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MICROECONOMICS

N. GREGORY MANKIW
AND MARK P. TAYLOR

FIFTH EDITION

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N. GREGORY MANKIW
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Australia • Brazil • Mexico • Singapore • United Kingdom • United States

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PREFACE

This fifth edition of *Microeconomics* reflects the way in which the discipline is evolving. Academics across the UK and Europe are engaged in a lively debate about the future direction of the subject both in the way it is taught at the undergraduate level and how research into developing new knowledge should be conducted. This new edition seeks to reflect some of this debate whilst retaining a familiar look and structure. Readers should note that this edition adapts Greg Mankiw's best-selling US undergraduate *Principles of Economics* text to reflect the needs of students and instructors in the UK and European market. As each new edition is written, the adaptation evolves and develops an identity distinct from the original US edition on which it is based. Responsibility for the UK and European edition lies with Cengage EMEA. Comments and feedback on this edition, therefore, should be addressed to the editorial team at Cengage EMEA for passing on to the authors via EMEAMankiw@cengage.com

We have aimed to retain the lively, engaging writing style and to continue to have the novice economics student in mind. The use of examples and the Case Studies and In the News articles help to provide some context to the theory and discussion throughout the text. The In the News articles are accompanied by questions which have been written to encourage you to think independently, to question, and to be critical of both received wisdom and what you read and hear about economic issues.

A complementary digital resource, *Maths for Economics: A Companion to Mankiw and Taylor Economics* has been produced alongside and seeks to develop further some of the mathematical elements of the text. MindTap provides a wealth of resources and support for the teaching and learning of economics at the undergraduate level and includes assignable assessment tasks, videos, case studies and more to provide everything needed for undergraduate study in one place. Welcome to the wonderful world of economics – learn to think like an economist and a whole new world will open up to you.

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PART 1 INTRODUCTION TO ECONOMICS

1 WHAT IS ECONOMICS?

THE ECONOMY AND ECONOMIC SYSTEMS

Every day, billions of people around the world make decisions. They make decisions about providing for the fundamentals in life such as food, clothing and shelter and how they use non-work time for leisure and domestic tasks. Making these decisions involves interaction with other people, with governments and business organizations. At any time, individuals could be mothers, fathers, sons, daughters, carers, employers, employees, houseworkers, producers, consumers, savers, taxpayers or benefit recipients. Many, but not all, of these interactions are related to some sort of exchange, normally with the use of a medium of exchange such as money, and sometimes to a direct exchange of services. Individuals purchase goods and services for final consumption and provide the inputs into production – land, labour and capital. We refer to these individuals collectively as 'households'. The organizations which buy these factors and use them to produce goods and services are referred to collectively as 'firms'.

The amount of interaction between households and firms – the amount of buying and selling which takes place – represents the level of **economic activity**. The more buying and selling there are, the higher the level of economic activity. Households and firms engaging in production and exchange in a particular geographic region are together referred to as the **economy**.

economic activity how much buying and selling goes on in the economy over a period of time
economy all the production and exchange activities that take place

Economics studies the interactions between households and firms in relation to exchange and the many decisions which are made in so doing. It also covers situations where some output is produced without the receipt of an income, such as the work done by unpaid carers and homemakers. It explores how people make a living; how resources are allocated among the many different uses they could be put to; and the way in which our activities influence not only our own well-being but also that of others and the environment.

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The Economic Problem

There are three questions that any economy must face:

- What goods and services should be produced?
- How should these goods and services be produced?
- Who should get the goods and services that have been produced?

To satisfy these questions, economies have resources at their disposal which are classified as land, labour and capital.

- **Land** – all the natural resources of the earth. This includes mineral deposits such as iron ore, coal, gold and copper; oil and gas; fish in the sea; and all the food and raw materials produced from the land.
- **Labour** – the human effort, both mental and physical, that goes into production. A worker in a factory producing precision tools, an investment banker, an unpaid carer, a road sweeper, a teacher – these are all forms of labour.
- **Capital** – the equipment and structures used to produce goods and services. Capital goods include machinery in factories, buildings, tractors, computers, cooking ovens – anything where the good is not used for its own sake but for the contribution it makes to production.

