

Economics

as a ***Business Environment***

Programme:

Master of Business Administration

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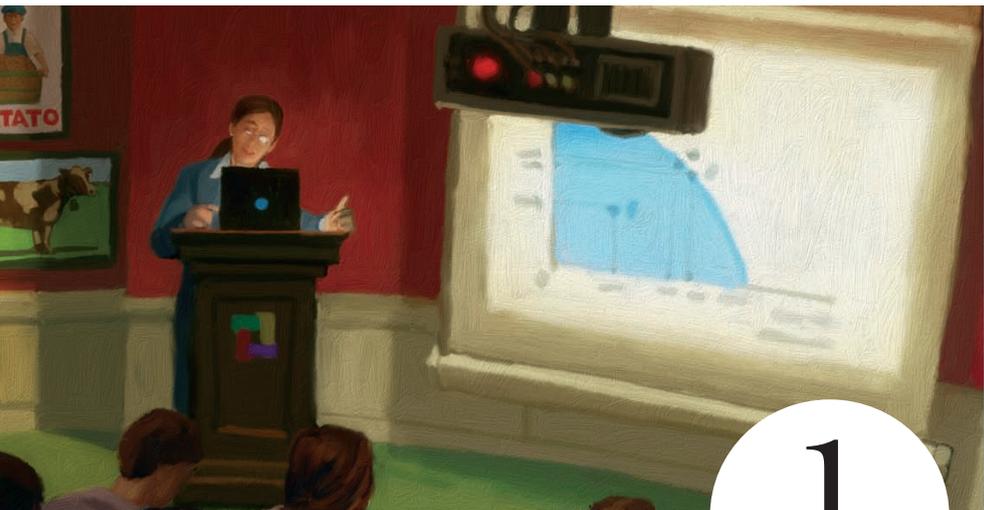
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Ten Principles of Economics

The word *economy* comes from the Greek word *oikonomos*, which means “one who manages a household.” At first, this origin might seem peculiar. But in fact, households and economies have much in common.

A household faces many decisions. It must decide which members of the household do which tasks and what each member gets in return: Who cooks dinner? Who does the laundry? Who gets the extra dessert at dinner? Who gets to choose what TV show to watch? In short, the household must allocate its scarce resources among its various members, taking into account each member’s abilities, efforts, and desires.

Like a household, a society faces many decisions. A society must decide what jobs will be done and who will do them. It needs some people to grow food, other people to make clothing, and still others to design computer software. Once society has allocated people (as well as land, buildings, and machines) to various jobs, it must also allocate the output of goods and services that they produce. It must decide who will eat caviar and who will eat potatoes. It must decide who will drive a Ferrari and who will take the bus.

The management of society’s resources is important because resources are scarce. **Scarcity** means that society has limited resources and therefore cannot produce all the goods and services people wish to have. Just as a household cannot give every member everything he or she wants, a society cannot give every individual the highest standard of living to which he or she might aspire.

scarcity
the limited nature of
society’s resources

economics
the study of how society
manages its scarce
resources

Economics is the study of how society manages its scarce resources. In most societies, resources are allocated not by an all-powerful dictator but through the combined actions of millions of households and firms. Economists therefore study how people make decisions: how much they work, what they buy, how much they save, and how they invest their savings. Economists also study how people interact with one another. For instance, they examine how the multitude of buyers and sellers of a good together determine the price at which the good is sold and the quantity that is sold. Finally, economists analyze forces and trends that affect the economy as a whole, including the growth in average income, the fraction of the population that cannot find work, and the rate at which prices are rising.



Although the study of economics has many facets, the field is unified by several central ideas. In this chapter, we look at *Ten Principles of Economics*. Don’t worry if you don’t understand them all at first or if you don’t find them completely convincing. In later chapters, we will explore these ideas more fully. The ten principles are introduced here to give you an overview of what economics is all about. You can think of this chapter as a “preview of coming attractions.”

HOW PEOPLE MAKE DECISIONS

There is no mystery to what an economy is. Whether we are talking about the economy of Los Angeles, of the United States, or of the whole world, an economy is just a group of people interacting with one another as they go about their lives. Because the behavior of an economy reflects the behavior of the individuals who make up the economy, we start our study of economics with four principles of individual decision making.

Principle 1: People Face Trade-offs

The first lesson about making decisions is summarized in the adage “There is no such thing as a free lunch.” To get one thing that we like, we usually have to give up another thing that we like. Making decisions requires trading off one goal against another.

Consider a student who must decide how to allocate her most valuable resource—her time. She can spend all of her time studying economics; she can spend all of her time studying psychology; or she can divide her time between the two fields. For every hour she studies one subject, she gives up an hour she could have used studying the other. And for every hour she spends studying, she gives up an hour that she could have spent napping, bike riding, watching TV, or working at her part-time job for some extra spending money.

Or consider parents deciding how to spend their family income. They can buy food, clothing, or a family vacation. Or they can save some of the family income for retirement or the children’s college education. When they choose to spend an extra dollar on one of these goods, they have one less dollar to spend on some other good.

When people are grouped into societies, they face different kinds of trade-offs. The classic trade-off is between “guns and butter.” The more we spend on national defense (guns) to protect our shores from foreign aggressors, the less we can spend on consumer goods (butter) to raise our standard of living at home. Also important in modern society is the trade-off between a clean envi-

ronment 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, these firms 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 health that comes with it, they have the cost of reducing the incomes of the firms' owners, workers, and customers.

Another trade-off society faces is between efficiency and equity. **Efficiency** means that society is getting the maximum benefits from its scarce resources. **Equity** means that those benefits are distributed fairly among society's members. In other words, efficiency refers to the size of the economic pie, and equity refers to how the pie is divided. Often, when government policies are designed, these two goals conflict.

Consider, for instance, policies aimed at achieving a more equal distribution of economic well-being. Some of these policies, such as the welfare system or unemployment insurance, try to help the members of society who are most in need. Others, such as the individual income tax, ask the financially successful to contribute more than others to support the government. Although these policies have the benefit of achieving greater equity, they have a cost in terms of reduced efficiency. When the government redistributes income from the rich to the poor, it reduces the reward for working hard; as a result, people work less and produce fewer goods and services. In other words, when the government tries to cut the economic pie into more equal slices, the pie gets smaller.

Recognizing that people face trade-offs does not by itself tell us what decisions they will or should make. A student should not abandon the study of psychology just because doing so would increase the time available for the study of economics. Society should not stop protecting the environment just because environmental regulations reduce our material standard of living. The poor should not be ignored just because helping them distorts work incentives. Nonetheless, acknowledging life's trade-offs is important because people are likely to make good decisions only if they understand the options that they have available.

Principle 2: The Cost of Something Is What You Give Up to Get It

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

Consider, for example, the decision to go to college. The benefit is intellectual enrichment and a lifetime of better job opportunities. But what is the cost? To answer this question, you might be tempted to add up the money you spend on tuition, books, room, and board. Yet this total does not truly represent what you give up to spend a year in college.

The first problem with this answer is that it includes some things that are not really costs of going to college. Even if you quit school, you need a place to sleep and food to eat. Room and board are costs of going to college only to the extent that they are more expensive at college than elsewhere. Indeed, the cost of room and board at your school might be less than the rent and food expenses that you would pay living on your own. In this case, the savings on room and board are a benefit of going to college.

efficiency
the property of society getting the most it can from its scarce resources

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

opportunity cost
whatever must be given up to obtain some item

rational people
people who systematically and purposefully do the best they can to achieve their objectives

marginal changes
small incremental adjustments to a plan of action

The second problem with this calculation of costs is that it ignores the largest cost of going to college—your time. When you spend a year listening to lectures, reading textbooks, and writing papers, you cannot spend that time working at a job. For most students, the wages given up to attend school are the largest single cost of their education.

The **opportunity cost** of an item is what you give up to get that item. When making any decision, such as whether to attend college, decision makers should be aware of the opportunity costs that accompany each possible action. In fact, they usually are. College athletes who can earn millions if they drop out of school and play professional sports are well aware that their opportunity cost of college is very high. It is not surprising that they often decide that the benefit is not worth the cost.

Principle 3: Rational People Think at the Margin

Economists normally assume that people are rational. **Rational people** systematically and purposefully do the best they can to achieve their objectives, given the opportunities they have. As you study economics, you will encounter firms that decide how many workers to hire and how much of their product to manufacture and sell to maximize profits. You will encounter consumers who buy a bundle of goods and services to achieve the highest possible level of satisfaction, subject to their incomes and the prices of those goods and services.

Rational people know that decisions in life are rarely black and white but usually involve shades of gray. At dinnertime, the decision you face is not between fasting or eating like a pig but whether to take that extra spoonful of mashed potatoes. When exams roll around, your decision is not between blowing them off or studying 24 hours a day but whether to spend an extra hour reviewing your notes instead of watching TV. Economists use the term **marginal changes** to describe small incremental adjustments to an existing plan of action. Keep in mind that *margin* means "edge," so marginal changes are adjustments around the edges of what you are doing. Rational people often make decisions by comparing *marginal benefits* and *marginal costs*.

For example, consider an airline deciding how much to charge passengers who fly standby. Suppose that flying a 200-seat plane across the United States costs the airline \$100,000. In this case, the average cost of each seat is \$100,000/200, which is \$500. One might be tempted to conclude that the airline should never sell a ticket for less than \$500. In fact, however, the airline can raise its profits by thinking at the margin. Imagine that a plane is about to take off with ten empty seats, and a standby passenger waiting at the gate will pay \$300 for a seat. Should the airline sell the ticket? Of course it should. If the plane has empty seats, the cost of adding one more passenger is minuscule. Although the *average* cost of flying a passenger is \$500, the *marginal* cost is merely the cost of the bag of peanuts and can of soda that the extra passenger will consume. As long as the standby passenger pays more than the marginal cost, selling the ticket is profitable.

