). The ability of Country A to produce a commodity more efficiently (i.e., with greater output per unit of input) than Country B. Possession of such an absolute advantage does not necessarily mean that A can export this commodity to B successfully. Country B may still have the comparative advantage.

Actual, cyclical, and structural budget. The **actual budget** deficit or surplus is the amount recorded in a given year. This is composed of the **structural budget**, which calculates what government revenues, expenditures, and deficits would be if the economy were operating at potential output; and the **cyclical budget**, which measures the effect of the business cycle on the budget.

Adaptive expectations. See **expectations.**

Adjustable peg. An exchange-rate system in which countries maintain a fixed or "pegged" exchange rate with respect to other currencies. This exchange rate is subject to periodic adjustment, however, when it becomes too far out of line with fundamental forces. This system was used for major currencies during the Bretton Woods period from 1944 to 1971 and is called the **Bretton Woods system.**

Administered (or **inflexible prices.** A term referring to prices which are set and kept constant for a period of time and over a series of transactions. (In contrast, refer to **price flexibility.**)

Aggregate demand. Total planned or desired spending in the economy during a given period. It is determined by the aggregate price level and influenced by domestic investment, net exports, government spending, the consumption function, and the money supply.

Aggregate demand (AO) curve. The curve showing the relationship between the quantity of goods and services that people are willing to buy and the aggregate price level, other things equal. As with any demand curve, important variables lie behind the aggregate demand curve, e.g., government spending, exports, and the money supply.

Aggregate supply. The total value of goods and services that firms would willingly produce in a given time period. Aggregate supply is a function of available inputs, technology, and the price level.

Aggregate supply (IS) curve. The curve showing the relationship between the output firms would willingly supply and the aggregate price level, other things equal. The AS curve tends to be vertical at potential output in the very long run but may be relatively flat in the short run.

Allocative efficiency. A situation in which no reorganization or trade could raise the utility or satisfaction of one individual without lowering the utility or satisfaction of another individual. Under certain limited conditions, perfect competition leads to allocative efficiency. Also called **Pareto efficiency**.

Antitrust legislation. Laws prohibiting monopolization, restraints of trade, and collusion among firms to raise prices or inhibit competition.

Appreciation (of a currency). See **depreciation** (of a currency).

Arbitrage. Speculation without risk. The act of buying a currency or a commodity in one market and simultaneously selling it for a profit in another market. Arbitrage is an important force in eliminating price discrepancies, thereby making markets function more efficiently.

Asset. A physical property or intangible right that has economic value. Important examples are plant, equipment, land, patents, copyrights, and financial instruments such as money or bonds.

Asset demand for money. See **demand for money**.

Automatic (or built-in) stabilizers. The property of a government tax and spending system that cushions income changes in the private sector. Examples include unemployment compensation and progressive income taxes.

Average cost. Refer to **cost, average**.

Average cost curve, short-run (LRAC, or LAC) The graph of the minimum average cost of producing a commodity for each level of output, assuming that technology and input prices are given but that the producer is free to choose the optimal size of plants.

Average cost curve, short-run (SRAC, or LAC). The graph of the minimum average cost of producing a commodity, for each level of output, using the given state of technology, input prices, and existing plant.

Average product. Total product or output divided by the quantity of one of the inputs. Hence, the average product of labor is defined as total product divided by the amount of labor input, and similarly for other inputs.

Average propensity to consume. See **marginal propensity to consume**.

Average revenue. Total revenue divided by total number of units sold—i.e., revenue per unit. Average revenue is generally equal to price.

Average variable cost. Refer to **cost, average variable**.

Balance of international payments. A statement showing all a nation's transactions with the rest of the world for a given period. It includes purchases and sales of goods and services, gifts, government transactions, and capital movements.

Balance of trade. The part of a nation's balance of payments that deals with merchandise (or visible) imports or exports. When "invisibles," or services, are included, the total accounting for imports and exports of goods and services is called the **balance on current account**.

Balance on current account. See **balance of trade**.

Balance sheet. A statement of a firm's financial position as of a given date, listing **assets** in one column, **liabilities** plus **net worth** in the other. Each item is listed at its actual or estimated money value. Totals of the two columns must balance because net worth is defined as assets minus liabilities.

Balanced budget. See **budget, balanced**.

Bank, commercial. A financial intermediary whose prime distinguishing feature until recently was that it accepts checking deposits. Also it holds savings or time deposits and money market deposit accounts; sells traveler's checks and performs other financial services; and lends to individuals and firms. Since 1980, savings banks and other depository institutions have been allowed to accept checking accounts and are thus becoming more like commercial banks.

Bank money. Money created by banks, particularly the checking accounts (part of **Mi**) that are generated by a multiple expansion of bank reserves.

Bank reserves. Refer to **reserves, bank**.

Barriers to competition. Factors that reduce the amount of competition or the number of producers in an industry, allowing greater economic concentration to occur. Important examples are legal barriers, regulation, and product differentiation.

Barter. The direct exchange of one good for another without using anything as money or as a medium of exchange.

Benefit principle (of taxation). The principle that people should be taxed in proportion to the benefits they receive from government programs.

Bond. An interest-bearing certificate issued by a government or corporation, promising to repay a sum of money (the principal **I** plus interest at specified dates in the future).

Break-even point (in macroeconomics). For an individual, family, or community, that level of income at which 100 percent is spent on consumption (i.e., the point where there is neither saving nor dissaving). Positive saving begins at higher income levels.

Break-even price or level, or point (in microeconomics). For a business firm, that level of price at which the firm breaks even, covering all costs but earning zero profit.

Bretton Woods system. See **adjustable peg.**

Budget, balanced. A budget in which total expenditures just equal total receipts (excluding any receipts from borrowing).

Budget constraint. See **budget line.**

Budget deficit. For a government, the excess of total expenditures over total receipts, with borrowing not included among receipts. This difference (the deficit) is ordinarily financed by borrowing.

Budget, government. A statement showing, for the government in question, planned expenditures and revenues for some period (typically 1 year).

Budget line. A line indicating the combination of commodities that a consumer can buy with a given income at a given set of prices. If the graph shows food and clothing, then each point on the line represents a combination of food and clothing that can be bought for a certain income level and with a given set of prices for the two goods. Also sometimes called the **budget constraint.**

Budget surplus. Excess of government revenues over government spending; the opposite of **budget deficit.**

Built-in stabilizers. See **automatic stabilizers.**

Business cycles. Fluctuations in total national output, income, and employment, usually lasting for a period of 2 to 10 years, marked by widespread and simultaneous expansion or contraction in many sectors of the economy. In modern macroeconomics, business cycles are said to occur when actual GNP rises relative to potential GNP (expansion) or falls relative to potential GNP (contraction or recession).

$C + i$, $C + I + G$, or $C + I + G + X$ schedule. A schedule showing the planned or desired levels of aggregate demand for each level of GNP, or the graph on which this schedule is depicted. The schedule includes consumption (C), investment (I), government spending on goods and services (G), and net exports (X).

Capital (capital goods, capital equipment). (1) In economic theory, one of the triad of productive inputs (land, labor, and capital). Capital

consists of durable produced goods that are in turn used in production. The major components of capital are equipment, structures, and inventory. When signifying capital goods, reference is also made to real capital. (2) In accounting and finance, "capital" means the total amount of money subscribed by the shareholder-owners of a corporation, in return for which they receive shares of the company's stock.

Capital consumption allowance. See **depreciation** (of an asset).

Capital deepening. In economic-growth theory, an increase in the capital-labor ratio. (Contrast with **capital widening**.)

Capital gains. The rise in value of a capital asset, such as land or common stocks, the gain being the difference between the sales price and the purchase price of the asset.

Capital markets. Markets in which financial resources (money, bonds, stocks) are traded. These, along with **financial intermediaries**, are institutions through which savings in the economy are transferred to investors.

Capital-output ratio. In economic-growth theory, the ratio of the total capital stock to annual GNP.

Capital widening. A rate of growth in real capital stock just equal to the growth of the labor force (or of population), so that the ratio between total capital and total labor remains unchanged. (Contrast with **capital deepening**.)

Capitalism. An economic system in which most property (land and capital) is privately owned. In such an economy, private markets are the primary vehicles used to allocate resources and generate incomes.

Cartel. An organization of independent firms producing similar products that work together to raise prices and restrict output. Cartels are illegal under U.S. antitrust laws.

Central bank. A government-established agency (in the United States, the Federal Reserve System) responsible for controlling the nation's money supply and credit conditions and for supervising the financial system, especially commercial banks.

Change in demand vs. change in quantity demanded. A change in the quantity buyers want to purchase, prompted by any reason other than a change in price (e.g., increase in income, change in tastes, etc.), is a "change in demand." (In graphical terms, it is a shift of the demand curve.) If, in contrast, the decision to buy more or less is prompted by a change in the good's price, then it is a "change in quantity demanded." (In graphical

terms, a change in quantity demanded is a movement along an unchanging demand curve.)

Change in supply vs. change in quantity supplied. This distinction is the same for supply as for demand, so see **change in demand vs. change in quantity demanded.**

Checking accounts (or bank money). A deposit in a commercial bank or other financial intermediary upon which checks can be written and which is therefore transactions money (or **M1**). The major kinds of checking accounts are demand deposits (which can be withdrawn without notice and do not bear interest) and **NOW accounts** (which are indistinguishable from traditional demand deposits except that they earn interest). Checking accounts are the largest component of **MI**.

Chicago School of Economics. A group of economists (among whom Henry Simons, F. A. von Hayek, and Milton Friedman have been the most prominent) who believe that competitive markets free of government intervention will lead to the most efficient operation of the economy.