> **land** all the natural resources of the earth
> **labour** the human effort, both mental and physical, that goes into production
> **capital** the equipment and structures used to produce goods and services

Scarcity and Choice

It is often assumed that these resources are ultimately scarce in relation to the demand for them. As members of households, we invariably do not have the ability to meet all our wants and needs. Our needs are the necessities of life which enable us to survive – food and water, clothing, shelter and proper health care – and our wants are the things which we believe make for a more comfortable and enjoyable life – holidays, different styles of clothes, smartphones, leisure activities, the furniture and items we have in our houses, and so on. Our demand for these wants and needs is generally greater than our ability to satisfy them. **Scarcity** means that society has limited resources and therefore cannot produce all the goods and services households demand. Just as a household cannot give every member everything they want, a society cannot give every individual the highest standard of living to which they might aspire. Because of the tension between our wants and needs and scarcity, decisions must be made by households and firms about how to allocate our incomes and resources to meet our wants and needs.

> **scarcity** the limited nature of society's resources

Economics investigates the issues arising due to the decisions that households and firms make as a result of this tension. A typical textbook definition of **economics** is 'the study of how society makes choices in managing its scarce resources and the consequences of this decision-making'. This definition can, however, mask the complexity and extent of the reach of economics. We might characterize households as having unlimited wants, but not everyone in society is materialistic, which the idea of unlimited wants might imply. Some people are more content with the simple things in life and their choices are based on what they see as being important. These choices are no less valid but reflect the complexity of the subject. Some people choose to maintain their standard of living through crime. A decision to resort to crime has reasons and consequences, and these may be of as much interest to an economist as the reasons why firms choose to advertise their products or why central banks make decisions on monetary policy.

> **economics** the study of how society manages its scarce resources

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Some might point out that the very idea of scarcity should be questioned in some instances. In Greece, Spain and some other European countries, there are millions of people who want to work but who cannot find a job. It could be argued that labour is not scarce in this situation, but job vacancies certainly are. Economists will be interested in how such a situation arises and what might be done to alleviate the issues that arise as a result of high levels of unemployment.

The study of economics, therefore, has many facets but there are some central ideas which help define the field even though economics draws on related disciplines such as psychology, sociology, law, anthropology, geography, statistics and maths, among others. These central ideas provide themes around which this book is based, and which form the basis of many first-year undergraduate degree courses.

HOW PEOPLE MAKE DECISIONS

The behaviour of an economy reflects the behaviour of the individuals who make up the economy. We will now outline some of the core issues which economics explores in relation to individuals making decisions.

People Face Trade-offs

Households and firms must make choices. Making choices involves trade-offs. A **trade-off** is the loss of the benefits from a decision to forego or sacrifice one option, balanced against the benefits incurred from the choice made. When choosing between alternatives we must consider the benefits gained from choosing one course of action but recognize that we must forego the benefits that could arise from the alternatives. To get one thing we like, we usually must give up another thing that we might also like. Making decisions, therefore, requires trading off the benefits of one action against those of another.

trade-off the loss of the benefits from a decision to forego or sacrifice one option balanced against the benefits incurred from the choice made

To illustrate this important concept, we provide some examples below.

Example 1 Consider an economics undergraduate student who must decide how to allocate their time. They can spend all of their time studying, which will bring benefits such as a better class of degree; they can spend all their time enjoying leisure activities, which yield different benefits; or they can divide their time between the two. For every hour they study, they give up the benefits of an hour they could have devoted to spending time in the gym, riding a bicycle, watching TV, sleeping or working at a part-time job for some extra spending money. The student must trade-off the benefits from studying against the benefits of using their time in other ways.

Example 2 A firm might be faced with the decision on whether to invest in a new product or a new accounting system. Both bring benefits – the new product might result in improved revenues and profits in the future, and the accounting system may make it more effective in controlling its costs, thus helping its profits. If scarce investment funds are put into the accounting system, the firm must trade-off the benefits that the new product investment would have brought.

Example 3 When people are grouped into societies, they face different kinds of trade-offs which can highlight the interaction of individuals and firms within society in general. An example is the trade-off between a clean environment and a high level of income. Laws that require firms to reduce pollution raise the cost of producing goods and services. Because of the higher costs, firms can end up earning smaller profits, paying lower wages, charging higher prices, or some combination of these three. Thus, while pollution regulations give us the benefit of a cleaner environment and the improved levels of health that come with it, they can have the cost of reducing the incomes of the firms' owners, workers and customers.