Marginal decision making can help explain some otherwise puzzling economic phenomena. Here is a classic question: Why is water so cheap, while diamonds are so expensive? Humans need water to survive, while diamonds are unnecessary; but for some reason, people are willing to pay much more for a diamond than for a cup of water. The reason is that a person's willingness to pay for any good is based on the marginal benefit that an extra unit of the good would yield. The marginal benefit, in turn, depends on how many units a person already has. Although water is essential, the marginal benefit of an extra cup

is small because water is plentiful. By contrast, no one needs diamonds to survive, but because diamonds are so rare, people consider the marginal benefit of an extra diamond to be large.

A rational decision maker takes an action if and only if the marginal benefit of the action exceeds the marginal cost. This principle can explain why airlines are willing to sell a ticket below average cost and why people are willing to pay more for diamonds than for water. It can take some time to get used to the logic of marginal thinking, but the study of economics will give you ample opportunity to practice.

Principle 4: People Respond to Incentives

An **incentive** is something (such as the prospect of a punishment or a reward) that induces a person to act. Because rational people make decisions by comparing costs and benefits, they respond to incentives. You will see that incentives play a central role in the study of economics. One economist went so far as to suggest that the entire field could be simply summarized: “People respond to incentives. The rest is commentary.”

Incentives are crucial to analyzing how markets work. For example, when the price of an apple rises, people decide to eat more pears and fewer apples because the cost of buying an apple is higher. At the same time, apple orchards decide to hire more workers and harvest more apples because the benefit of selling an apple is also higher. As we will see, the effect of a good’s price on the behavior of buyers and sellers in a market—in this case, the market for apples—is crucial for understanding how the economy allocates scarce resources.

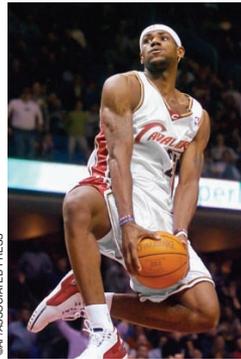
Public policymakers should never forget about incentives because many policies change the costs or benefits that people face and, therefore, alter their behavior. A tax on gasoline, for instance, encourages people to drive smaller, more fuel-efficient cars. That is one reason people drive smaller cars in Europe, where gasoline taxes are high, than in the United States, where gasoline taxes are low. A gasoline tax also encourages people to take public transportation rather than drive and to live closer to where they work. If the tax were larger, more people would be driving hybrid cars, and if it were large enough, they would switch to electric cars.

When policymakers fail to consider how their policies affect incentives, they often end up with results they did not intend. For example, consider public policy regarding auto safety. Today, all cars have seat belts, but this was not true 50 years ago. In the 1960s, Ralph Nader’s book *Unsafe at Any Speed* generated much public concern over auto safety. Congress responded with laws requiring seat belts as standard equipment on new cars.

How does a seat belt law affect auto safety? The direct effect is obvious: When a person wears a seat belt, the probability of surviving a major auto accident rises. But that’s not the end of the story because the law also affects behavior by altering incentives. The relevant behavior here is the speed and care with which drivers operate their cars. Driving slowly and carefully is costly because it uses the driver’s time and energy. When deciding how safely to drive, rational people compare the marginal benefit from safer driving to the marginal cost. They drive more slowly and carefully when the benefit of increased safety is high. It is no surprise, for instance, that people drive more slowly and carefully when roads are icy than when roads are clear.

Consider how a seat belt law alters a driver’s cost–benefit calculation. Seat belts make accidents less costly because they reduce the likelihood of injury or

incentive
something that induces
a person to act



BASKETBALL STAR LEBRON JAMES UNDERSTANDS OPPORTUNITY COST AND INCENTIVES. HE DECIDED TO SKIP COLLEGE AND GO STRAIGHT TO THE PROS, WHERE HE HAS EARNED MILLIONS OF DOLLARS AS ONE OF THE NBA’S TOP PLAYERS.

death. In other words, seat belts reduce the benefits of slow and careful driving. People respond to seat belts as they would to an improvement in road conditions—by driving faster and less carefully. The end result of a seat belt law, therefore, is a larger number of accidents. The decline in safe driving has a clear, adverse impact on pedestrians, who are more likely to find themselves in an accident but (unlike the drivers) don’t have the benefit of added protection.

At first, this discussion of incentives and seat belts might seem like idle speculation. Yet in a classic 1975 study, economist Sam Peltzman showed that auto-safety laws have had many of these effects. According to Peltzman’s evidence, these laws produce both fewer deaths per accident and more accidents. He concluded that the net result is little change in the number of driver deaths and an increase in the number of pedestrian deaths.

Peltzman’s analysis of auto safety is an offbeat example of the general principle that people respond to incentives. When analyzing any policy, we must consider not only the direct effects but also the indirect and sometimes less obvious effects that work through incentives. If the policy changes incentives, it will cause people to alter their behavior.

Quick Quiz List and briefly explain the four principles of individual decision making.

HOW PEOPLE INTERACT

The first four principles discussed how individuals make decisions. As we go about our lives, many of our decisions affect not only ourselves but other people as well. The next three principles concern how people interact with one another.

Principle 5: Trade Can Make Everyone Better Off

You have probably heard on the news that the Japanese are our competitors in the world economy. In some ways, this is true because American and Japanese firms produce many of the same goods. Ford and Toyota compete for the same customers in the market for automobiles. Apple and Sony compete for the same customers in the market for digital music players.

Yet it is easy to be misled when thinking about competition among countries. Trade between the United States and Japan is not like a sports contest in which one side wins and the other side loses. In fact, the opposite is true: Trade between two countries can make each country better off.

To see why, consider how trade affects your family. When a member of your family looks for a job, he or she competes against members of other families who are looking for jobs. Families also compete against one another when they go shopping because each family wants to buy the best goods at the lowest prices. So in a sense, each family in the economy is competing with all other families.

Despite this competition, your family would not be better off isolating itself from all other families. If it did, your family would need to grow its own food, make its own clothes, and build its own home. Clearly, your family gains much from its ability to trade with others. Trade allows each person to specialize in the



“FOR \$5 A WEEK YOU CAN WATCH BASEBALL WITHOUT BEING NAGGED TO CUT THE GRASS!”

activities he or she does best, whether it is farming, sewing, or home building. By trading with others, people can buy a greater variety of goods and services at lower cost.

Countries as well as families benefit from the ability to trade with one another. Trade allows countries to specialize in what they do best and to enjoy a greater variety of goods and services. The Japanese, as well as the French and the Egyptians and the Brazilians, are as much our partners in the world economy as they are our competitors.

Principle 6: Markets Are Usually a Good Way to Organize Economic Activity

The collapse of communism in the Soviet Union and Eastern Europe in the 1980s may be the most important change in the world during the past half century. Communist countries worked on the premise that government officials were in the best position to determine the allocation of scarce resources in the economy. These central planners decided what goods and services were produced, how much was produced, and who produced and consumed these goods and services. The theory behind central planning was that only the government could organize economic activity in a way that promoted economic well-being for the country as a whole.

Today, most countries that once had centrally planned economies have abandoned this system and are trying to develop market economies. In a **market economy**, the decisions of a central planner are replaced by the decisions of millions of firms and households. 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 self-interest guide their decisions.

At first glance, the success of market economies is puzzling. After all, in a market economy, no one is looking out for 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 promotes overall economic well-being.

In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations*, economist Adam Smith made the most famous observation in all of economics: Households and firms interacting in markets act as if they are guided by an “invisible hand” that leads them to desirable market outcomes. One of our goals in this book is to understand how this invisible hand works its magic.

As you study economics, you will learn that prices are the instrument with which the invisible hand directs economic activity. In any market, buyers look at the price when determining how much to demand, and sellers look at the price when deciding how much to supply. As a result of the decisions that buyers and sellers make, market prices reflect both the value of a good to society and the cost to society of making the good. Smith’s great insight was that prices adjust to guide these individual buyers and sellers to reach outcomes that, in many cases, maximize the welfare of society as a whole.

There is an important corollary to the skill of the invisible hand in guiding economic activity: When the government prevents prices from adjusting naturally to supply and demand, it impedes the invisible hand’s ability to coordinate the millions of households and firms that make up the economy. This corollary explains

market economy

an economy that allocates resources through the decentralized decisions of many firms and households as they interact in markets for goods and services

why taxes adversely affect the allocation of resources: Taxes distort prices and thus the decisions of households and firms. It also explains the even greater harm caused by policies that directly control prices, such as rent control. And it explains the failure of communism. In communist countries, prices were not determined in the marketplace but were dictated by central planners. These planners lacked the information that gets reflected in prices that are free to respond to market forces. Central planners failed because they tried to run the economy with one hand tied behind their backs—the invisible hand of the marketplace.

Principle 7: Governments Can Sometimes Improve Market Outcomes

If the invisible hand of the market is so great, why do we need government? One purpose of studying economics is to refine your view about the proper role and scope of government policy.