Classical economics. The predominant school of economic thought prior to the appearance of Keynes' work; founded by Adam Smith in 1776. Other major figures who followed him include David Ricardo, Thomas Malthus, and John Stuart Mill. By and large, this school believed that economic laws (particularly individual self-interest and competition) determine prices and factor rewards and that the price system is the best possible device for resource allocation. Their macroeconomic theory rests on **Say's Law of markets**.

Classical theories (in macroeconomics). Theories emphasizing the self-correcting forces in the economy. In the classical approach, there is generally full employment and policies to stimulate aggregate demand have no impact upon output.

Clearing market. A market in which prices are sufficiently flexible to equilibrate supply and demand very quickly. In markets that clear, there is no rationing, unemployed resources, or excess demand or supply. In practice, this is thought to apply to many commodity and financial markets but not to labor or many product markets. **Closed economy.** See **open economy**.

Coase theorem. A view (not actually a theorem) put forth by Ronald Coase that externalities or economic inefficiencies will under certain conditions be corrected by bargaining between the affected parties.

Collective bargaining. The process of negotiations between a group of workers (usually a union) and their employer. Such bargaining leads to an agreement about wages, fringe benefits, and working conditions.

Collusion. Agreement between different firms to cooperate by raising prices, dividing markets, or otherwise restraining competition.

Collusive oligopoly. A market structure in which a small number of firms (i.e., a few oligopolists) collude and jointly make their decisions. When they succeed in maximizing their joint profits, the price and quantity in the market closely approach those prevailing under monopoly.

Command economy. A mode of economic organization in which the key economic functions—what, how, and for whom—are principally determined by government directive. Sometimes called a "centrally planned economy."

Commodity money. Money with **intrinsic value**; also, the use of some commodity (cattle, beads, etc.) as money.

Common stock. The financial instrument representing ownership and, generally, voting rights in a corporation. A certain share of a company's stock gives the owner title to that fraction of the votes, net earnings, and assets of the corporation.

Communism. At the same time (1) an ideology, (2) a set of political parties, and (3) an economic system. A communist economic system is one in which private ownership of the means of production, particularly industrial capital, is prohibited (for such ownership of capital goods is believed to result in exploitation of workers). In addition, communism holds that income should be distributed equally, or, more ideally, according to "need." In today's communist countries, most capital and land are owned by the state. These countries are also characterized by extensive central planning, with the state setting many prices, output levels, and other important economic variables.

Comparative advantage (in international trade). The law of comparative advantage says that a nation should specialize in producing and exporting those commodities which it can produce at relatively lower costs, and that it should import those goods for which it is a relatively high-cost producer. Thus it is a comparative advantage, not an absolute advantage, that should dictate trade patterns.

Compensating differentials. Differences in wage rates among jobs that serve to offset or compensate for the nonmonetary differences of the jobs. For example, unpleasant jobs that require isolation for many months in

Alaska pay wages much higher than those for similar jobs nearer to civilization.

Competition, imperfect. Refers to markets in which perfect competition does not hold because at least one seller (or buyer) is large enough to affect the market price and therefore faces a downward-sloping demand curve (or supply). Imperfect competition refers to any kind of imperfection—pure **monopoly, oligopoly, or monopolistic competition.**

Competition, perfect. Refers to markets in which no firm or consumer is large enough to affect the market price. This situation arises where (1) the number of sellers and buyers is very large and (2) the products offered by sellers are homogeneous (or indistinguishable). Under such conditions, each firm faces a horizontal (or perfectly elastic) demand curve.

Competitive equilibrium. The balancing of supply and demand in a market or economy characterized by **perfect competition.** Because perfectly competitive sellers and buyers individually have no power to influence the market, price will move to the point at which price equals both marginal cost and marginal utility.

Competitive market. See **competition, perfect.**

Complements. Two goods which "go together" in the eyes of consumers (e.g., left shoes and right shoes). Goods are **substitutes** when they compete with each other (as **do** gloves and mittens).

Compound interest. Interest computed on the sum of all past interest earned as well as on the principal. For example, suppose \$100 (the principal) is deposited in an account earning 10 percent interest compounded annually. At the end of year 1, interest of \$10 is earned. At the end of year 2, the interest payment is \$11, \$10 on the original principal and \$1 on the interest—and so on in future years.

Concentration ratio. The percentage of an industry's total output accounted for by the largest firms. A typical measure is the **four-firm concentration ratio**, which is the fraction of output accounted for by the four largest firms.

Conglomerate. A large corporation producing and selling a variety of unrelated goods (e.g., some cigarette companies have expanded into such unrelated areas as liquor, car rental, and movie production).

Conglomerate merger. See **merger.**

Constant returns to scale. See **returns to scale.**

Consumer price index (CPI). A price index that measures the cost of a fixed basket of consumer goods in which the weight assigned to each

commodity is the share of expenditures on that commodity by urban consumers in 1982-1984.

Consumer surplus. The difference between the amount that a consumer would be willing to pay for a *commodity and the amount actually paid. This difference arises* because the marginal utilities (in dollar terms) of all but the last unit exceed the price. Hence the monetary equivalent of the total utility of the commodity consumed may be well above the amount spent. Under rigorous assumptions, the money value of consumer surplus can be measured (using a demand-curve diagram) as the area under the demand curve but above the price line.

Consumption. In macroeconomics, the total spending, by individuals or a nation, on consumer goods during a given period. Strictly speaking, consumption should apply only to those goods totally used, enjoyed, or "eaten up" within that period. In practice, consumption expenditures include all consumer' goods bought, many of which last well beyond the period in question—e.g., furniture, clothing, and automobiles.

Consumption function. A schedule relating total consumption to personal disposable income (D/). Total wealth and other variables are also frequently assumed to influence consumption.

Consumption-possibility line. Refer to **budget line**.

Cooperative equilibrium. In game theory, an outcome in which the parties act in unison to find strategies that will optimize their joint payoffs.

Corporate income tax. A tax levied on the annual net income of a corporation.

Corporation. The predominant form of business organization in modern capitalist economies.

Cost, average variable. Total variable cost (refer to **cost, variable**) divided by the number of units produced.

Cost, fixed. The cost a firm would incur even if its output for the period in question were zero. Total fixed cost is made up of such individual contractual costs as interest payments, mortgage payments, and directors' fees.

Cost, marginal. The extra cost (or the increase in total cost) required to produce 1 extra unit of output (or the reduction in total cost from producing 1 unit less).

Cost, minimum. The lowest attainable cost per' unit (whether average, variable, or marginal). Every point on an average cost curve is a minimum in the sense that it is the best the firm can do with respect to cost

for the output which that point represents. Minimum average cost is the lowest point, or points, on that curve.

Cost-push inflation. Inflation originating on the supply side of markets from a sharp increase in costs. In the aggregate supply-and-demand framework, cost-push is illustrated as an upward shift of the AS curve. Also called **supply-shock** inflation.

Cost, total. The minimum attainable total cost, given a particular level of technology and set of input prices. Short-run total cost takes existing plant and other fixed costs as given. Long-run total cost is the cost that would be incurred if the firm had complete flexibility with respect to all inputs and decisions.

Cost, variable. A cost that varies with the level of output, such as raw materials, labor, and fuel costs. Variable costs equal total cost minus fixed cost.

Crawling (or sliding) peg. A technique for managing a nation's exchange rate that allows the exchange rate (or the bands around the rate) to "crawl" up or down by a small amount each day or week (say, 0.25 percent per week).

Credit. (1) In monetary theory, the use of someone else's funds in exchange for a promise to pay (usually with interest) at a later date. The major examples are short-term loans from a bank, credit extended by suppliers, or commercial paper. (2) In balance-of-payments accounting, an item such as exports that earns a country foreign currency.

Cross elasticity of demand. A measure of the influence of a change in one good's price on the demand for another good. More precisely, the cross elasticity of demand equals the percentage change in demand for good A when the price of good B changes by 1 percent, assuming other variables are held constant.

Crowding out. The proposition that government spending or government deficits reduce the amount of business investment.

Currency. Coins and paper money.

Currency appreciation (or **depreciation**' See **depreciation** (of a currency).

Current account. See **balance of trade**.

Cyclical budget. See **actual, cyclical,**
and **structural budget**.

Cyclical unemployment. See **frictional unemployment**.

Deadweight loss. The loss in real income or consumer and producer surplus that arises because of monopoly, tariffs and quotas, taxes,

or other distortions. For example, when a monopolist raises its price, the loss in consumer satisfaction is more than the gain in the monopolist's revenue—the difference being the deadweight loss to society due to monopoly.

Debit. (1) An accounting term signifying an increase in assets or decrease in liabilities. (2) In balance-of-payments accounting, a debit is an item such as imports that reduces a country's stock of foreign currencies.

Decreasing returns to scale. See **returns to scale**.

Deficit spending. Government expenditures on goods and services and transfer payments in excess of its receipts from taxation and other revenue sources. The difference must be financed by borrowing from the public.

Deflating (of economic data). The process of converting "nominal" or current-dollar variables into "real" terms. This is accomplished by dividing current-dollar variables by a price index.

Deflation. A fall in the general level of prices.

Demand curve (or **demand schedule**). A schedule or curve showing the quantity of a good that buyers would purchase at each price, other things equal. Normally a demand curve has price on the vertical or Y axis and quantity demanded on the horizontal or X axis. Also see **change in demand vs. change in quantity demanded**.

Demand for money. A summary term used by economists to explain why individuals and businesses hold money balances. The major motivations for holding money are (1) **transactions demand**, signifying that people need money to purchase things, and (2) **asset demand**, relating to the desire to hold a very liquid, risk-free asset.

Demand-pull inflation. Price inflation caused by an excess demand for goods in general, caused, for example, by a major increase in aggregate demand. Often contrasted with **cost-push inflation**.