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Efficiency and Equity An important trade-off that has interested economists for many years is the trade-off between efficiency and equity. In economics, efficiency deals with ways in which society gets the most it can (depending how this is defined) from its scarce resources. An outcome can be identified as being efficient by some measure, but not necessarily desirable. **Equity** looks at the extent to which the benefits of outcomes are distributed fairly among society's members. Often, when government policies are being designed, these two goals conflict. Because equity is about 'fairness' it inevitably involves value judgements. Differences in opinion lead to disagreements among policymakers and economists.

equity the property of distributing economic prosperity fairly among the members of society

There are some economists who dismiss the idea of a trade-off between equity and efficiency as a myth in some contexts, because the idea has been generalized to all situations. The historical context and origins of many economic ideas are important to understand. The origins of the equity and efficiency trade-off came from Arthur Okun in the 1970s. There are some economists who argue that improving equality can lead to improvements in efficiency – in effect that it is possible to have a bigger cake and to eat it.

Policies aimed at achieving a more equal distribution of economic well-being, such as the social security system, involve a trade-off between the effects of a benefits system versus the effects on the efficiency of the tax system that pays for it. A government decision to raise the top rate of income tax on what it considers 'the very rich' but to abolish income tax for those earning the minimum wage is effectively a redistribution of income from the rich to the poor. It provides incentive effects for some in society to seek work, but may reduce the reward for working hard, so some in society choose to work less or even move to another country where the tax system is less onerous. Whether the trade-off is a 'good' thing is dependent on the philosophy, belief sets and opinions of the decision-makers, and the power which they have in society. Recognizing that people face trade-offs does not by itself tell us what decisions they will or should make. Acknowledging and understanding the consequences of trade-offs is important, because people are likely to make more informed decisions if they understand the options they have available.

SELF TEST You will often hear the adage 'there is no such thing as a free lunch'. Does this simply refer to the fact that someone must have paid for the lunch to be provided and served? Or does the recipient of the 'free lunch' also incur a cost?

Opportunity Cost

Because people face trade-offs, making decisions requires comparing the costs and benefits of alternative courses of action. In many cases, however, the costs of an action are not as obvious as might first appear.

Consider, for example, the decision whether to go to university. The benefits are intellectual enrichment and a lifetime of better job opportunities. In considering the costs, you might be tempted to add up the money you spend on tuition fees, resources and living expenses over the period of the degree. This approach is intuitive and might be a way in which non-economists would approach the decision. An economist would point out that even if you decided to leave full-time education, you would still incur living expenses and so these costs would be incurred in any event. Accommodation becomes a cost of higher education only if it is more expensive at university than elsewhere.

This calculation of costs ignores the largest cost of a university education – your time. For most students, the wages given up attending university are the largest single cost of their higher education. When making decisions it is sometimes more helpful to measure the cost in terms of what other options have had to be sacrificed rather than in money terms. **Opportunity cost** is the measure of the options sacrificed in making a decision. The opportunity cost of going to university is the wages from full-time work that you have had to sacrifice.

opportunity cost whatever must be given up to obtain some item; the value of the benefits foregone (sacrificed)

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Calculating Opportunity Costs Opportunity cost is the cost expressed in terms of the next best alternative sacrificed – what must be given up in order to acquire something. As a general principle, we can express the opportunity cost as a ratio expressed as the sacrifice in one good in terms of the gain in the other:

$$Opportunity\ cost\ of\ good\ y = \frac{Sacrifice\ of\ good\ x}{Gain\ in\ good\ y}$$

Expressing the opportunity cost in terms of good *x* would give:

$$Opportunity\ cost\ of\ good\ x = \frac{Sacrifice\ of\ good\ y}{Gain\ in\ good\ x}$$

Opportunity cost can be expressed in terms of either good – they are the reciprocal of each other.