One reason we need government is that the invisible hand can work its magic only if the government enforces the rules and maintains the institutions that are



FYI

Adam Smith and the Invisible Hand

It may be only a coincidence that Adam Smith’s

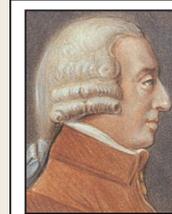
great book *The Wealth of Nations* was published in 1776, the exact year American revolutionaries signed the Declaration of Independence. But the two documents share a point of view that was prevalent at the time: Individuals are usually best left to their own devices, without the heavy hand of government guiding their actions. This political philosophy provides the intellectual basis for the market economy and for free society more generally.

Why do decentralized market economies work so well? Is it because people can be counted on to treat one another with love and kindness? Not at all. Here is Adam Smith’s description of how people interact in a market economy:

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.



Adam Smith

Man 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 favor, and show them that it is for their own advantage to do for him what he

Smith is saying 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.

Many of Smith’s insights remain at the center of modern economics. Our analysis in the coming chapters will allow us to express Smith’s conclusions more precisely and to analyze fully the strengths and weaknesses of the market’s invisible hand.

key to a market economy. Most important, markets work only if **property rights** are enforced. A farmer won't grow food if he expects his crop to be stolen; a restaurant won't serve meals unless it is assured that customers will pay before they leave; and a music company won't produce CDs if too many potential customers avoid paying by making illegal copies. We all rely on government-provided police and courts to enforce our rights over the things we produce—and the invisible hand counts on our ability to enforce our rights.

Yet there is another, more profound reason we need government: The invisible hand is powerful, but it is not omnipotent. Although markets are often a good way to organize economic activity, this rule has some important exceptions. There are two broad reasons for a government to intervene in the economy and change the allocation of resources that people would choose on their own: to promote efficiency and to promote equity. That is, most policies aim either to enlarge the economic pie or to change how the pie is divided.

Consider first the goal of efficiency. Although the invisible hand usually leads markets to allocate resources efficiently, this is not always the case. 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 impact of one person's actions on the well-being of a bystander. The classic example of an externality is pollution. Another possible cause of market failure is **market power**, which refers to the ability of a single person (or small group) to unduly influence market prices. For example, if everyone in town needs water but there is only one well, the owner of the well is not subject to the rigorous competition with which the invisible hand normally keeps self-interest in check. In the presence of externalities or market power, well-designed public policy can enhance economic efficiency.

The invisible hand may also fail to ensure that economic prosperity is distributed equitably. A market economy rewards people according to their ability to produce things that other people are willing to pay for. The world's best basketball player earns more than the world's best chess player simply because people are willing to pay more to watch basketball than chess. The invisible hand does not ensure that everyone has sufficient food, decent clothing, and adequate healthcare. Many public policies, such as the income tax and the welfare system, aim to achieve a more equitable distribution of economic well-being.

To say that the government *can* improve on market outcomes at times does not mean that it always *will*. Public policy is made not by angels but by a political process that is far from perfect. Sometimes policies are designed simply to reward the politically powerful. Sometimes they are made by well-intentioned leaders who are not fully informed. As you study economics, you will become a better judge of when a government policy is justifiable because it promotes efficiency or equity and when it is not.

Quick Quiz List and briefly explain the three principles concerning people's economic interactions.

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. All these decisions and interactions

property rights

the ability of an individual to own and exercise control over scarce resources

market failure

a situation in which a market left on its own fails to allocate resources efficiently

externality

the impact of one person's actions on the well-being of a bystander

market power

the ability of a single economic actor (or small group of actors) to have a substantial influence on market prices

together make up "the economy." The last three principles concern the workings of the economy as a whole.

Principle 8: A Country's Standard of Living Depends on Its Ability to Produce Goods and Services

The differences in living standards around the world are staggering. In 2003, the average American had an income of about \$37,500. In the same year, the average Mexican earned \$8,950, and the average Nigerian earned \$900. Not surprisingly, this large variation in average income is reflected in various measures of the quality of life. Citizens of high-income countries have more TV sets, more cars, better nutrition, better healthcare, and a longer life expectancy than citizens of low-income countries.

Changes in living standards over time are also large. In the United States, incomes have historically grown about 2 percent per year (after adjusting for changes in the cost of living). At this rate, average income doubles every 35 years. Over the past century, average income has risen about eightfold.

What explains these large differences in living standards among countries and over time? The answer is surprisingly simple. Almost all variation in living standards is attributable to differences in countries' **productivity**—that is, the amount of goods and services produced from each hour of a worker's time. In nations where workers can produce a large quantity of goods and services per unit of time, most people enjoy a high standard of living; in nations where workers are less productive, most people endure a more meager existence. Similarly, the growth rate of a nation's productivity determines the growth rate of its average income.

The fundamental relationship between productivity and living standards is simple, but its implications are far-reaching. If productivity is the primary determinant of living standards, other explanations must be of secondary importance. For example, it might be tempting to credit labor unions or minimum-wage laws for the rise in living standards of American workers over the past century. Yet the real hero of American workers is their rising productivity. As another example, some commentators have claimed that increased competition from Japan and other countries explained the slow growth in U.S. incomes during the 1970s and 1980s. Yet the real villain was not competition from abroad but flagging productivity growth in the United States.

The relationship between productivity and living standards also has profound implications for public policy. When thinking about how any policy will affect living standards, the key question is how it will affect our ability to produce goods and services. To boost living standards, policymakers need to raise productivity by ensuring that workers are well educated, have the tools needed to produce goods and services, and have access to the best available technology.

Principle 9: Prices Rise When the Government Prints Too Much Money

In Germany in January 1921, a daily newspaper cost 0.30 marks. Less than 2 years later, in November 1922, the same newspaper cost 70,000,000 marks. All other prices in the economy rose by similar amounts. This episode is one of history's most spectacular examples of **inflation**, an increase in the overall level of prices in the economy.

productivity

the quantity of goods and services produced from each hour of a worker's time

inflation

an increase in the overall level of prices in the economy

Although the United States has never experienced inflation even close to that in Germany in the 1920s, inflation has at times been an economic problem. During the 1970s, for instance, the overall level of prices more than doubled, and President Gerald Ford called inflation “public enemy number one.” By contrast, inflation in the 1990s was about 3 percent per year; at this rate, it would take more than 20 years for prices to double. Because high inflation imposes various costs on society, keeping inflation at a low level is a goal of economic policymakers around the world.

What causes inflation? In almost all cases of large or persistent inflation, the culprit is growth in the quantity of money. When a government creates large quantities of the nation’s money, the value of the money falls. In Germany in the early 1920s, when prices were on average tripling every month, the quantity of money was also tripling every month. Although less dramatic, the economic history of the United States points to a similar conclusion: The high inflation of the 1970s was associated with rapid growth in the quantity of money, and the low inflation of the 1990s was associated with slow growth in the quantity of money.

Principle 10: Society Faces a Short-Run Trade-off between Inflation and Unemployment

Although a higher level of prices is, in the long run, the primary effect of increasing the quantity of money, the short-run story is more complex and more controversial. Most economists describe the short-run effects of monetary injections as follows:

- Increasing the amount of money in the economy stimulates the overall level of spending and thus the demand for goods and services.
- Higher demand may over time cause firms to raise their prices, but in the meantime, it also encourages them to increase the quantity of goods and services they produce and to hire more workers to produce those goods and services.
- More hiring means lower unemployment.

This line of reasoning leads to one final economywide trade-off: a short-run trade-off between inflation and unemployment.

Although some economists still question these ideas, most accept that society faces a short-run trade-off between inflation and unemployment. This simply means that, over a period of a year or two, many economic policies push inflation and unemployment in opposite directions. Policymakers face this trade-off regardless of whether inflation and unemployment both start out at high levels (as they were in the early 1980s), at low levels (as they were in the late 1990s), or someplace in between. This short-run trade-off plays a key role in the analysis of the **business cycle**—the irregular and largely unpredictable fluctuations in economic activity, as measured by the production of goods and services or the number of people employed.

Policymakers can exploit the short-run trade-off between inflation and unemployment using various policy instruments. By changing the amount that the government spends, the amount it taxes, and the amount of money it prints, policymakers can influence the combination of inflation and unemployment that the economy experiences. Because these instruments of economic policy are potentially so powerful, how policymakers should use these instruments to control the economy, if at all, is a subject of continuing debate.



“WELL IT MAY HAVE BEEN 68 CENTS WHEN YOU GOT IN LINE, BUT IT’S 74 CENTS NOW!”

business cycle

fluctuations in economic activity, such as employment and production



FYI

How to Read This Book

Economics is fun, but it can also be hard to learn. My

aim in writing this text is to make it as fun and easy as possible. But you, the student, also have a role to play. Experience shows that if you are actively involved as you study this book, you will enjoy a better outcome both on your exams and in the years that follow. Here are a few tips about how best to read this book.

1. *Summarize, don’t highlight.* Running a yellow marker over the text is too passive an activity to keep your mind engaged. Instead, when you come to the end of a section, take a minute and summarize what you just learned in your own words, writing your summary in the wide margins we’ve provided. When you’ve finished the chapter, compare your summaries with the one at the end of the chapter. Did you pick up the main points?
2. *Test yourself.* Throughout the book, Quick Quizzes offer instant feedback to find out if you’ve learned what you are supposed to. Take the opportunity to write down your answer and then check it against the answers provided in the back of the book. The quizzes are meant to test your basic comprehension. If your answer is incorrect, you probably need to review the section.