Demography. The study of the behavior of a population.

Depreciation (of an asset). A decline in the value of an asset. In both business and national accounts, depreciation is the dollar estimate of the extent to which capital has been "used up" or worn out over the period in question. Also termed **capital consumption allowance** in national-income accounting.

Depreciation (of a currency). A nation's currency is said to depreciate when it declines relative to other currencies. For example, if the foreign exchange rate of the dollar falls from 6 to 4 French francs per U.S. dollar, the dollar's value has fallen, and the dollar has undergone a

depreciation. The opposite of a depreciation is an **appreciation**, which occurs when the foreign exchange rate of a currency rises.

Depression. A prolonged period characterized by high unemployment, low output and investment, depressed business confidence, falling prices, and widespread business failures. A milder form of business downturn is a **recession**, which has many of the features of a depression to a lesser extent; the precise definition of a recession today is a period in which real GNP declines for at least two consecutive calendar quarters.

Derived demand. The demand for a factor of production that results (is "derived") from the demand for the final good to which it contributes. Thus the demand for tires is derived from the demand for automobile transportation.

Devaluation. A decrease in the official price of a nation's currency, as expressed in the currencies of other nations or in terms of gold.

Thus when the official price of the dollar was lowered with respect to gold in **1971**, the dollar was devalued. The opposite of devaluation is called **revaluation**, which occurs when a nation raises its official foreign exchange rate relative to gold or other currencies.

Developing countries. See **less developed country**.

Diminishing marginal utility, law of. The law which says that, as more and more of any one commodity is consumed, its marginal utility declines.

Diminishing returns, law of. A law stating that the additional output from successive increases of one input will eventually diminish when other inputs are held constant. Technically, the law is equivalent to saying that the marginal product of the varying input declines after a point.

Direct taxes. Those levied directly on individuals or firms, including taxes on income, labor earnings, and profits. Direct taxes contrast with **indirect taxes**, which are those levied on goods and services and thus only indirectly on people, and which include sales taxes and taxes on property, alcohol, imports, and gasoline.

Discount rate. (1) The interest **rate** charged by a Federal Reserve Bank (the central bank) on a loan that it makes to a commercial bank. (2) The rate used to calculate the present value of some asset.

Discounting (of future income). The process of converting future income into an equivalent present value. This process takes a future dollar amount and reduces it by a discount factor that reflects the appropriate interest rate. For example, if someone promises **you \$121** in **2** years, and the appropriate interest rate or discount rate is **10** percent per year, then we can

calculate the present value by discounting the \$121 by a discount factor of $(1.10)^2$. The rate at which future incomes are discounted is called the **discount rate**.

Discrimination. Differences in earnings that arise because of personal characteristics that are unrelated to job performance, especially those related to gender, race, or religion.

Disequilibrium. The state in which an economy is not in **equilibrium**. This may arise when shocks (to income or prices) have shifted demand or supply schedules but the market price (or quantity) has not yet adjusted fully. In macroeconomics, unemployment is often thought to stem from market disequilibria.

Disinflation. The process of reducing a high inflation rate. For example, the deep recession of 1980-1983 led to a sharp disinflation over that period.

Disposable income (DM). Roughly, take-home pay, or that part of the total national income that is available to households for consumption or saving. More precisely, it is equal to GNP less all taxes, business saving, and depreciation plus government and other transfer payments and government interest payments.

Dissaving. Negative saving; spending more on consumption goods during a period than the disposable income available for that period (the difference being financed by borrowing or drawing on past saving).

Distribution. In economics, the manner in which total output and income is distributed among individuals or factors (e.g., the distribution of income between labor and capital).

Division of labor. A method of organizing production whereby each worker specializes in part of the productive process. Specialization of labor yields higher total output because labor can become more skilled at a particular task and because specialized machinery can be introduced to perform more carefully defined sub tasks.

Dominant equilibrium. See **dominant strategy**.

Dominant strategy. In game theory, a situation where one player has a best strategy no matter what strategy the other player follows. When all players have a dominant strategy, we say that the outcome is a **dominant equilibrium**.

Downward-sloping demand, law of. The rule that says that when the price of some commodity falls, consumers will purchase more of that good when other things are held equal.

Duopoly. A market structure in which there are only two sellers. (Compare with **oligopoly**.)

Durable goods. Equipment or machines that are normally expected to last longer than 3 years, e.g., machine tools, trucks, and automobiles.

Easy-money policy. The central-bank policy of increasing the money supply to reduce interest rates. The purpose of such a policy is to increase investment, thereby raising GNP. (Contrast with **tight-money policy**.)

Econometrics. The branch of economics that uses the methods of statistics to measure and estimate quantitative economic relationships.

Economic good. A good that is scarce relative to the total amount of it that is desired. It must therefore be rationed, usually by charging a positive price.

Economic growth. An increase in the total output of a nation over time. Economic growth is usually measured as the annual rate of increase in a nation's real GNP (or real potential GNP).

Economic regulation. See **regulation**.

Economic rent. See **rent, economic**.

Economic surplus. A term denoting the excess in total satisfaction or utility over the costs of production. Equals the sum of consumer surplus (the excess of consumer satisfaction over total value of purchases) and producer surplus (the excess of producer revenues over costs).

Economies of scale. Increases in productivity, or decreases in average cost of production, that arise; from increasing all the factors of production in the same proportion.

Economies of scope. Economies of producing multiple goods or services. Thus economies of scope exist if it is cheaper to produce both good X and good Y together rather than separately.

Efficiency. Absence of waste, or the use of economic resources that produces the maximum level of satisfaction possible with the given inputs and technology. A shorthand expression for **allocative efficiency**.

Efficient-market theory. See **random-walk theory** (of stock market prices).

Elasticity. A term widely used in economics to denote the responsiveness of one variable to changes in another. Thus the elasticity of X with respect to Y means the percentage change in X for every 1 percent change in Y. For especially important examples, see **price elasticity of demand** and **price elasticity of supply**.

Employed. According to official U.S. definitions, persons are employed if they perform any paid work, or if they hold jobs but are absent because of illness, strike, or vacations. Also see **unemployment**.

Equilibrium. The state in which an economic entity is at rest or in which the forces operating on the entity are in balance so that there is no tendency for change.

Equilibrium (for a business firm). That position or level of output in which the firm is maximizing its profit, subject to any constraints it may face, and therefore has no incentive to change its output or price level. In the standard theory of the firm, this means that the firm has chosen an output at which marginal revenue is just equal to marginal cost.

Equilibrium (for the individual consumer). That position in which the consumer is maximizing utility, i.e., has chosen the bundle of goods which, given income and prices, best satisfies the consumer's wants.

Equilibrium, competitive. See **competitive equilibrium**.

Equilibrium, general. See **general equilibrium**.

Equilibrium , macroeconomic. A GNP level at which intended aggregate demand equals intended aggregate supply. At the equilibrium, desired consumption (C), government expenditures (G), investment (I), and net exports (X) just equal the quantity that businesses wish to sell at the going price level.

Exchange rate. See **foreign exchange rate**.

Exchange-rate system. The set of rules, arrangements, and institutions under which payments are made among nations. Historically, the most important exchange rate systems have been the gold exchange standard, the Bretton Woods system, and today's flexible-exchange-rate system.

Excise tax vs. sales tax. An excise tax is one levied on the purchase of a specific commodity or group of commodities (e.g., on alcohol or tobacco). A **sales tax** is one levied on all commodities with only a few specific exclusions (e.g., on all purchases except food).

Exclusion principle. A criterion by which public goods are distinguished from private goods. When a producer sells a commodity to person A and can easily exclude B, C, D, etc., from enjoying the benefits of the commodity, the exclusion principle holds and the good is a private good. If, as in public health or national defense, people cannot easily be excluded from enjoying the benefits of the good's production, then the good has public-good characteristics.

Expectations. Views or beliefs about uncertain variables (such as future interest rates, prices, or tax rates). Expectations are said to be **rational**

if they are not systematically wrong (or "biased") and use all available information. Expectations are said to be **adaptive** if people form their expectations on the basis of past behavior.

Expenditure multiplier. See **multiplier**.

Exports. Goods or services that are produced in the home country and sold to another country. These include merchandise trade (like cars) and services (like transportation or interest on loans and investments). **Imports** are simply flows in the opposite direction—into the home country from another country.

External diseconomies. Situations in which production or consumption imposes uncompensated costs on other parties. Steel factories that emit smoke and sulfurous fumes harm local property and public health, yet the injured parties are not paid for the damages. The pollution is an external diseconomy.

External economies. Situations in which production or consumption yields positive benefits to others without those others paying. A firm that hires a security guard scares thieves from the neighborhood, thus providing external security services. Together with external diseconomies, these are often referred to as **externalities**.

External vs. induced variables. External variables are those determined by conditions outside the economy. They are contrasted with **induced variables**, which are determined by the internal workings of the economic system. Changes in the weather are external; changes in consumption are often induced by changes in income.

Externalities. Activities that affect others for better or worse, without those others paying or being compensated for the activity. Externalities exist when private costs or benefits do not equal social costs or benefits. The two major species are **external economies** and **external diseconomies**.

Factors of production. Productive inputs, such as labor, land, and capital; the resources needed to produce goods and services. Also called **inputs**.

Fallacy of composition. The fallacy of assuming that what holds for individuals also holds for the group or the entire system.

Federal Reserve System. The **central bank** of the United States.

Fiat money. Money, like today's paper currency, without **intrinsic value** but decreed (by fiat) to be legal tender by the government. Fiat money is accepted only as long as people have confidence that it will be accepted.