Thinking at the Margin

Decisions in life are rarely straightforward and usually involve weighing up costs and benefits. Having a framework or principle on which to base decision-making can help if we want to maximize benefits or minimize costs. Thinking at the margin is one such framework that economists adopt in thinking about decision-making. **Marginal changes** describe small incremental adjustments to an existing plan of action. Marginal analysis is based around an assumption that **economic agents** (an individual, firm or organization that has an impact in some way on an economy) are seeking to maximize or minimize outcomes when making decisions. Consumers may be assumed to seek to maximize the satisfaction they gain from their incomes, and firms to maximize profits and minimize costs. Maximizing and minimizing behaviour is based on a further assumption that economic agents behave rationally.

marginal changes small incremental adjustments to a plan of action
economic agents an individual, firm or organization that has an impact in some way on an economy

It is important to stop and consider what we mean by the term 'rational' in this context. When some economists use the term '**rational**' in the context of decision-making, it simply means the assumption that decision-makers can make consistent choices between alternatives. We will look at this in more detail later in the book, but at this stage we will express rationality based on decision-makers' ability to rank their preferences and do the best they can with their existing resources. Thinking at the margin means that decision-makers choose a course of action such that the marginal cost is equal to the marginal benefit. If a decision results in greater marginal benefits than marginal costs, it is worth making that decision and continuing up to the point where the marginal cost of the decision is equal to the marginal benefit.

rational the assumption that decision-makers can make consistent choices between alternatives

The assumption of rational behaviour provides a framework around which decisions can be analyzed and has been a basic tenet of economics since the 1870s, with thinkers such as William Stanley Jevons and Carl Menger building on work by David Ricardo and Jeremy Bentham, which became part of the so-called marginalist school. The assumptions of rational economic behaviour have implications which have been subject to criticism. In studying economic models which rely on the assumption of rational behaviour, it is important to remember that if these assumptions are relaxed, outcomes might be very different. We will cover a number of economic models which are based on this assumption, because it provides a view into the way in which economic analysis has developed historically and how it is subject to evolution and change. It also provides a way of thinking about issues which can be contrasted with other ways of thinking when different assumptions are held.

People Respond to Incentives

If we assume the principle of rational behaviour and that people make decisions by comparing costs and benefits, it is logical to assume that their behaviour may change when the costs or benefits change. That

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is, people respond to incentives. The threat of a fine and the removal of a driving licence is designed to regulate the way in which people drive and park their cars; putting a price on the provision of plastic bags in supermarkets aims to encourage people to re-use bags and reduce the total number used.

There has been an increase in the amount of research conducted on incentives because the intentions of policymakers do not always lead to the outcomes expected or desired. A fine imposed on parents who are late picking up their children from day care centres might be expected to reduce the number of late pickups, but one study in Israel showed that far from reducing the number of late pickups, parents were willing to pay the fine and the number arriving late actually increased. Such consequences are referred to as 'unintended consequences'.

SELF TEST What sort of incentives might governments put in place to encourage workers to find work and get off welfare benefits? What might be the unintended consequences of the incentives you identify?

HOW PEOPLE INTERACT

Decision-making not only affects ourselves but other economic agents as well. We will now explore some issues which arise when economic agents interact with others.

Trade Can Make Everyone Better Off

The United States and China are competitors with Europe in the world economy because US and Chinese firms produce many of the same goods as European firms. It might be thought that if China increases its share of world trade at the expense of Europe this might be bad news for people in Europe. This might not be the case.

Trade between Europe and the United States and China is not like a sports contest, where one side wins and the other side loses (a zero-sum game). In some circumstances trade between economies can make all better off. Households, firms and countries have different resource endowments; individuals have talents and skills that allow them to produce some things more efficiently than others; some firms have experience and expertise in the production of goods and services; and some countries, like Spain, are blessed by plenty of sunshine which allows their farmers to grow high quality soft fruit. Trade allows individuals, firms and countries to specialize in the activities they do best. With the income they receive from specializing they can trade with others who are also specializing and can improve their standard of living as a result.

However, while trade can provide benefits and winners, there are also likely to be costs and losers. The economic development of some countries in the last 50 years has meant that many people have access to cheap, good quality goods and services as a result of the export of these goods and services. For workers and employers in these industries in developed economies, the competition from developing countries might mean that they find themselves without work or must close their businesses. In some situations, it is difficult for these people to find alternative work, and whole communities can be greatly affected by the changes being experienced. They may not agree that 'trade can benefit everyone'.