3. *Practice, practice, practice.* At the end of each chapter, Questions for Review test your understanding, and Problems and Applications ask you to apply and extend the material. Perhaps your instructor will assign some of these exercises as homework. If so, do them. If not, do them anyway. The more you use your new knowledge, the more solid it becomes.
4. *Go online.* The publisher of this book maintains an extensive website to help you in your study of economics. It includes additional examples, applications, and problems, as well as quizzes so you can test yourself. Check it out. The website is <http://mankiwswlearning.com>.
5. *Study in groups.* After you’ve read the book and worked problems on your own, get together with classmates to discuss the material. You will learn from each other—an example of the gains from trade.
6. *Don’t forget the real world.* In the midst of all the numbers, graphs, and strange new words, it is easy to lose sight of what economics is all about. The Case Studies and In the News boxes sprinkled throughout this book should help remind you. Don’t skip them. They show how the theory is tied to events happening in all of our lives. If your study is successful, you won’t be able to read a newspaper again without thinking about supply, demand, and the wonderful world of economics.

Quick Quiz List and briefly explain the three principles that describe how the economy as a whole works.

CONCLUSION

You now have a taste of what economics is all about. In the coming chapters, we will develop many specific insights about people, markets, and economies. Mastering these insights will take some effort, but it is not an overwhelming task. The field of economics is based on a few basic ideas that can be applied in many different situations.

Throughout this book, we will refer back to the *Ten Principles of Economics* highlighted in this chapter and summarized in Table 1. Whenever we do so, an icon will be displayed in the margin, as it is now. But even when that icon is absent, you should keep these building blocks in mind. Even the most sophisticated economic analysis is built using the ten principles introduced here.



How People Make Decisions

- 1: People Face Trade-offs
- 2: The Cost of Something Is What You Give Up to Get It
- 3: Rational People Think at the Margin
- 4: People Respond to Incentives

How People Interact

- 5: Trade Can Make Everyone Better Off
- 6: Markets Are Usually a Good Way to Organize Economic Activity
- 7: Governments Can Sometimes Improve Market Outcomes

How the Economy as a Whole Works

- 8: A Country's Standard of Living Depends on Its Ability to Produce Goods and Services
- 9: Prices Rise When the Government Prints Too Much Money
- 10: Society Faces a Short-Run Trade-off between Inflation and Unemployment

T A B L E 1**Ten Principles of Economics****SUMMARY**

- The fundamental lessons about individual decision making are that people face trade-offs among alternative goals, that the cost of any action is measured in terms of forgone opportunities, that rational people make decisions by comparing marginal costs and marginal benefits, and that people change their behavior in response to the incentives they face.
- The fundamental lessons about interactions among people are that trade can be mutually beneficial, that markets are usually a good way of coordinating trade among people, and that the government can potentially improve market outcomes if there is some market failure or if the market outcome is inequitable.
- The fundamental lessons about the economy as a whole are that productivity is the ultimate source of living standards, that money growth is the ultimate source of inflation, and that society faces a short-run trade-off between inflation and unemployment.

KEY CONCEPTS

scarcity, p. 3
 economics, p. 4
 efficiency, p. 5
 equity, p. 5
 opportunity cost, p. 6
 rational people, p. 6

marginal changes, p. 6
 incentive, p. 7
 market economy, p. 9
 property rights, p. 11
 market failure, p. 11
 externality, p. 11

market power, p. 11
 productivity, p. 12
 inflation, p. 12
 business cycle, p. 13

QUESTIONS FOR REVIEW

1. Give three examples of important trade-offs that you face in your life.
2. What is the opportunity cost of seeing a movie?
3. Water is necessary for life. Is the marginal benefit of a glass of water large or small?
4. Why should policymakers think about incentives?
5. Why isn't trade among countries like a game with some winners and some losers?
6. What does the "invisible hand" of the marketplace do?
7. Explain the two main causes of market failure and give an example of each.
8. Why is productivity important?
9. What is inflation and what causes it?
10. How are inflation and unemployment related in the short run?

PROBLEMS AND APPLICATIONS

1. Describe some of the trade-offs faced by each of the following:
 - a. a family deciding whether to buy a new car
 - b. a member of Congress deciding how much to spend on national parks
 - c. a company president deciding whether to open a new factory
 - d. a professor deciding how much to prepare for class
2. You are trying to decide whether to take a vacation. Most of the costs of the vacation (airfare, hotel, and forgone wages) are measured in dollars, but the benefits of the vacation are psychological. How can you compare the benefits to the costs?
3. You were planning to spend Saturday working at your part-time job, but a friend asks you to go skiing. What is the true cost of going skiing? Now suppose you had been planning to spend the day studying at the library. What is the cost of going skiing in this case? Explain.
4. You win \$100 in a basketball pool. You have a choice between spending the money now or putting it away for a year in a bank account that pays 5 percent interest. What is the opportunity cost of spending the \$100 now?
5. The company that you manage has invested \$5 million in developing a new product, but the development is not quite finished. At a recent meeting, your salespeople report that the introduction of competing products has reduced the expected sales of your new product to \$3 million. If it would cost \$1 million to finish development and make the product, should you go ahead and do so? What is the most that you should pay to complete development?
6. Three managers of the Magic Potion Company are discussing a possible increase in production. Each suggests a way to make this decision.

HARRY: We should examine whether our company's productivity—gallons of potion per worker—would rise or fall.

RON: We should examine whether our average cost—cost per worker—would rise or fall.

HERMIONE: We should examine whether the extra revenue from selling the additional potion would be greater or smaller than the extra costs.

Who do you think is right? Why?
7. The Social Security system provides income for people over age 65. If a recipient of Social Security decides to work and earn some income, the amount he or she receives in Social Security benefits is typically reduced.
 - a. How does the provision of Social Security affect people's incentive to save while working?
 - b. How does the reduction in benefits associated with higher earnings affect people's incentive to work past age 65?

8. A recent bill reforming the government's anti-poverty programs limited many welfare recipients to only 2 years of benefits.
 - a. How does this change affect the incentives for working?
 - b. How might this change represent a trade-off between equity and efficiency?
9. Your roommate is a better cook than you are, but you can clean more quickly than your roommate can. If your roommate did all of the cooking and you did all of the cleaning, would your chores take you more or less time than if you divided each task evenly? Give a similar example of how specialization and trade can make two countries both better off.
10. Suppose the United States adopted central planning for its economy, and you became the chief planner. Among the millions of decisions that you need to make for next year are how many compact discs to produce, what artists to record, and who should receive the discs.
 - a. To make these decisions intelligently, what information would you need about the compact disc industry? What information would you need about each of the people in the United States?
 - b. How would your decisions about CDs affect some of your other decisions, such as how many CD players to make or cassette tapes to produce? How might some of your other decisions about the economy change your views about CDs?
11. Nations with corrupt police and court systems typically have lower standards of living than nations with less corruption. Why might that be the case?
12. Explain whether each of the following government activities is motivated by a concern about equity or a concern about efficiency. In the case of efficiency, discuss the type of market failure involved.
 - a. regulating cable TV prices
 - b. providing some poor people with vouchers that can be used to buy food
 - c. prohibiting smoking in public places
 - d. breaking up Standard Oil (which once owned 90 percent of all oil refineries) into several smaller companies
 - e. imposing higher personal income tax rates on people with higher incomes
 - f. instituting laws against driving while intoxicated
13. Discuss each of the following statements from the standpoints of equity and efficiency.
 - a. "Everyone in society should be guaranteed the best healthcare possible."
 - b. "When workers are laid off, they should be able to collect unemployment benefits until they find a new job."
14. In what ways is your standard of living different from that of your parents or grandparents when they were your age? Why have these changes occurred?
15. Suppose Americans decide to save more of their incomes. If banks lend this extra saving to businesses, which use the funds to build new factories, how might this lead to faster growth in productivity? Who do you suppose benefits from the higher productivity? Is society getting a free lunch?
16. Imagine that you are a policymaker trying to decide whether to reduce the rate of inflation. To make an intelligent decision, what would you need to know about inflation, unemployment, and the trade-off between them?
17. Look at a newspaper or at the website <http://www.economist.com> to find three stories about the economy that have been in the news lately. For each story, identify one (or more) of the *Ten Principles of Economics* discussed in this chapter that is relevant and explain how it is relevant. Also, for each story, look through this book's Contents and try to find a chapter that might shed light on the news event.



For further information on topics in this chapter, additional problems, applications, examples, online quizzes, and more, please visit our website at <http://mankiw.swlearning.com>.

From GNP to national income

The final complication is depreciation.

Depreciation is a flow concept telling us how much our effective capital stock is being used up in each time period. Depreciation is an economic cost because it measures resources being used up in the production process.

Our simple example in Table 19.4 ignored depreciation completely. The machine bought by the car maker lasted for ever. We now recognize that machinery wears out. In consequence, the *net* output of the economy is lower. The part of the economy's gross output used merely to replace existing capital is not available for consumption, investment in net additions to the capital stock, government spending or exports.

Similarly, we need to reduce our measure of the incomes available for spending on these goods. Thus, we subtract depreciation from GNP to get net national product (NNP) or national income.

National income measures how much the economy can spend or save, after setting aside enough resources to maintain the capital stock intact by offsetting depreciation.

We have now developed a complete set of national accounts. Figure 19.5 may keep you straight.

Depreciation or capital consumption is the rate at which the value of the existing capital stock declines per period as a result of usage or obsolescence.

National income is the economy's net national product. It is calculated by subtracting depreciation from GNP at basic prices.