Final good. A good that is produced for final use and not for resale or further manufacture. (Compare with **intermediate goods**.) **Financial intermediary.** An institution that receives funds from savers and lends them to borrowers. These include depository institutions (such as commercial or **savings banks**) and non-depository institutions (such as money market mutual funds, brokerage houses, insurance companies, or pension funds).

Firm (business firm). The basic, private producing unit in a capitalist or mixed economy. It hires labor and buys other inputs in order to make and sell commodities.

Fiscal-monetary mix. Refers to the combination of fiscal and monetary policies used to influence macro-economic activity. A tight monetary-loose fiscal policy will tend to encourage consumption and retard investment, while an easy monetary-tight fiscal policy will have the opposite effect.

Fiscal policy. A government's program with respect to (1) the purchase of goods and services and spending on transfer payments, and (2) the amount and type of taxes.

Fixed cost. Refer to **cost, fixed**.

Fixed exchange rate. See **foreign exchange rate**.

Flexible exchange rates. A system of foreign exchange rates among countries wherein the exchange rates are predominantly determined by private market forces (i.e., by supply and demand) without government's setting and maintaining a particular pattern of exchange rates. Also sometimes called **floating exchange rates**. When the government refrains from any intervention in exchange markets, the system is called a pure floating exchange-rate system.

Floating exchange rates. See **flexible exchange rates**.

Flow vs. stock. A flow variable is one that has a time dimension or flows over time (like the flow through a stream). A stock variable is one that measures a quantity at a point of time (like the water in a lake). Income represents dollars per year and is thus a flow. Wealth as of December 1992 is a stock.

Foreign exchange. Currency or other financial instruments that allow one country to settle amounts owed to other countries.

Foreign exchange rate. The rate, or price, at which one country's currency is exchanged for the currency of another country. For example, if one British pound costs \$1.40, then the exchange rate for the pound is \$1.40. A country has a **fixed exchange rate** if it pegs its currency at a given

exchange rate and stands ready to defend that rate. An exchange rate which is not fixed is said to float. See also **flexible exchange rates**.

Four-firm concentration ratio. See **concentration ratio**.

Fractional-reserve banking. A regulation in modern banking systems whereby financial institutions are legally required to keep a specified fraction of their deposits in the form of deposits with the central bank (or in vault cash). In the United States today, large banks must keep 12 percent of checking deposits in reserves.

Free goods. Those goods that are not **economic goods**. Like air or seawater, they exist in such large quantities that they need not be rationed out among those wishing to use them. Thus, their' market price is zero.

Free trade. A policy whereby the government does not intervene in trading between nations—by tariffs, quotas, or other means.

Frictional unemployment. Temporary unemployment caused by changes in individual markets. It takes time, for example, for new workers to search among different job possibilities; even experienced workers often spend a minimum period of unemployed time moving from one job to another. Frictional is thus distinct from **cyclical unemployment**, which results from a low level of aggregate demand in the context of sticky wages and prices.

Full employment. A term that is used in many senses. Historically, it was taken to be that level of employment at which no (or minimal) involuntary unemployment exists. Today, economists rely upon the concept of the **natural rate of unemployment** to indicate the highest sustainable level of employment over the long run.

Galloping inflation. See **inflation**.

Game theory. An analysis of situations involving two or more decision makers with at least partly conflicting interests. It can be applied to the interaction of oligopolistic markets as well as to bargaining situations such as strikes or to conflicts such as games and war.

General equilibrium. An equilibrium state for the economy as a whole in which the markets for all goods and services are simultaneously in equilibrium. Since at these prices producers want to supply exactly the amount of goods that consumers want to buy, there are no pressures encouraging any agent in the economy to change behavior. By contrast, **partial-equilibrium analysis** concerns the equilibrium in a single market.

GNP. See **gross national product**.

GNP deflator. The "price" of GNP, that is, the price index that measures the average price of the components in GNP relative to a base year.

GNP gap. The difference or gap between potential GNP and actual GNP.

Gold standard. A system under which a nation (1) declares its currency unit to be equivalent to some fixed weight of gold, (2) holds gold reserves and will buy or sell gold freely at the price so proclaimed, and (3) puts no restriction on the export or import of gold.

Government debt. The total of government obligations in the form of bonds and shorter-term borrowings. Government debt held by the public excludes bonds held by quasi-governmental agencies such as the central bank.

Graduated income tax. See **income tax, personal**.

Gresham's Law. A law first attributed to Sir Thomas Gresham, adviser to Queen Elizabeth I of England, who stated in 1558 that "bad money drives out good"—i.e., that if the public is suspicious of one component of the money supply, it will hoard the "good money" and try to pass off the "bad money" to someone else.

Gross domestic product (GDP). The total output produced inside a country during a given year. Contrasts with **GNP**, which is the output produced by factors owned by the country.

Gross national product, nominal (or nominal GNP). The value, at current market prices, of all final goods and services produced during a year by a nation.

Gross national product, real (or real GIMP). Nominal GNP corrected for inflation, i.e., $\text{real GNP} = \text{nominal GNP} / \text{GNP deflator}$.

Growth accounting. A technique for estimating the contribution of different factors to economic growth. Using marginal-productivity theory, growth accounting decomposes the growth of output into the growth in labor, land, capital, education, technical knowledge, and other miscellaneous sources.

Hedging. A technique for avoiding a risk by making a counteracting transaction. For example, if a farmer produces wheat that will be harvested in the fall, the risk of price fluctuations can be offset, or hedged, by selling in the spring or summer the quantity of wheat that will be produced.

High-powered money. Same as **monetary base**.

Horizontal equity vs. vertical equity. Horizontal equity refers to the fairness or equity in treatment of persons in similar situations; the principle of horizontal equity states that those who are essentially equal should receive equal treatment. **Vertical equity** refers to the equitable treatment of those who are in different circumstances; there are no universally accepted practical applications of vertical equity, although some hold that vertical equity requires progressive taxation.

Horizontal integration. Refer to **integration, vertical vs. horizontal.**

Horizontal merger. See **merger.**

Human capital. The stock of technical knowledge and skill embodied in a nation's work force, resulting from investments in formal education and on-the-job training.

Hyperinflation. See **inflation.**

Imperfect competition. Refer to **competition, imperfect.**

Imperfect competitor. Any firm that buys or sells a good in large enough quantities to be able to affect the price of that good.

Implicit-cost elements. Costs that do not show up as explicit money costs but nevertheless should be counted as such. For example, if you run your own business, then in reckoning your profit you should include as one of your implicit costs the wage or salary you could have earned if you had worked elsewhere. Sometimes called **opportunity cost** although "opportunity cost" has a broader meaning.

Imports. See **exports.**

Inappropriability. The inability of firms to capture the full monetary value of their actions; particularly applicable to inventive activity.

Incidence (or tax incidence). The ultimate economic burden of a tax (as opposed to the legal requirement for payment). Thus a sales tax may be paid by a retailer, but it is likely that the incidence falls upon the consumer. The exact incidence of a tax depends on the price elasticities of supply and demand.

Income. The flow of wages, interest payments, dividends, and other receipts accruing to an individual or nation during a period of time (usually a year).

Income effect (of a price change). Change in the quantity demanded of a commodity because the change in its price has the effect of changing a consumer's real income. Thus it supplements the **substitution effect** of a price change.

Income elasticity of demand. The

demand for any given good is influenced not only by the good's price but by buyers' incomes. Income elasticity measures this responsiveness. Its precise definition is percentage change in quantity demanded divided by percentage change in income. (Compare with **price elasticity of demand**.) **Income statement.** A company's statement, covering a specified time period (usually a year), showing sales or revenue earned during that period, all costs properly charged against the goods sold, and the profit (net income) remaining after deduction of such costs. Also called a **profit-and-loss statement**.

Income tax, negative. Refer to **negative income tax**.

Income tax, personal. Tax levied on the income received by individuals, either in the form of wages and salaries or income from property, such as rents, dividends, or interest. In the United States, personal income tax is **graduated**, meaning that people with higher incomes pay taxes at a higher average rate than people with lower incomes.

Income velocity of money. Refer to **velocity of money**.

Incomes policy. A government policy that attempts directly to restrict wage and price changes in an effort to slow inflation. Such policies range from voluntary wage-price guidelines to outright legal control over wages, salaries, and prices.

Increasing returns to scale. See **returns to scale**.

Independent goods. Goods whose demands are relatively separate from one another. More precisely, goods A and B are independent when a change in the price of good A has no effect on the quantity demanded of good B, other things equal.

Indexing (or indexation). A mechanism by which wages, prices, and contracts are partially or wholly adjusted to compensate for changes in the general price level.

Indifference curve. A curve drawn on a graph whose two axes measure amounts of different goods consumed. Each point on one curve (indicating different combinations of the two goods) yields exactly the same level of satisfaction for a given consumer. That is, the consumer is indifferent between any two points on an indifference curve.

Indifference map. A graph showing a family of indifference curves for a consumer. In general, curves that lie farther northeast from the graph's origin represent higher levels of satisfaction. **Indirect taxes.** See **direct taxes**. **Induced variables.** See **external vs.**

induced variables. **Industry.** A group of firms producing

similar' or identical products. **Inertial inflation.** A process of steady inflation that occurs when inflation is expected to persist and the ongoing rate of inflation is built into contracts and people's expectations.

Infant industry. In foreign-trade theory, an industry that has not had sufficient time to develop the experience or expertise to exploit the economies of scale needed to compete successfully with more mature industries producing the same commodity in other countries. Infant industries are often thought to need tariffs or quotas to protect them while they develop.

Inferior good. A good whose consumption goes down as income rises.

Inflation (or **inflation rate**). The inflation rate is the percentage annual increase in a general price level. **Hyperinflation** is inflation at extremely high rates (say, 1000, 1 million, or even 1 billion percent a year). **Galloping inflation** is a rate of 50 or 100 or 200 percent annually. **Moderate inflation** is a price-level rise that does not distort relative prices or incomes severely.