The Capitalist Economic System

The economic problem highlights three questions that any society must answer. What goods and services should be produced, how they are to be produced and who will get what is produced are determined by the economic system. An **economic system** is the way in which resources are organized and allocated to provide for the needs of an economy's citizens. In many countries of the world, a capitalist economic system based on markets is the primary way in which the three questions are addressed. A **capitalist economic system** incorporates the principles of the private ownership of factors of production to produce goods and services which are exchanged through a price mechanism. Production is operated primarily for profit.

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economic system the way in which resources are organized and allocated to provide for the needs of an economy's citizens
capitalist economic system a system which relies on the private ownership of factors of production to produce goods and services which are exchanged through a price mechanism and where production is operated primarily for profit

Capitalist economic systems have proved capable of raising the standard of living of millions of people over the last 200 years. We can measure the standard of living in terms of the income that people earn which allows them to purchase the goods and services they need to survive and enjoy life. While capitalist systems have increased living standards for many, it is not the case that everyone in society benefits equally. Capitalism has meant that some people and countries have become very rich whereas others remain poor. The existence of the profit motive provides an incentive for entrepreneurs to take risks to organize factors of production. This dynamism in capitalist systems not only leads to developments in technology and capital efficiency which help generate profits for the individuals and firms concerned but also increases knowledge and information in society as a whole, which further contributes to economic development.

Critics of capitalist systems argue that they are inherently unstable and lurch from boom to bust. In addition, capitalist systems favour those who have acquired ownership of factor inputs. Ownership of factor inputs can result in the exploitation of workers. Owners of factors of production can wield considerable economic and political power which can distort resource allocation. Karl Marx spent a large part of his life seeking to understand and analyze the capitalist system and develop theories to explain why it exploited workers and was unstable.

Markets Can Be a Good Way to Organize Economic Activity

The role of markets in capitalist economic systems is central. In a **market economy**, the three key questions of the economic problem are addressed through the decentralized decisions of many firms and households as they interact in markets for goods and services. Firms decide whom to hire and what to make. Households decide which firms to work for and what to buy with their incomes. These firms and households interact in the marketplace, where prices and, it is assumed, self-interest guide their decisions.

market economy an economy that addresses the three key questions of the economic problem by allocating resources through the decentralized decisions of many firms and households as they interact in markets for goods and services

In a pure market economy (one without any government intervention) no one is considering the economic well-being of society as a whole. Free markets contain many buyers and sellers of numerous goods and services, and all of them are interested, primarily, in their own well-being. Yet, despite decentralized decision-making and self-interested decision-makers, market economies have proven remarkably successful in organizing economic activity in a way that can promote overall economic well-being for millions of people, even though it is recognized there are inequalities that will arise.

Planned Economic Systems The inequitable distribution of wealth in capitalist societies which was witnessed in the countries which benefitted from the Industrial Revolution in the 1700s and 1800s led to the development of other economic systems, most notably **planned economic systems**, sometimes referred to as communist systems or *command economies*. Communist countries worked on the premise that central planners could guide economic activity and answer the three key questions of the economic problem. The theory behind central planning was that the government could organize economic activity in a way that promoted economic well-being for the country as a whole and led to a more equitable outcome.

planned economic systems economic activity organized by central planners who decided on the answers to the fundamental economic questions

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Today, most countries that once had centrally planned economies such as Russia, Poland, Angola, Mozambique and the Democratic Republic of Congo have abandoned this system and are developing more market-based economies.

FYI

Adam Smith and the Invisible Hand

Adam Smith published *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776 and it is a landmark in economics. Smith's work reflected a point of view that was typical of so-called enlightenment writers at the end of the eighteenth century – that individuals are usually best left to their own devices, without government guiding their actions. This political philosophy provides the intellectual basis for the market economy.

Here is Adam Smith's description of how people interact in a market economy:

Man (sic) has almost constant occasion for the help of his brethren, and it is vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and show them that it is for their own advantage to do for him what he requires of them … It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest…

Every individual … neither intends to promote the public interest, nor knows how much he is promoting it … He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest, he frequently promotes that of the society more effectually than when he really intends to promote it.

Smith suggested that participants in the economy are motivated by self-interest and that the 'invisible hand' of the marketplace guides this self-interest into promoting general economic well-being. Smith's use of the term 'self-interest' should not be interpreted as 'selfishness'. Smith was interested in how humans pursue their own self-interest *in their own way*. As the 2002 Nobel Prize in Economics winner, Vernon L. Smith, put it in his Prize Lecture, 'doing good for others does not require deliberate action to further the perceived interest of others'.