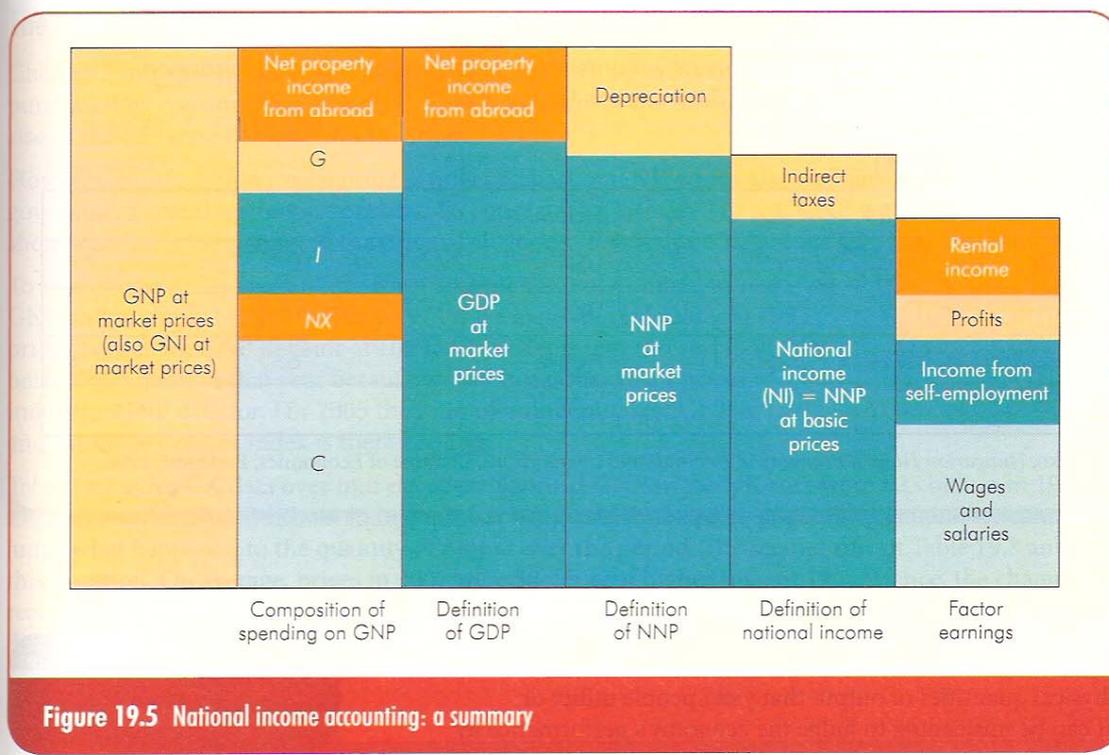


Table 19.5 UK national accounts, 2005 (£bn, current prices)

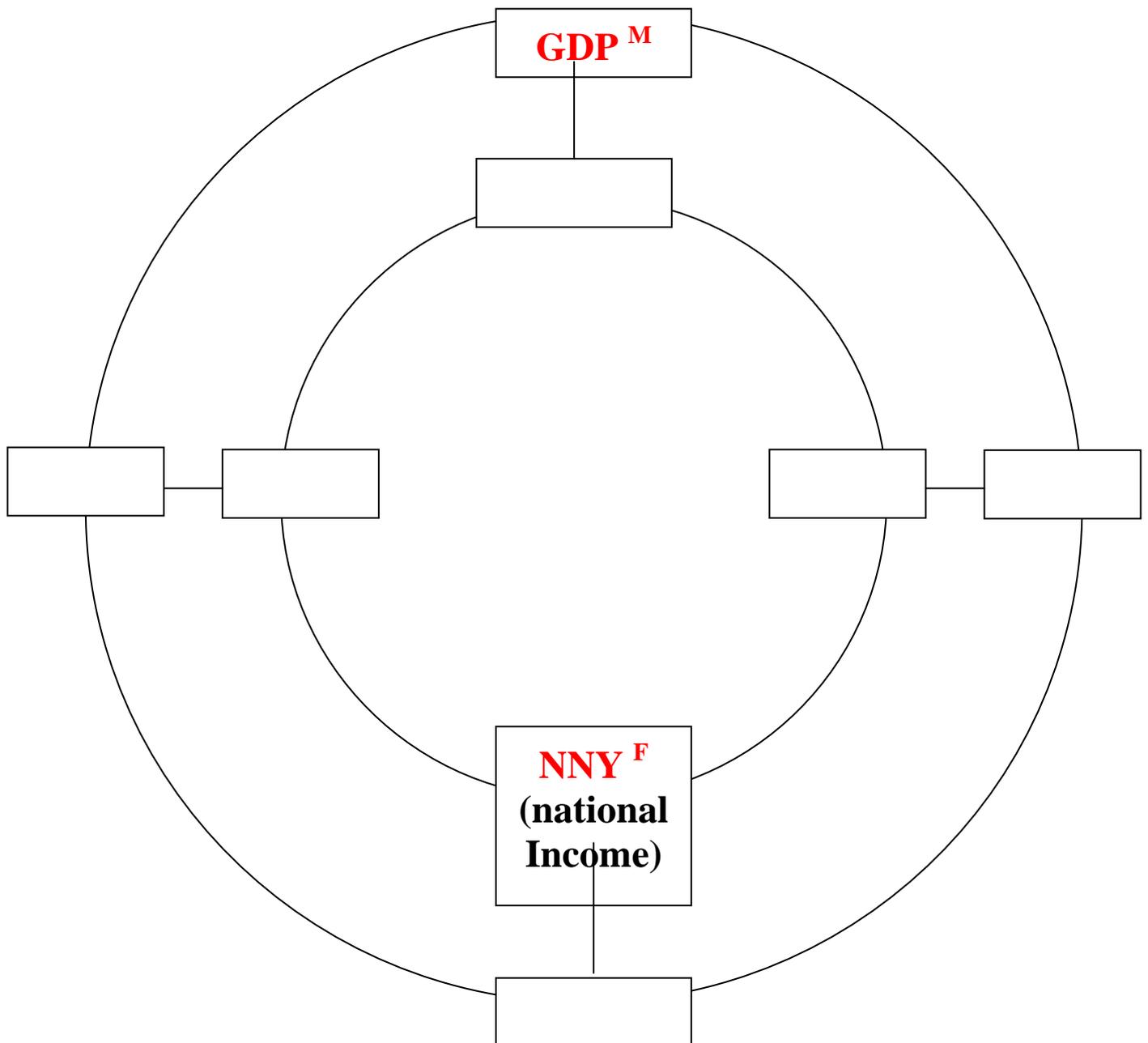
Expenditure measure		Income measure	
At market prices:		Income source: employment	
C by households	759	Profits and rents	274
C by government and non-profit organizations	301	Other	113
I by private firms and government	210	GDP at basic prices	1072
NX	-45	Indirect taxes	153
GDP at market prices	1225	GDP at market prices	1225
Net property income from abroad	63		
GNP (GNI) at market prices	1288		

Sources: ONS, UK National Accounts; OECD, Economic Outlook.

Domestic Product and National Income

$G - D =$	
$DP + NIA =$	
$P^M + SB =$	

The way from GDP to National Income



Joint Economic Forecast Spring 2016

Press release

Embargo: Thursday, 14.04.2016, 11.00 a.m.

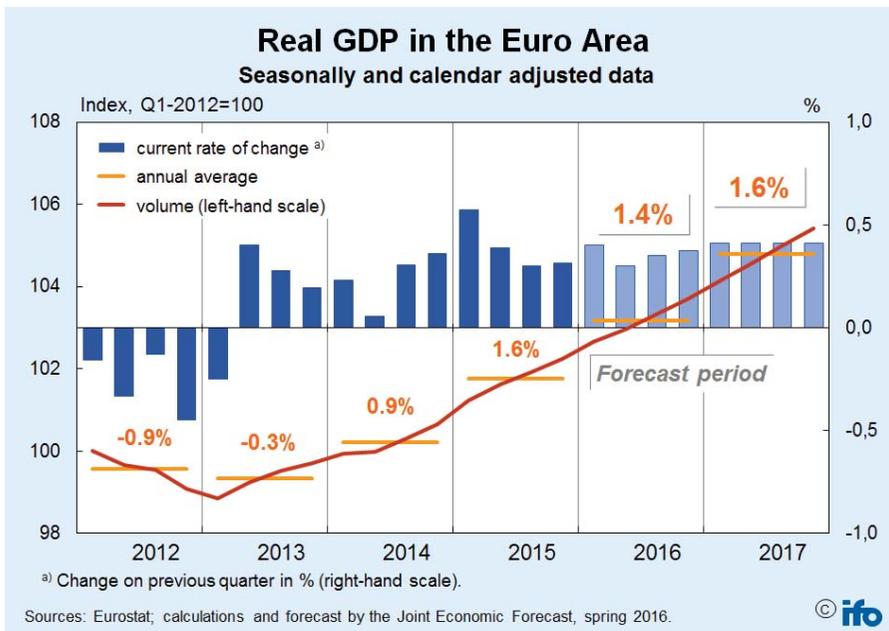
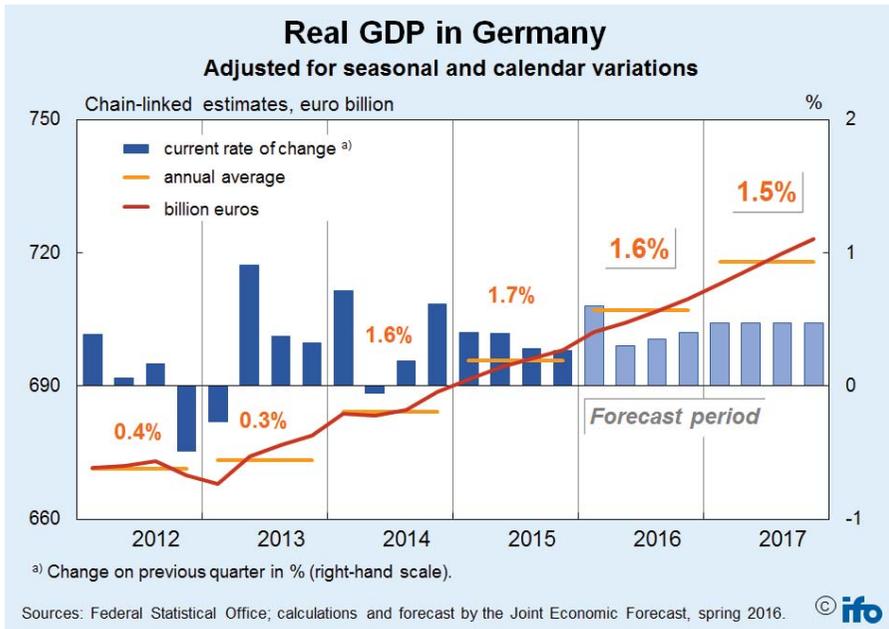
14 April 2016