Innovation. A term particularly associated with Joseph Schumpeter, who meant by it (1) the bringing to market of a new and significantly different product, (2) the introduction of a new production technique, or (3) the opening up of a new market. (Contrast with **invention**.)

Inputs. See **factors of production**.

Insurance. A system by which individuals can reduce their exposure to risk of large losses by spreading the risks among a large number of persons.

Integration, vertical vs. horizontal.

The production process is one of stages—e.g., iron ore into steel ingots, steel ingots into rolled steel sheets, rolled steel sheets into an automobile body. **Vertical integration** is the combination in a single firm of two or more different stages of this process (e.g., iron ore with steel ingots). **Horizontal integration** is the combination in a single firm of different units that operate at the same stage of production.

Interest. The return paid to those who lend money.

Interest rate. The price paid for borrowing money for a period of time, usually expressed as a percentage of the principal per year. Thus, if the interest rate is 10 percent per year, then \$100 would be paid for a loan of \$1000 for 1 year.

Intermediate goods. Goods that have undergone some manufacturing or processing but have not yet reached the stage of becoming final products. For example, steel and cotton yarn are intermediate goods.

Intervention. An activity in which a government buys or sells its currency in the foreign exchange market in order to affect its currency's exchange rate.

Intrinsic value (of money). The commodity value of a piece of money (e.g., the market value of the weight of copper in a copper coin).

Invention. The creation of a new product or discovery of a new production technique. (Distinguish from **innovation**.)

Investment. (1) Economic activity that forgoes consumption today with an eye to increasing output in the future. It includes tangible capital (structures, equipment, and inventories) and intangible investments (education or "human capital," research and development, and health). Net investment is the value of total investment after an allowance has been made for depreciation. (2) In finance terms, investment has an altogether different meaning and denotes the purchase of a security, such as a stock or a bond. **Investment demand** (or **investment demand curve**). The schedule showing the relationship between the level of investment and the cost of capital (or, more specifically, the real interest rate); also, the graph of that relationship. **Invisible hand.** A concept introduced by Adam Smith in 1776 to describe the paradox of a laissez-faire market economy. The invisible-hand doctrine holds that, with each participant pursuing his or her own private interest, a market system nevertheless works to the benefit of all as though a benevolent invisible hand were directing the whole process. **Involuntary unemployment.** See

unemployment. **Iron law of wages.** In the economic theories of Malthus and Marx, the theory that there is an inevitable tendency in capitalism for wages to be driven down to a subsistence level.

Keynesian economics. The body of thought developed by John Maynard Keynes holding that a capitalist system does not automatically tend toward a full-employment equilibrium. According to Keynes, the resulting underemployment equilibrium could be cured by fiscal or monetary policies to raise aggregate demand.

Labor force. In official U.S. statistics, that group of people 16 years of age and older who are either employed or unemployed.

Labor-force participation rate. Ratio of those in the labor force to the entire population 16 years of age or older.

Labor productivity. See **productivity**.

Labor supply. The number of workers (or, more generally, the number of labor-hours) available to an economy. The principal determinants of labor supply are population, real wages, and social traditions.

Labor theory of value. The view, often associated with Adam Smith and Karl Marx, that every commodity should be valued solely according to the quantity of labor required for its production.

Laissez-faire ("Leave us alone"). The view that government should interfere as little as possible in economic activity and leave decisions to the marketplace. As expressed by classical economists like Adam Smith, this view held that the role of government should be limited to

(1) maintenance of law and order,

(2) national defense, and (3) provision of certain public goods that private business would not undertake (e.g., public health and sanitation).

Land. In classical and neoclassical economics, one of the three basic factors of production (along with labor and capital). More generally, land is taken to include land used for agricultural or industrial purposes as well as natural resources taken from above or below the soil.

Least-cost rule (of production). The rule that the cost of producing a specific level of output is minimized when the ratio of the marginal revenue product of each input to the price of that input is the same for all inputs.

Legal tender. Money that by law must be accepted as payment for debts. All U.S. coins and currency are legal tender, but checks are not.

Less developed country (LDC). A country with a per capita income far below that of "developed" nations (the latter usually includes most nations of North America or Western Europe).

Liabilities. In accounting, debts or financial obligations owed to other firms or persons. **Libertarianism.** An economic philosophy that emphasizes the importance of personal freedom in economic and political affairs; also sometimes called "liberalism." Libertarian writers, including Adam Smith in an earlier age and Milton Friedman and James Buchanan today, hold that people should be able to follow their own interests and desires and that government activities should be limited to guaranteeing contracts and to providing police and national defense, thereby allowing maximum personal freedom.

Limited liability. The restriction of an owner's loss in a business to the amount of capital that the owner has contributed to the company. Limited liability was an important factor in the rise of large corporations. By

contrast, owners in partnerships and individual proprietorships generally have **unlimited liability** for the debts of those firms.

Long run. A term used to denote a period over which full adjustment to changes can take place. In microeconomics, it denotes the time over which firms can enter or leave an industry and the capital stock can be replaced. In macroeconomics, it is often used to mean the period over which all prices, wage contracts, tax rates, and expectations can fully adjust.

Long-run aggregate supply. The relationship between output and the price level after all price and wage adjustments have taken place, and the AS curve is therefore vertical.

Lorenz curve. A graph used to show the extent of inequality of income or wealth.

M1, M2. Refer to **money supply**.

Macroeconomics. Analysis dealing with the behavior of the economy as a whole with respect to output, income, the price level, foreign trade, unemployment, and other aggregate economic variables. (Contrast with **microeconomics**.)

Malthusian theory of population growth. The hypothesis, first expressed by Thomas Malthus, that the “natural” tendency of population is to grow more rapidly than the food supply. Per capita food production would thus decline over time, thereby putting a check on population. In general, a view that population tends to grow more rapidly as incomes or living standards of the population rise.

Managed float. The most prevalent exchange-rate system today. In this system, a country occasionally intervenes to stabilize its currency.

Marginal cost. Refer to **cost, marginal**.

Marginal principle. The fundamental notion that people will maximize their income or profits when the marginal costs and marginal benefits of their actions are equal.

Marginal product (MP*). The extra output resulting from 1 extra unit of a specified input when all other inputs are held constant. Sometimes called marginal physical product.

Marginal product theory of distribution. A theory of the distribution of income proposed by John B. Clark, according to which each productive input is paid according to its **marginal product**.

Marginal propensity to consume (MPC). The extra amount that people consume when they receive an extra dollar of disposable income. To be distinguished from the **average propensity to consume**, which is the ratio of total consumption to total disposable income.

Marginal propensity to import (MPm). In macroeconomics, the increase in the dollar value of imports resulting from each dollar increase in the value of GNP.

Marginal propensity to save (.11KS). That fraction of an additional dollar of disposable income that is saved. Note that, by definition, $MPC + MPS = 1$.

Marginal revenue (MR). The additional revenue a firm would earn if it sold 1 extra unit of output. In perfect competition, MR equals price. Under imperfect competition, MR is less than price because, in order to sell the extra unit, the price must be reduced on all prior units sold.

Marginal revenue product (UKI') (of an input). Marginal revenue multiplied by marginal product. It is the extra revenue that would be brought in if a firm were to buy 1 extra unit of an input, put it to work, and sell the extra product it produced.

Marginal tax rate. For an income tax, the percentage of the last dollar of income paid in taxes. If a tax system is progressive, the marginal tax rate is higher than the average tax rate.

Marginal utility (MI). The additional or extra satisfaction yielded from consuming 1 additional unit of a commodity, with amounts of all other goods consumed held constant.

Market. An arrangement whereby buyers and sellers interact to determine the prices and quantities of a commodity. Some markets (such as the stock market or a flea market) take place in physical locations; other markets are conducted over the telephone or are organized by computers.

Market economy. An economy in which the what, how, and for whom questions concerning resource allocation are primarily determined by supply and demand in markets. In this form of economic organization, firms, motivated by the desire to maximize profits, buy inputs and produce and sell outputs. Households, armed with their factor incomes, go to markets and determine the demand for commodities. The interaction of firms' supply and households' demand then determines the prices and quantities of goods.

Market equilibrium. Same as *competitive equilibrium*.

Market failure. An imperfection in a price system that prevents an efficient allocation of resources. Important examples are **externalities** and **imperfect competition**.

Market power. The degree of control that a firm or group of firms has over the price and production decisions in an industry. In a monopoly, the firm has a high degree of market power; firms in perfectly competitive

industries have no market power. **Concentration ratios** are the most widely used measures of market power.

Market share. That fraction of an industry's output accounted for by an individual firm or group of firms.

Markup pricing. The pricing method used by many firms in situations of imperfect competition; under this method they estimate average cost and then add some fixed percentage to that cost in order to reach the price they charge.

Marxism. The set of social, political, and economic doctrines developed by Karl Marx in the nineteenth century. As an economic theory, Marxism predicted that capitalism would collapse as a result of its own internal contradictions, especially its tendency to exploit the working classes. The conviction that workers would inevitably be oppressed under capitalism was based on the **iron law of wages**, which holds that wages would decline to subsistence levels.

Mean. In statistics, the same thing as "average." Thus for the numbers 1, 3, 6, 10, 20, the mean is 8.

Median. In statistics, the figure exactly in the middle of a series of numbers ordered or ranked from lowest to highest (e.g., incomes or examination grades). Thus for the numbers 1, 3, 6, 10, 20, the median is 6.

Mercantilism. A political doctrine perhaps best known as the object of Adam Smith's attack in *The*

Wealth of Nations. Mercantilists emphasized the importance of balance-of-payments surpluses as a device to accumulate gold. They therefore advocated tight government control of economic policies, believing that laissez-faire policies might lead to a loss of gold.