The term 'invisible hand' is widely used in economics to describe the way market economies allocate scarce resources but interestingly, Adam Smith only used the phrase once in *The Wealth of Nations*. The phrase was also used in an earlier book, *The Theory of Moral Sentiments*. In both instances, Smith outlined the idea that self-interested individuals' actions could produce socially desirable results.

In the *Theory of Moral Sentiments*, the phrase is used to show how human desire for luxury can have the effect of providing employment for others, and in *The Wealth of Nations* the phrase is used in relation to investment choices. There are similarities in sentiment in both uses, but in the former case, Smith, it seems, was seeking to explore the political philosophy of the economic system he was writing about; a system which was very different in many respects to that which we witness today.

Governments Can Sometimes Improve Market Outcomes

An economy can allocate some goods and services through the price mechanism, but markets do not always lead to efficient or equitable outcomes. In some cases, goods and services would not be provided by a market system because it is not practicable to do so, and in other cases market-based allocations might be deemed undesirable, with either too few or too many goods and services consumed. The capitalist system and markets rely on laws and regulations to ensure that property rights are enforced.

Governments provide goods and services which might not be provided in sufficient quantities in a market system and set the legal and regulatory framework within which firms and households can operate. Government intervention in markets may aim to promote efficiency *and* equity. That is, most policies aim either to enlarge the economic cake, or change the way in which the cake is divided, or even try to achieve both. Market systems do not always ensure that everyone has sufficient food, decent clothing

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and adequate health care. Many public policies, such as income tax and the social security system, are designed to achieve a more equitable distribution of economic well-being.

When markets do allocate resources, the resulting outcomes might still be deemed inefficient. Economists use the term '**market failure**' to refer to a situation in which the market on its own fails to produce an efficient allocation of resources. One possible cause of market failure is an **externality**, which is the uncompensated impact, both negative and positive, of one person's actions on the well-being of a bystander (a third party). For instance, the classic example of a negative externality is pollution. Another possible cause of market failure is **market power**, which refers to the ability of a single person or business (or group of businesses) to unduly influence market prices or output. In the presence of market failure, well-designed public policy can enhance economic efficiency.

market failure a situation where scarce resources are not allocated to their most efficient use
externality the cost or benefit of one person's decision on the well-being of a bystander (a third party) which the decision-maker does not take into account in making the decision
market power the ability of a single economic agent (or small group of agents) to have a substantial influence on market prices or output

To say that the government *can* improve on market outcomes at times does not mean that it always *will*. Public policy is made by a political process that is also imperfect. Sometimes policies are designed simply to reward the politically powerful. Sometimes they are made by well-intentioned leaders who are not fully informed. One goal of the study of economics is to help you judge when a government policy is justifiable to promote efficiency or equity, and when it is not.

HOW THE ECONOMY AS A WHOLE WORKS

We started by discussing how individuals make decisions and then looked at how people interact with one another. We will now look at issues arising that concern the workings of the economy as a whole.

Microeconomics and Macroeconomics

Since roughly the 1930s, the field of economics has been divided into two broad subfields. **Microeconomics** is the study of how households and firms make decisions and how they interact in specific markets. **Macroeconomics** is the study of economy-wide phenomena. The Nobel Prize winning economist Ragnar Frisch is credited with being the first to use the two terms (along with the term 'econometrics' incidentally), and the Cambridge economist Joan Robinson, an associate of Keynes, was one of the first to define macroeconomics, referring to it as 'the theory of output as a whole'.

microeconomics the study of how households and firms make decisions and how they interact in markets
macroeconomics the study of economy-wide phenomena, including inflation, unemployment and economic growth

Microeconomics might involve the study of the effects of a congestion tax on the use of cars in a city centre, the impact of foreign competition on the European car industry, or the effects of attending university on a person's lifetime earnings. A macroeconomist might study the effects of borrowing by national governments, the changes over time in an economy's rate of unemployment or alternative policies to raise growth in national living standards.

Microeconomics and macroeconomics are closely intertwined. Because changes in the overall economy arise from the decisions of millions of individuals, it is impossible to understand macroeconomic developments without considering the associated microeconomic decisions. For example, a macroeconomist might study the effect of a cut in income tax on the overall production of goods and services in

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