Joint Economic Forecast Spring 2016: Upturn Remains Moderate – Economic Policy Lacks Growth Orientation

The German economy is experiencing a moderate upturn. Gross domestic product is expected to increase by 1.6 percent this year and by 1.5 percent in 2017. The upturn will be driven by private consumption, which will benefit from continued employment growth, sizeable increases in wage and transfer income and purchasing power gains thanks to lower energy prices. Fiscal policy will also be expansively oriented, partly due to rising costs related to refugee immigration. While investment in construction is also expected to expand markedly, corporate investment activity will remain subdued. Against a background of only gradual world economic recovery and strong domestic demand, no positive economic stimulus is expected from foreign trade. Public budgets will post significant surpluses in the forecasting period. Failing to use this room for manoeuvre to promote growth, as seen in recent years, is not a sustainable path.

At the beginning of 2016 it became clear that the world economy had cooled down markedly in the preceding months. This bad news led to significant valuation losses on stock markets worldwide in January and February, as well as to a significant upturn in the perception of risk. This was largely due to rapid structural change in China. For several years now the Chinese economy has been moving away from growth mainly driven by investments in industry and exports to growth that is more based on consumption and services. This shrinking process entails significant economic risks and is accompanied by a decline in foreign trade's importance to China, as well as weaker demand for commodities.

Combined with strong growth in the oil supply, this led to sharp falls in oil prices last winter. The drop in commodity prices partly reflected weaker demand worldwide. At the same time, it boosted economic activity in most advanced economies by increasing real income and lowering production costs. The overall effect on global demand for goods is expected to be positive, despite revenue losses in the major commodity-exporting, emerging economies, since a large share of lost revenues was not spent on consumer or capital goods prior to the price slump, but was set aside as savings.



The gloomier economic outlook and decline in oil prices led to a further slowdown in the global price dynamic. This prompted recourse to additional, unconventional fiscal policy measures in the euro area and Japan, which will further stimulate economic activity. In Britain and the USA central banks are more cautious about their announced policy turnaround. While the Bank of England is expected to leave its base rate unchanged during the forecasting period, two further interest rate increases are expected in the USA this year, despite a clear increase in the US core inflation rate over the winter. China's central bank significantly lowered its minimum reserve ratio for commercial banks at the end of February.

Since government debt ratios are high in almost all advanced economies and policies are often restricted by budgetary rules, fiscal policy stimulus for economic activity will be limited. The fiscal policy orientation in the USA is more or less neutral and only slightly expansive in the euro area. In Britain and Japan fiscal policy is expected to remain restrictive. China's government is currently providing the greatest fiscal policy stimulus worldwide. Many commodity-exporting emerging economies, by contrast, will be forced to take tough consolidation measures.

In the meantime there are growing signs that international economic activity will not weaken any further in the first half of 2016. In advanced economies in particular the dynamic has already gained momentum slightly. Production growth, by contrast, will remain moderate on the whole. US monetary policy will gradually become less expansive, with the strong US dollar curbing international demand. In the euro area last year's stimulus provided by the strong depreciation of the euro will disappear. The Chinese economy will continue to struggle with structural change, as well as the high indebtedness of several state-owned manufacturers. In Japan production will increase again, as the drop seen at the end of last year was mainly due to temporary factors. It has become clear, however, that its economic policy ("Abenomics") implemented with high expectations has failed to trigger any self-sustaining upturn.

All in all, world production will expand this year at around the same moderate pace as last year, according to this forecast. This will mean growth of 2.4 percent in 2016 and of 2.8 percent in 2017. Growth in world trade is also expected to be weak during the forecasting period. The institutes forecast growth rates of 2.9 percent this year and of 3.4 percent in 2017.

Although the financial markets have calmed down since mid-February, the risks underlying their unrest have not dissipated. On the one hand, it is still possible that structural change in China will affect the whole country's economy to a greater extent than previously. Inflation, on the other hand, which has already risen clearly in the USA, could increase more rapidly than predicted in this forecast, obliging central banks to make swift interest rate increases. This may cause turbulence in financial markets, and especially in emerging economies. Finally, Europe's economy faces significant political risks. Forces in favour of reversing the political and economic integration achieved in the European Union have been gathering power for several years. There is a possibility that Britain may vote to exit the European Union in June. Moreover, it is difficult to estimate the implications that this may have for trade and financial flows within the EU.

The German economy is experiencing a moderate upturn. Against a background of sustained employment growth, sizeable wage increases and purchasing power gains thanks to lower energy prices, private consumption is driving the upturn. Expenditure on caring for and accommodating the large number of refugees is also providing an additional stimulus. Low interest rates are boosting demand too. The world economy, by contrast, is hardly providing any stimulus.

After losing impetus in the second half of 2015, the increase in aggregate economic production accelerated significantly at the beginning of 2016. This is suggested in particular by rising production levels in manufacturing and growth in the working population in January and February. The pace of growth is expected to slow slightly over the rest of the year. This forecast is backed up by the Ifo Business Climate, which clouded over somewhat in the first quarter, although it remains historically favourable.

The positive development in the labour market is expected to continue over the rest of the forecasting period. The labour force will grow by 500,000 persons on average this year and by around 390,000 persons in 2017. As in previous years, migration will more than compensate for the decline in the working population due to demographics. Moreover, the availability of refugees in the German labour market will also make itself increasingly felt over the forecasting period. Unemployment will edge upwards as a result, despite employment growth. However, the average unemployment rate of 6.2 percent this year and 6.4 percent in 2017 will remain almost unchanged.

Sizeable income growth combined with a weak price dynamic mean that private households will enjoy a sharp increase in purchasing power. Wages will rise markedly and transfer income will rally, mainly due to sharp pension increases. All of these factors will lead to significant growth in private consumption. Public consumption is also expected to increase. The migration of refugees will play a central role here, initially leading to rising material costs for refugee care, and subsequently to higher monetary welfare benefits.

Overall, growth in investment activity will be subdued over the forecasting period. Indeed, its development will be two-tier: investment in residential construction will continue to grow thanks to low interest rates, strong developments in the labour market and income levels, as well as far higher demand for residential accommodation due to the influx of immigrants. Investment in both commercial construction and corporate investment in equipment, by contrast, is only expected to grow sluggishly at first, despite low interest rates, partly due to a significant deterioration in business expectations.

Scepticism on the part of companies was primarily due to multiple reports of a worldwide economic cooldown at the beginning of the year. There are now a growing number of signs that the global economy will not continue to weaken in the first half of 2016. It is expected to pick up again somewhat over the rest of the forecasting period, albeit only moderately. After a modest upturn in the spring, German exports are expected to see slightly higher growth in the second half of the year. Indeed, imports will rise so significantly that foreign trade will, on balance, strongly curb the production increase this year. In 2017, by contrast, the production increase is expected to make a slightly positive contribution.

All in all, gross domestic product is expected to rise by 1.6 percent this year and by 1.5 percent in 2017 - rates that are slightly higher than growth in production potential. The output gap is expected to narrow further in 2016 and to almost close in 2017. The 68 percent projection interval for this year will range from 0.9 percent to 2.3 percent and from -0.5 percent to 3.5 percent in 2017.

Pressure due to inflation is limited thanks to the sharp drop in energy prices. Consumer prices are expected to rise by 0.5 percent versus last year. Inflation excluding energy prices (core rate) is at 1.2 percent. In view of the sharp upturn in domestic demand and the accelerated increase in unit wage costs, the core rate is expected to rise to 1.5 percent in 2017. Since oil prices are not expected to have any curbing effect, the inflation rate will also reach 1.5 percent.

Government budget surpluses are also expected to decrease. Expenditure related to the inflow of refugees will rise and fiscal policy will be slightly expansive. Thanks to a marked increase in income tax revenues, taxes from revenues and social contributions and lower spending on interest, the German federal government will nevertheless post a budget surplus of 11 billion euros this year and 10 billion euros in 2017.

From a structural point of view – adjusted for economic influences – the overall public budget will also post surpluses that create budgetary room for manoeuvre. The State will admittedly benefit from temporary factors, including the significant drop in spending on interest due to the low-interest environment, as well as more favourable, short-lived demographic developments (“demographic interim high”). Against this background, surpluses should only be used to cover temporary additional expenditure or to finance measures that increase production potential on a lasting basis. In their past Joint Economic Forecasts the institutes have repeatedly outlined the contours of such a growth-friendly policy. In addition to reducing the burden of taxes and charges on employers, spending on investment in real capital, and especially in human capital, could boost production potential. The latter is also particularly important to facilitate the integration of refugees into the labour market. Economic policy priorities to date, however, have focused on consumption and distribution policy spending, rather than on growth-oriented measures. The continued pursuit of the economic policy of recent years, which has done little to promote growth, is not a sustainable path.