Merger. The acquisition of one corporation by another, which usually occurs when one firm buys the stock of another. Important examples are (1) **vertical mergers**, which occur when the two firms are at different stages of a production process (e.g., iron ore and steel), (2) **horizontal mergers**, which occur when the two firms produce in the same market (e.g., two automobile manufacturers), and (3) **conglomerate mergers**, which occur when the two firms operate in unrelated markets (e.g., shoelaces and oil refining).

Microeconomics. Analysis dealing with the behavior of individual elements in an economy—such as the determination of the price of a single product or the behavior of a single consumer or business firm. (Contrast with **macroeconomics**.)

Minimum cost. Refer to **cost, minimum**.

Mixed economy. The dominant form of economic organization in non-communist countries. Mixed economies rely primarily on the price system for their economic organization but use a variety of government interventions (such as taxes, spending, and regulation) to handle macroeconomic instability and market failures.

Model. A formal framework for representing the basic features of a complex system by a few central relationships. Models take the form of graphs, mathematical equations, and computer programs.

Moderate inflation. See **inflation**.

Momentary run. A period of time that is so short that production is fixed.

Monetarism. A *school of thought* holding that changes in the money supply are the major cause of macroeconomic fluctuations. For the short run, this view holds that changes in the money supply are the primary determinant of changes in both real output and the price level. For the longer run, this holds that prices tend to move proportionally with the money supply. Monetarists often conclude that the best macroeconomic policy is one with a stable growth in the money supply.

Monetary base. The net monetary liabilities of the government that are held by the public. In the United States, the monetary base is equal to currency and bank reserves. Sometimes called **high-powered money**.

Monetary policy. The objectives of the central bank in exercising its control over money, interest rates, and credit conditions. The instruments of monetary policy are primarily open-market operations, reserve requirements, and the discount rate.

Money. The means of payment or medium of exchange. For the items constituting money, refer to **money supply**.

Money demand schedule. The relationship between holdings of money and interest rates. As interest rates rise, bonds and other securities become more attractive, lowering the quantity of money demanded. See also **demand for money**.

Money funds. Shorthand expression for very liquid short-term financial instruments whose interest rates are not regulated. The major examples are money market mutual funds and commercial bank money market deposit accounts.

Money market. A term denoting the set of institutions that handle the purchase or sale of short-term credit instruments like Treasury bills and commercial paper.

Money supply. The narrowly defined money supply (M_1) consists of coins, paper currency, plus all demand or checking deposits; this is narrow, or transactions, money. The broadly denned supply (M_2) includes all items in M_1 , plus certain liquid assets or near-monies— savings deposits, money market funds, and the like.

Money-supply effect. The relationship whereby a price rise operating on a fixed nominal money supply produces tight money and lowers aggregate spending.

Money-supply multiplier. The ratio of the increase in the money supply (or in deposits) to the increase in bank reserves. Generally, the money-supply multiplier is equal to the inverse of the required reserve ratio. For example, if the required reserve ratio is 0.125, then the money-supply multiplier is 8.

Money, velocity of. See **velocity of money.**

Monopolistic competition. A market structure in which there are many sellers who are supplying goods that are close, but not perfect, substitutes. In such a market, each firm can exercise some effect on its product's price. **Monopoly.** A market structure in which a commodity is supplied by a single firm. Also see **natural monopoly.**

Monopsony. The mirror image of monopoly: a market in which there is a single buyer; a "buyer's monopoly."

MPC. See **marginal propensity to • consume.**

MPS. See **marginal propensity to save.**

Multiplier. A term in macroeconomics denoting the change in an induced variable (such as GNP or money supply) per unit of change in an external variable (such as government spending or bank reserves). The **expenditure multiplier** refers to the increase in GNP that would result from a \$1 increase in expenditure (say on investment).

Multiplier model. In macroeconomics, a theory developed by J. M. Keynes that emphasizes the importance of changes in autonomous expenditures (especially investment, government spending, and net exports) in determining changes in output and employment. Also see **multiplier.**

Nash equilibrium. In game theory, a set of strategies for the players where no player can improve his or her payoff given the other player's strategy. That is, given player' A's strategy, player B can do no better, and given B's strategy A can do no better. The Nash equilibrium is also sometimes called the **noncooperative equilibrium.**

National debt. Same as **government debt.**

National-income and -product accounting. A set of accounts that measures the spending, income, and output of the entire nation for a quarter or a year.

Natural monopoly. A firm or industry whose average cost per unit of production falls sharply over the entire range of its output, as for example in local electricity distribution. Thus a single firm, a monopoly, can supply the industry output more efficiently than can multiple firms.

Natural rate of unemployment. The unemployment rate at which upward and downward pressures on wage and price inflation are in balance, so that inflation neither rises nor falls. Equivalently, the unemployment rate at which the long-run **Phillips curve** is vertical. "**Near-money.**" Financial assets are risk-free and so readily convertible into money that they are close to actually being money. Examples are money funds and Treasury bills.

Negative income tax. A plan for replacing current income-support programs (welfare, food stamps etc.) with a unified program. Under such a plan, poor families would receive an income supplement and would have benefits reduced as their earnings increase.

Neoclassical growth model. A theory or model used to explain long-term trends in economic growth of industrial economies. This model emphasizes the importance of capital deepening (i.e., a growing capital-labor ratio) and technological change in explaining the growth of potential real GNP.

(Met economic welfare (NEW). A measure of national output that corrects several limitations of the GNP measure.

Net exports. In the national product accounts, the value of exports of goods and services minus the value of imports of goods and services.

Net investment. Gross investment minus depreciation of capital goods.

Net national product (NNP). GNP less an allowance for depreciation of capital goods.

Net worth. In accounting, total assets minus total liabilities.

NNP. See **net national product**.

Nominal GNP. See **gross national product, nominal**.

Nominal (or money! interest rate. The **interest rate** paid on different assets. This represents a dollar return per year per dollar invested. Compare with the **real interest rate**, which represents the return per year in goods per unit of goods invested.

Noncooperative equilibrium. See **Nash equilibrium**.

Normative vs. positive economics. Normative economics considers "what ought to be"—value judgments, or goals, of public policy. **Positive economics**, by contrast, is the analysis of facts and behavior in an economy, or "the way things are."

NOW (negotiable order of withdrawal) account. An interest-bearing checking account. See also **checking accounts**.

Okun's Law. The empirical relationship, discovered by Arthur Okun, between cyclical movements in GNP and unemployment. The law states that when actual GNP declines 2 percent relative to potential GNP, the unemployment rate increases by about 1 percentage point. (Earlier estimates placed the ratio at 3 to 1.)

Oligopoly. A situation of imperfect competition in which an industry is dominated by a small number of suppliers.

Open economy. An economy that engages in international trade (i.e., imports and exports) of goods and capital with other countries. A **closed economy** is one that has no imports or exports.

Open-economy multiplier. In an open economy, income leaks into imports as well as into saving. Therefore, the open-economy multiplier for investment or government expenditure is given by

$$\text{Open-economy multiplier} = \frac{1}{MPS + MPm}$$

where MPS = marginal propensity to save and MPm = marginal propensity to import.

Open-market operations. The activity of a central bank in buying or selling government bonds to influence bank reserves, the money supply, and interest rates. If securities are bought, the money paid out by the central bank increases commercial-bank reserves, and the money supply increases. If securities are sold, the money supply contracts.

Opportunity cost. The value of the next best use (or opportunity) for an economic good, or the value of the sacrificed alternative. Thus, say that the best alternative use of the inputs employed to mine a ton of coal was to grow 10 bushels of wheat. The opportunity cost of a ton of coal is thus the 10 bushels of wheat that could have been produced but were not. Opportunity cost is particularly useful for valuing nonmarketed goods such as environmental health or safety.

Other things equal. A phrase that signifies that a factor under consideration is changed while all other factors are held equal or constant. For example, a downward-sloping demand curve shows that the quantity

demanded will decline as the price rises, as long as other things (such as incomes) are held equal.

Output. See **total product.**

Paradox of value. The paradox that many necessities of life (e.g., water) have a low "market" value, while many luxuries (e.g., diamonds) with little "use" value have a high market price. It is explained by the fact that a price does not reflect the total utility of a commodity but its marginal utility.

Pareto efficiency (or **Parcto optimally**). See **allocative efficiency.**

Partial-equilibrium analysis. Analysis concentrating on the effect of changes in an individual market, holding other things equal (e.g., disregarding changes in income).

Partnership. An association of two or more persons to conduct a business which is not in corporate form and does not enjoy limited liability.

Patent. An exclusive right granted to an inventor to control the use of an invention for, in the United States, a period of 17 years. Patents create temporary monopolies as a way of rewarding inventive activity and are the principal tool for promoting invention among individuals or small firms.

Payoff table. In game theory, a table used to describe the strategies and payoffs of a game with two or more player.). The profits or utilities of the different players are the **payoffs.**

Payoffs. See **payoff table.**

Perfect competition. Refer to **competition, perfect.**

Personal savings rate. The ratio of personal saving to personal disposable income, in percent.

Phillips curve. A graph first devised by A. W. Phillips, showing the tradeoff between unemployment and inflation. In modern mainstream macroeconomics, the downward-sloping "tradeoff" Phillips curve is generally held to be valid only in the short run; in the long run, the Phillips curve is usually thought to be vertical at the natural rate of unemployment.

Portfolio theory. An economic theory that describes how rational investors allocate their wealth among different financial assets—that is, how they put their wealth into a "portfolio."

Positive economics. Refer to **normative vs. positive economics.**

Post hoc fallacy. From the Latin, post hoc, ergo propter hoc, which translates as "after this, therefore because of this." This fallacy arises when it is assumed that because event A precedes event B, it follows that A causes B.

Potential GIMP. High-employment GNP; more precisely, the maximum level of GNP that can be sustained with a given state of technology and population size without accelerating inflation. Today, it is generally taken to be equivalent to the level of output corresponding to the natural rate of unemployment.

Potential output. Same as **potential GNP**.

Poverty. Today, the U.S. government defines the "poverty line" to be the minimum adequate standard of living.

PPF. See **production-possibility frontier**.

Present value (of an asset). Today's value for an asset that yields a stream of income over time. Valuation of such time streams of returns requires calculating the present worth of each component of the income, which is done by applying a discount rate (or interest rate) to future incomes.

Price-elastic demand (or elastic demand). The situation in which price elasticity of demand exceeds

1 in absolute value. This signifies that the percentage change in quantity demanded is greater than the percentage change in price. In addition, elastic demand implies that total revenue (price times quantity) rises when price falls because the increase in quantity demanded is so large. (Contrast with **price-inelastic demand**.)

Price elasticity of demand. A measure of the extent to which quantity demanded responds to a price change. The elasticity coefficient (price elasticity of demand = ϵ) is percentage change in quantity demanded divided by percentage change in price. In figuring percentages, use the averages of old and new quantities in the numerator and of old and new prices in the denominator; disregard the minus sign. Refer also to **price-elastic demand, price-inelastic demand, unit-elastic demand**.

Price elasticity of supply. Conceptually similar to **price elasticity of demand**, except that it measures the supply responsiveness to a price change. More precisely, the price elasticity of supply measures the percentage change in quantity supplied divided by the percentage change in price. Supply elasticities are most useful in perfect competition.

Price flexibility. Price behavior in "auction" markets (e.g., for many raw commodities or the stock market), in which prices immediately respond to changes in demand or in supply. (In contrast, refer to **administered prices**.)

Price index. An index number that shows how the average price of a bundle of goods has changed over a period of time. In computing the

average, the prices of the different goods are generally weighted by their economic importance (e.g., by each commodity's share of total consumer expenditures in the **consumer price index I**).

Price-inelastic demand (or inelastic demand). The situation in which price elasticity of demand is below 1 in absolute value. In this case, when price declines, total revenue declines, and when price is increased, total revenue goes up. Perfectly inelastic demand means that there is no change at all in quantity demanded when price goes up or goes down. (Contrast with **price-elastic demand** and **unit-elastic demand**.)

Private good. See **public good**.

Producer price index. The **price index** of goods sold at the wholesale level (such as steel, wheat, oil).

Product, average. See **average product**.

Product differentiation. The existence of characteristics that make similar goods less-than-perfect substitutes. Thus locational differences make similar types of gasoline sold at separate points imperfect substitutes. Firms enjoying product differentiation face a downward-sloping demand curve instead of the horizontal demand curve of the perfect competitor.

Product, marginal. See **marginal product**.

Production function. A relation (or mathematical function) specifying the maximum output that can be produced with given inputs for a given level of technology. Applies to a firm or, as an aggregate production function, to the economy as a whole.

Production-possibility frontier (PPF). A graph showing the menu of goods that can be produced by an economy. In a frequently cited case, the choice is reduced to two goods, guns and butter. Points outside the PPF (to the northeast of it) are unattainable. Points inside it are inefficient since resources are not being fully employed, resources are not being used properly, or outdated production techniques are being utilized.

Productivity. A term referring to the ratio of output to inputs (total output divided by labor inputs is **labor productivity**). Productivity increases if the same quantity of inputs produces more output. Labor productivity increases because of improved technology, improvements in labor skills, or capital deepening.

Productivity growth. The rate of increase in **productivity** from one period to another. For example, if an index of labor productivity is 100 in 1990 and 101.7 in 1991, the rate of productivity growth is 1.7 percent per year for 1991 over 1990.

Productivity of capital, net. Refer to **rate of return**.

Profit. (1) In accounting terms, total revenue minus costs properly chargeable against the goods sold (refer to **income statement**). (2) In economic theory, the difference between sales revenue and the full opportunity cost of resources involved in producing the goods.

Profit-and-loss statement. Refer to **income statement**.

Progressive, proportional, and regressive taxes. A progressive tax weighs more heavily upon the rich; a regressive tax does the opposite. More precisely, a tax is progressive if the average tax rate (i.e., taxes divided by income) is higher for those with higher incomes; it is a regressive tax if the average tax rate declines with higher incomes; it is a proportional tax if the average tax rate is equal at all income levels.

Property rights. Property rights define the ability of individuals or firms to own, buy, sell, and use the capital goods and other property in a market economy.

Proportional tax. Refer to **progressive, proportional, and regressive taxes**.

Proprietorship, individual. A business firm owned and operated by one person.

Protectionism. Any policy adopted by a country to protect domestic industries against competition from imports (most commonly, a tariff or quota imposed on such imports).

Public choice (also **public-choice theory!**). Branch of economics and political science dealing with the way that governments make choices and direct the economy. This theory differs from the theory of markets in emphasizing the influence of vote maximizing for politicians, which contrasts to profit maximizing by firms.

Public debt. See **government debt**.

Public good. A commodity whose benefits are indivisibly spread among the entire community, whether or not particular individuals desire to consume the public good. For example, a public-health measure that eradicates smallpox protects all, not just those paying for the vaccinations. To be contrasted with **private goods**, such as bread, which, if consumed by one person, cannot be consumed by another person.

Pure economic rent. See **rent, economic**.

Quantity demanded. See **change in demand vs. change in quantity demanded**.

Quantity equation of exchange. A tautology, $MV = PQ$, where M is the money supply, V is the income velocity of money, and PQ (price times quantity) is the money value of total output (nominal GNP). The

equation must always hold exactly since V is defined as PQ/M . **Quantity supplied.** See **change in supply vs. change in quantity supplied.**

Quantity theory of prices. A theory of the determination of output and the overall price level holding that prices move proportionately with the money supply. A more cautious approach put forth by monetarists holds that the money supply is the most important determinant of changes in nominal GNP (see **monetarism**).

Quota. A form of import protectionism in which the total quantity of imports of a particular commodity (e.g., sugar or cars) during a given period is limited.

Random-walk theory (of stock market prices). Increasingly called the **efficient-market theory**. A view that holds that all currently available information is already incorporated into the price of common stocks (or other assets). Consequently, the stock market offers no bargains that can be found by looking at old or "stale" information or at easily available information (like recent price movements). Stock prices do change, however—on the basis of new information. If we assume that the chances of good news and of bad are 50:50, then stock prices will follow a "random walk," i.e., they are equally likely to move up or down.

Rate of inflation. See **inflation**.

Rate of return (or return) on capital. The yield on an investment or on a capital good. Thus, an investment costing \$100 and yielding \$12 annually has a rate of return of 12 percent per year.

Rational expectations. (1) For the narrow definition, see **expectations**. (2) More generally, part of a view of the economy held by proponents of **rational-expectations macroeconomics**.

Rational-expectations macroeconomics. A school, led by Robert Lucas and Thomas Sargent, holding that markets clear quickly and that expectations are rational. Under these and other conditions it can be shown that predictable macroeconomic policies have no effect on real output or unemployment. Sometimes called new classical macroeconomics.

Real GNP. GNP adjusted for price change. Real GNP equals nominal GNP divided by the GNP deflator. See **gross national product, real**.

Real interest rate. The interest rate measured in terms of goods rather than money. It is thus equal to the money (or nominal) interest rate less the rate of inflation.

Real wages. The purchasing power of a worker's wages in terms of goods and services. It is measured by the ratio of the money wage rate to the consumer price index.

Recession. A downturn in real GNP for two or more successive quarters. See also **depression**.

Regressive tax. Refer to **progressive**, **proportional**, and **regressive taxes**.

Regulation. Government laws or rules designed to control the behavior of firms. The major kinds are **economic regulation** (which affects the prices, entry, or service of a single industry, such as telephone service) and **social regulation** (which attempts to correct externalities that prevail across a number of industries, such as air or water pollution).

Rent, economic (or pure economic rent). This term was applied by nineteenth-century British economists to income earned from land. The total supply of land available is (with minor qualifications) fixed, and the return paid to the landowner is rent. The term is often extended to the return paid to any factor in fixed supply—i.e., to any input having a perfectly inelastic or vertical supply curve.

Required reserves. See **reserves, bank**.

Reserves, bank. That portion of deposits that a bank sets aside in the form of vault cash or non-interest-earning deposits with Federal Reserve Banks. In the United States, banks are required to hold 12 percent of checking deposits (or transactions accounts) in the form of reserves.

Reserves, international. Every nation holds at least some reserves, in such forms as gold, currencies of other nations, and special drawing rights. International reserves serve as "international money," to be used when a country encounters balance-of-payments difficulties. If a nation were prepared to allow its exchange rate to float freely, it would need no reserves.

Resource allocation. The manner in which an economy distributes its resources (its factors of production) among the potential uses so as to produce a particular set of final goods.

Returns to scale. The rate at which output increases when all inputs are increased proportionately. For example, if all the inputs double and output is exactly doubled, that process is said to exhibit **constant returns to scale**. If, however, output grows by less than 100 percent when all inputs are doubled, the process shows **decreasing returns to scale**; if output more than doubles, the process demonstrates **increasing returns to scale**.

Revaluation. An increase in the official foreign exchange rate of a currency. See also **devaluation**.

Revenue, average. Refer to **average revenue**.

Revenue, marginal. Refer to **marginal revenue**.

Revenue, total. Refer to **total revenue**.