Key Forecast Figures for Germany

	2012	2013	2014	2015	2016	2017
Price adjusted GDP (percentage change over previous year)	0.4	0.3	1.6	1.7	1.6	1.5
Persons in employment ¹ (1 000 persons)	42 060	42 328	42 703	43 032	43 535	43 921
Unemployment (1 000 persons)	2 897	2 950	2 898	2 795	2 737	2 822
Unemployment rate ² (in percent)	6.8	6.9	6.7	6.4	6.2	6.4
Consumer prices ³ (percentage change over previous year)	2.0	1.5	0.9	0.3	0.5	1.5
Unit labour costs ⁴ (percentage change over previous year)	3.1	2.0	1.7	1.7	2.5	2.0
General government financial balance ⁵ EUR billion	-2.7	-3.8	8.4	21.2	11.0	9.8
in percent of GDP	-0.1	-0.1	0.3	0.7	0.4	0.3
Balance on current account EUR billion	193.6	190.4	212.9	257.5	254.2	263.3
in percent of GDP	7.0	6.8	7.3	8.5	8.1	8.1

1 Domestic employment.

2 Federal Employment Agency concept, unemployed persons as percent of civilian labor force.

3 Consumer price index (2010 = 100).

4 Compensation of employees per hour worked by employees in relation to labour productivity (per hour worked by persons in employment).

5 On national accounts definition (ESA 2010).

Source: Federal Statistical Office, Federal Employment Agency, Deutsche Bundesbank, 2016 and 2017: forecast by the Institutes.

Members of the Joint Economic Forecast Project Group:

Deutsches Institut für Wirtschaftsforschung e.V.

www.diw.de

Press contact Phone: (030) 89789 252, Email: presse@diw.de

in cooperation with:

Österreichisches Institut für Wirtschaftsforschung

www.wifo.ac.at

Leibniz-Institut für Wirtschaftsforschung Halle

www.iwh-halle.de

Press contact Phone: (0345) 7753 720, Email: Stefanie.Mueller@iwh-halle.de

in cooperation with:

Kiel Economics

www.kieleconomics.de

ifo Institut – Leibniz-Institut für Wirtschaftsforschung an der Universität München e.V.

www.ifo.de

Press contact Phone: (089) 9224 1218, E-Mail: schultz@ifo.de

in cooperation with:

KOF Konjunkturforschungsstelle der ETH Zürich

www.kof.ethz.ch

Rheinisch-Westfälisches Institut für Wirtschaftsforschung

www.rwi-essen.de

Press contact Phone: (0201) 81 49 244, E-Mail: katharina.fischer@rwi-essen.de

In cooperation with:

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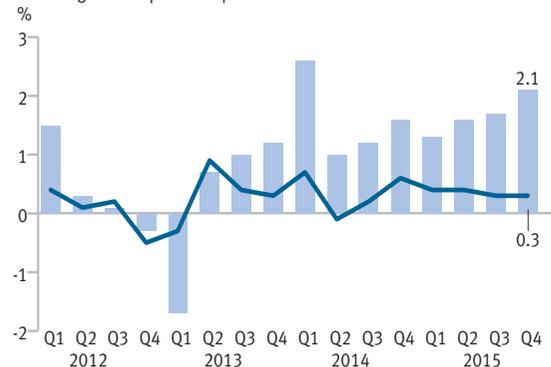
www.ihs.ac.at

GERMAN ECONOMY

4th quarter 2015

Gross domestic product
Price-adjusted, chain-linked

■ Change on the same quarter a year earlier
— Change on the previous quarter



Statistisches Bundesamt

National Accounts

National accounts provide a comprehensive quantitative picture of economic development within a country, i.e. in this case Germany. The most important national accounts aggregate is the gross domestic product (GDP). The GDP measures the domestic production of goods and services minus the intermediate consumption of goods and services.

National accounts provide important data to the political community, administration and businesses for assessing and shaping economic, financial, social and other policies. The national accounting system within the European Union is based on harmonised European rules that are laid down in a legally binding form in the European System of National and Regional Accounts (ESA 2010).

This leaflet only shows a small part of the whole national accounts publication programme. More results as well as definitions and general information on national accounts in Germany are available on the internet at www.destatis.de.

Production	Use	Distribution
Agriculture, forestry and fishing	Final consumption expenditure	Compensation of employees
Industry	Gross fixed capital formation	Property and entrepreneurial income
Services	Changes in inventories	Taxes on production and imports less subsidies
Taxes less subsidies on products (net taxes)	Balance of exports and imports (net exports)	Consumption of fixed capital
		Balance of primary income from the rest of the world

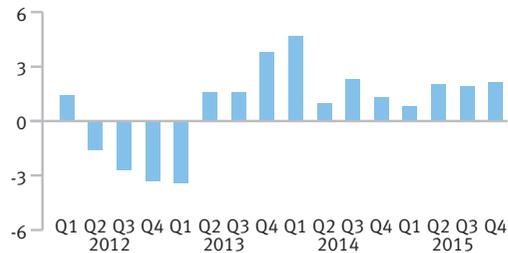
Gross domestic product

Production of gross domestic product – Quarterly data

	2015			
	Q1	Q2	Q3	Q4
At current prices (EUR bn.)				
Gross value added	664.3	669.7	694.2	694.4
Agriculture, forestry and fishing	3.6	3.8	3.8	3.8
Industry, excluding construction	172.5	175.3	177.6	175.7
Construction	25.4	31.4	34.3	36.9
Services	462.7	459.2	478.4	478.0
+ Net taxes on products ¹	75.1	73.7	76.0	78.5
= Gross domestic product	739.4	743.4	770.1	772.9
Price-adjusted, chain-linked²				
Gross value added	1.1	1.6	1.5	1.9
Agriculture, forestry and fishing	-1.6	-2.3	-2.4	-0.9
Industry, excluding construction	1.1	2.3	2.4	2.0
Construction	-2.3	-0.7	-0.3	3.6
Services	1.3	1.5	1.4	1.8
Net taxes on products ¹	2.7	2.0	3.4	4.0
Gross domestic product	1.3	1.6	1.7	2.1

1 Taxes on products less subsidies on products. – 2 Change on the same quarter of the preceding year in %.

Gross value added in manufacturing¹ Price-adjusted, chain-linked



1 Change on the same quarter of the preceding year in %.

Use of gross domestic product – Quarterly data

	2015			
	Q1	Q2	Q3	Q4
At current prices (EUR bn.)				
Private final consumption expenditure (households and NPISHs)	390.4	406.3	416.5	420.2
+ Government final consumption expenditure	141.3	142.4	144.0	159.0
+ Gross fixed capital formation	136.8	152.6	156.2	160.6
+ Changes in inventories ¹	14.5	-20.8	0.0	-30.2
= Domestic uses	683.1	680.4	716.7	709.6
+ Balance of exports and imports	56.4	63.0	53.4	63.4
Memorandum item: Exports	343.0	355.3	358.3	363.1
Imports	286.6	292.3	304.9	299.7
= Gross domestic product	739.4	743.4	770.1	772.9
Price-adjusted chain-linked²				
Private final consumption expenditure (households and NPISHs)	2.3	1.8	2.1	1.6
Government final consumption expenditure	2.2	2.3	2.3	2.7
Gross fixed capital formation	0.7	1.5	2.2	4.2
Changes in inventories ^{1, 3}	-0.4	-1.0	-0.3	-0.2
Domestic uses	1.4	0.8	1.9	2.3
Balance of exports and imports ³	0.0	0.9	-0.1	0.0
Memorandum item: Exports	4.8	6.5	5.2	5.0
Imports	5.8	5.4	6.2	5.8
Gross domestic product	1.3	1.6	1.7	2.1
Price-, seasonally and calendar-adjusted figures using Census X-12-ARIMA⁴				
Private final consumption expenditure (households and NPISHs)	0.4	0.1	0.6	0.3
Government final consumption expenditure	0.5	0.7	0.5	1.0
Gross fixed capital formation	1.5	-0.6	0.1	1.5
Changes in inventories ^{1, 3}	0.0	-0.3	0.1	0.1
Domestic uses	0.6	-0.2	0.6	0.8
Balance of exports and imports ³	-0.2	0.6	-0.3	-0.5
Memorandum item: Exports	1.5	1.8	0.3	-0.6
Imports	2.2	0.6	1.1	0.5
Gross domestic product	0.4	0.4	0.3	0.3

1 Including acquisitions less disposals of valuables. – 2 Change on the same quarter of the preceding year in %. – 3 Contribution to GDP growth in percentage points. – 4 Change on the previous quarter in %.