Risk averse. A person is risk-averse when, faced with an uncertain situation, the displeasure from losing a given amount of income is greater than the pleasure from gaining the same amount of income.

Risk spreading. The process of taking large risks and spreading them around so that they are but small risks for a large number of people. The major form of risk spreading is **insurance**, which is a kind of gambling in reverse.

Sales tax. See **excise tax vs. sales tax**.

Saving. That part of income which is not consumed; in other words, the difference between disposable income and consumption.

Savings function. The schedule showing the amount of saving that households or a nation will undertake at each level of income.

Say's Law of markets. The theory that "supply creates its own demand." J. B. Say argued in 1803 that, because total purchasing power is exactly equal to total incomes and outputs, excess demand or supply is impossible. Keynes attacked Say's Law, pointing out that an extra dollar of income need not be entirely spent (i.e., the marginal propensity to consume is not necessarily unity).

Scarcity, law of. The principle that most things that people want are available only in limited supply (the exception being **free goods**). Thus goods are generally scarce and must somehow be rationed, whether by price or some other means.

Securities. A term used to designate a wide variety of financial assets, such as stocks, bonds, options, and notes; more precisely, the document used to establish ownership of these assets.

Short run. A period in which all factors cannot adjust fully. In microeconomics, the capital stock and other "fixed" inputs cannot be adjusted and entry is not free in the short run. In macroeconomics, prices, wage contracts, tax rates, and expectations may not fully adjust in the short run.

Short-run aggregate supply. The relationship between output and prices in the short run wherein changes in aggregate demand can affect output. Also represented by an upward-sloping or horizontal AS curve.

Shutdown price (or- point, or- rule). In the theory of the firm, the shutdown point where the market price is just sufficient to cover average variable cost and no more. Hence, the firm's losses per period just equal its fixed costs; it might as well shut down.

Single-tax movement. A nineteenth-century movement, originated by Henry George, holding that continued poverty in the midst of steady economic progress was attributable to the scarcity of land and the large rents flowing to landowners. The "single tax" was to be a tax on economic rent earned from land-ownership.

Slope. In a graph, the change in the variable on the vertical axis per unit of change in the variable on the horizontal axis. Upward-sloping lines have positive slopes, downward-sloping curves (like demand curves) have negative slopes, and horizontal lines have slopes of zero.

Social overhead capital. The essential investments on which economic development depends, particularly for transportation, power, and communications. Sometimes called "infrastructure."

Social regulation. See **regulation.**

Socialism. A political theory that holds that all (or almost all) the means of production, other than labor, should be owned by the community. This allows the return on capital to be shared more equally than under capitalism.

Speculator. Someone engaged in speculation, i.e., who buys (or sells) a commodity or financial asset with the aim of profiting from later selling (or buying) the item at a higher (or lower) price.

Spillovers. Same as **externalities.**

Stagflation. A term, coined in the early 1970s, describing the coexistence of high unemployment, or stagnation, with persistent inflation. Its explanation lies primarily in the inertial nature of the inflationary process.

Stock, common. Refer to **common stock.**

Stock market. An organized marketplace in which common stocks are traded. In the United States, the largest stock market is the New York Stock Exchange, on which are traded the largest American companies.

Stock vs. flow. See **flow vs. stock.**

Strategic interaction. A situation in oligopolistic markets in which each firm's business strategies depend upon its rivals' plans. A formal analysis of strategic interaction is given in **game theory.**

Structural unemployment. Unemployment resulting because the regional or occupational pattern of job vacancies does not match the pattern

of worker availability. There may be jobs available, but unemployed workers may not have the required skill; or the jobs may be in different regions from where the unemployed workers live.

Subsidy. A payment by a government to a firm or household that provides or consumes a commodity. For example, governments often subsidize food by paying for part of the food expenditures of low-income households.

Substitutes. Goods that compete with each other (as do gloves and mittens). By contrast, goods that go together in the eyes of consumers (such as left shoes and right shoes) are complements.

Substitution effect (of a price change). The tendency of consumers is to consume more of a good when its relative price falls (to "substitute" in favor of that good), and to consume less of the good when its relative price increases (to "substitute" away from that good). This substitution effect of a price change leads to a downward-sloping demand curve. (Compare with **income effect**.)

Supply curve (or **supply schedule**). A schedule showing the quantity of a good that suppliers in a given market desire to sell at each price, holding other things equal.

Supply shock. In macroeconomics, a sudden change in production costs or productivity that has a large and unexpected impact upon aggregate supply. As a result of a supply shock, real GNP and the price level change unexpectedly.

Supply-side economics. A view emphasizing policy measures to affect aggregate supply or potential output. This approach holds that high marginal tax rates on labor and capital incomes reduce work effort and saving.

Tariff. A levy or tax imposed upon each unit of a commodity imported into a country.

Tax incidence. See **incidence**.

Technological change. A change in the process of production or introduction of new products such that more or improved output can be obtained from the same bundle of inputs. It results in an outward shift in the production-possibility curve.

Technological progress. Same as **technological change**.

Terms of trade (in international trade). The "real" terms at which a nation sells its export products and buys its import products. It equals the ratio of an index of export prices to an index of import prices.

Tight-money policy. A central-bank policy of restraining or reducing the money supply and of raising interest rates. This policy has the effect of slowing the growth of real GNP, reducing the rate of inflation, or raising the nation's foreign exchange rate. (Contrast with **easy-money policy**.)

Time deposit. Funds, held in a bank, that have a minimum "time of withdrawal." Included in broad money (M-) but not in M_x because they are not accepted as a means of payment.

Token money. Money with little or no intrinsic value.

Total cost. Refer to **cost, total**.

Total factor productivity. An index of productivity that measures total output per unit of total input. The numerator of the index is total output (say GNP), while the denominator is a weighted average of inputs of capital, labor, and resources. The growth of total factor productivity is often taken as an index of the rate of technological progress.

Total product (or output). The total amount of a commodity produced, measured in physical units such as bushels of wheat, tons of steel, or number of haircuts.

Trade barrier. Any of a number of protectionist devices by which nations discourage imports. Tariffs and quotas are the most visible barriers, but in recent years non-tariff barriers (or NTBs), such as burdensome regulatory proceedings, have replaced more traditional measures.

Transactions demand for money. See **demand for money**.

Transfer payments, government, payments made by a government to individuals, for which the individual performs no current service in return. Examples are social security payments and unemployment insurance.

Treasury bills (T-bills). Short-term bonds or securities issued by the federal government.

Underground economy. Unreported economic activity. The underground economy includes otherwise legal activities not reported to the taxing authorities (such as garage sales or services "bartered" among friends) and illegal activities (such as the drug trade, gambling, and prostitution).

Unemployment. (1) In economic terms, **involuntary unemployment** occurs if there are qualified workers who would be willing to work at prevailing wages but cannot find jobs. (2) In the official (U.S. Bureau of Labor Statistics) definition, a worker is unemployed if he or she (a) is not

working and (b) either is waiting for recall from layoff or has actively looked for work in the last 4 weeks.

Unemployment, frictional. See **frictional unemployment**.

Unemployment rate. The percentage of the labor force that is unemployed.

Unemployment, structural. See **structural unemployment**.

Unit-elastic demand. The situation, between **price-elastic demand** and **price-inelastic demand**, in which price elasticity is just equal to 1 in absolute value. See also **price elasticity of demand**. **Unlimited liability.** See **limited liability**.

Usury. The charging of an interest rate above a legal maximum on borrowed money.

Utility (also **total utility**) The total satisfaction derived from the consumption of goods or services. To be contrasted with **marginal utility**, which is the additional utility arising from consumption of an additional unit of the commodity.

Utility-possibility frontier. Analogous to the **production-possibility frontier**; a graph showing the utility or satisfaction of two consumers (or groups), one on each axis. It is downward-sloping to indicate that redistributing income from A to B will lower the utility of A and raise that of B. Points on the utility-possibility frontier display **allocative** (or **Pareto**) **efficiency**. For the allocation implied by these points, it is impossible to devise feasible outcomes that would make one party better off without making someone else worse off.

Value added. The difference between the value of goods produced and the cost of materials and supplies used in producing them. In a \$1 loaf of bread embodying \$0.60 worth of wheat and other materials, the value added is \$0.40. Value added consists of the wages, interest, and profit components added to the output by a firm or industry.

Value-added tax (or **VAT**). A tax levied upon a firm as a percentage of its value added.

Value, paradox of. See **paradox of value**.

Variable. A magnitude of interest that can be defined and measured. Important variables in economics include prices, quantities, interest rates, exchange rates, dollars of wealth, and so forth.

Variable cost. Refer to **cost, variable**.

Velocity of money. In serving its function as a medium of exchange, money moves from buyer to seller to new buyer and so on. Its "velocity" refers to the "speed" of this movement. The **income velocity of**

money is defined as nominal GNP divided by the total money supply for the period in question, or $V = P \times Q / M = \text{GNP} / M$.

Voluntary unemployment. The unemployment that occurs when an individual perceives the value of wages to be less than the opportunity use of time, say in leisure.

Wealth. The net value of tangible and financial items owned by a nation or person at a point of time. It equals all assets less all liabilities.

Welfare economics. The normative analysis of economic systems, i.e., the study of what is "wrong" or "right" about the economy's functioning.

Welfare state. A practice whereby the government of a mixed economy uses its fiscal and regulatory policies to modify the market distribution of income and to provide service to the population.

What, how, and for whom. The three fundamental problems of economic organization. What is the problem of how much of each possible good and service will be produced with the society's limited stock of resources or inputs. How is the choice of the particular technique by which each good of the what shall be produced. For whom refers to the distribution of consumption goods among the members of that society.

Yield. Same as the **interest rate** or **rate of return** on an asset.

Educational edition

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