Distribution of gross domestic product – Quarterly data

	2015			
	Q1	Q2	Q3	Q4
At current prices (EUR bn.)				
Net wages and salaries	194.1	200.4	211.8	232.1
+ Income tax and social contributions (of employees)	98.5	108.4	100.2	117.3
= Gross wages and salaries	292.6	308.7	312.0	349.4
+ Employers' social contributions	66.5	69.1	68.7	76.1
= Compensation of employees	359.1	377.9	380.6	425.5
+ Property and entrepreneurial income	193.8	163.4	199.8	160.5
= Net national income (factor costs)	552.9	541.3	580.5	586.0
+ Taxes on production and imports less subsidies ¹	72.9	73.2	75.7	77.8
= Net national income	625.8	614.5	656.2	663.9
+ Consumption of fixed capital	131.9	132.4	133.1	133.7
= Gross national income	757.7	746.9	789.3	797.6
– Balance of primary income from the rest of the world	18.3	3.5	19.2	24.6
= Gross domestic product	739.4	743.4	770.1	772.9

1 Taxes received by and subsidies paid by general government, respectively.

Labour productivity and unit labour costs (per person)¹ Price-adjusted, chain-linked



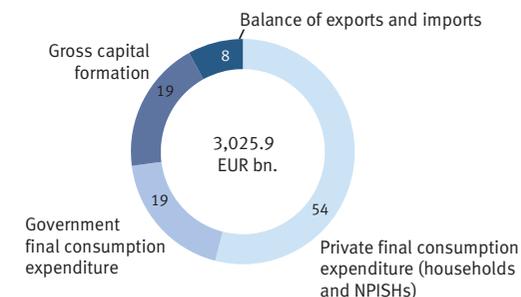
1 Change on the same quarter of the preceding year in %. – 2 Price-adjusted GDP per person in employment. – 3 Compensation of employees per employee in relation to labour productivity per person in employment.

Use of gross domestic product – Annual data

	2013	2014	2015
At current prices (EUR bn.)			
Private final consumption expenditure (households and NPISHs)	1,562.7	1,592.2	1,633.4
+ Government final consumption expenditure	541.9	564.0	586.7
+ Gross fixed capital formation	557.3	585.1	606.2
+ Changes in inventories ¹	– 10.5	– 22.0	– 36.5
= Domestic uses	2,651.4	2,719.3	2,789.8
+ Balance of exports and imports	169.4	196.4	236.1
Memorandum item: Exports	1,283.1	1,333.2	1,419.6
Imports	1,113.7	1,136.8	1,183.5
= Gross domestic product	2,820.8	2,915.7	3,025.9
Price-adjusted, chain-linked²			
Private final consumption expenditure (households and NPISHs)	0.6	0.9	1.9
Government final consumption expenditure	0.8	1.7	2.4
Gross fixed capital formation	– 1.3	3.5	2.2
Changes in inventories ^{1, 3}	0.6	– 0.3	– 0.5
Domestic uses	0.8	1.3	1.6
Balance of exports and imports ³	– 0.5	0.4	0.2
Memorandum item: Exports	1.6	4.0	5.4
Imports	3.1	3.7	5.8
Gross domestic product	0.3	1.6	1.7

1 Including acquisitions less disposals of valuables. – 2 Change on the previous year in %. – 3 Contribution to GDP growth in percentage points.

Use of gross domestic product 2015 in %

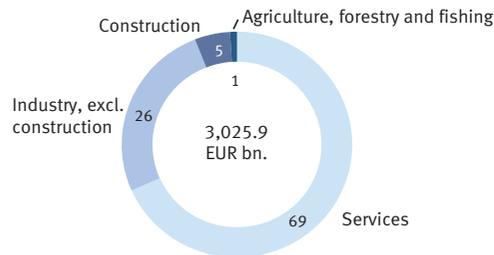


Production of gross domestic product – Annual data

	2013	2014	2015
At current prices (EUR bn.)			
Gross value added	2,536.9	2,623.1	2,722.7
Agriculture, forestry and fishing	20.0	17.9	15.0
Industry, excluding construction	655.5	674.8	701.2
Construction	113.3	120.7	128.1
Services	1,748.0	1,809.7	1,878.4
+ Taxes on products	290.3	299.2	310.5
– Subsidies on products	6.4	6.7	7.3
= Gross domestic product	2,820.8	2,915.7	3,025.9
Price-adjusted, chain-linked¹			
Gross value added	0.3	1.5	1.5
Agriculture, forestry and fishing	4.3	7.5	– 1.8
Industry, excluding construction	0.4	1.6	2.0
Construction	– 1.2	2.6	0.3
Services	0.3	1.3	1.5
Taxes on products	0.3	2.3	3.2
Subsidies on products	1.0	0.1	10.1
Gross domestic product	0.3	1.6	1.7

¹ Change on the previous year in %.

Production of gross domestic product 2015 in %¹



¹ As measured by gross value added (GVA) at current prices of the relevant industry as percentage of total GVA at current prices.

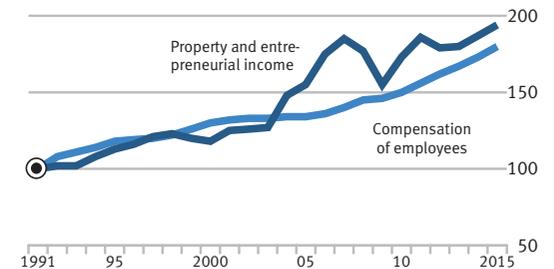
Distribution of gross domestic product – Annual data

	2013	2014	2015
At current prices (EUR bn.)			
Net wages and salaries	779.7	808.1	838.4
+ Income tax and social contributions (of employees)	388.6	405.6	424.3
= Gross wages and salaries	1,168.3	1,213.7	1,262.7
+ Employers' social contributions	262.5	271.6	280.4
= Compensation of employees	1,430.8	1,485.3	1,543.1
+ Property and entrepreneurial income	665.8	690.9	717.5
= Net national income (factor costs)	2,096.6	2,176.2	2,260.6
– Subsidies ¹	24.4	25.5	26.8
+ Taxes on production and imports ²	304.7	314.0	326.5
= Net national income	2,377.0	2,464.7	2,560.3
+ Consumption of fixed capital	505.1	517.8	531.2
= Gross national income	2,882.0	2,982.4	3,091.5
– Balance of primary income from the rest of the world	61.2	66.8	65.6
= Gross domestic product	2,820.8	2,915.7	3,025.9

¹ Paid by general government. – ² Received by general government.

Compensation of employees, property and entrepreneurial income

1991 = 100



Key data for total economy – Annual data

	2013	2014	2015
Gross domestic product (GDP), price-adjusted ¹	0.3	1.6	1.7
GDP at current prices in EUR bn.	2,820.8	2,915.7	3,025.9
GDP per capita in EUR ²	34,978	36,003	37,099
Total population in 1,000 ²	80,646	80,983	81,563
Persons in employment (domestic concept) in 1,000	42,328	42,703	43,032
Unemployed persons in 1,000 ³	2,182	2,090	1,950
Economically active population as % of total population ³	55.1	55.2	55.1
Unemployed persons as % of economically active population	4.9	4.7	4.3
Gross national income in EUR bn.	2,882.0	2,982.4	3,091.5
Disposable income of households in EUR bn.	1,671.8	1,710.1	1,757.7
Saving ratio (saving as % of disposable income of households)	9.1	9.5	9.7
Labour productivity (per capita) ^{1,4}	- 0.3	0.7	0.9
Labour productivity (per hour) ^{1,4}	0.7	0.4	0.6
Compensation of employees per employee ¹	1.8	2.6	2.7
Compensation of employees per hour worked by employees ¹	2.6	2.0	2.3
Unit labour costs (per capita) ^{1,5}	2.2	1.9	1.8
Unit labour costs (per hour) ^{1,5}	2.0	1.6	1.7
Wage ratio, unadjusted (compensation of employees as % of net national income at factor costs)	68.2	68.3	68.3
Government deficit ratio (Net lending/net borrowing as % of GDP at current prices)	- 0.1	0.3	0.7

1 Change on the previous year in %. – 2 Average population based on the 2011 Census (on 9th of May: 80 219 695 inhabitants) – 3 Results of the labour force survey (microcensus) according to the definition of the ILO. – 4 Price-adjusted GDP per person in employment resp. per hour worked by persons in employment. – 5 Compensation of employees per employee resp. per hour worked by employees in relation to labour productivity per person in employment resp. per hour worked by persons in employment.

Further information

For subject-related information please contact the National Accounts Infoteam:
 Phone + 49 (0) 611 / 75 26 26

For written requests please use our e-mail address
gdp-info@destatis.de or our contact form
www.destatis.de/contact

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Federal Statistical Office, German Economy, 4th quarter 2015



Monitoring economic performance, quality of life and sustainability

Joint Report as requested by the
Franco-German Ministerial Council

December 2010

Conseil d'Analyse Économique
113 rue de Grenelle
75007 Paris
Tel.: 0033 1 / 4275 5300
Fax: 0033 1 / 4275 5127
E-Mail: pierre.joly@pm.gouv.fr
Internet: <http://www.cae.gouv.fr>

Sachverständigenrat zur Begutachtung
der gesamtwirtschaftlichen Entwicklung
Statistisches Bundesamt
65180 Wiesbaden
Tel.: 0049 611 / 75 2390 / 3640 / 4694
Fax: 0049 611 / 75 2538
E-Mail: srw@destatis.de
Internet: <http://www.sachverstaendigenrat.org>

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PREFACE

1. The Franco-German Ministerial Council decided on February 4, 2010 to ask the French Conseil d'Analyse Économique (CAE) and the German Council of Economic Experts (GCEE) to follow-up on the outcome of the "Commission on the Measurement of Economic Performance and Social Progress" (Stiglitz-Sen-Fitoussi Commission, or SSFC).

The CAE and GCEE have fulfilled this request by preparing a report on

„Monitoring economic performance, quality of life and sustainability“.

It discusses how comprehensiveness and accuracy of an indicator set might be traded off optimally with parsimony and cost to provide a reliable basis for regular, timely and digestible reporting on three key issues regarding economic performance, quality of life and sustainability.

2. As the world is emerging from its worst economic crisis of the last six decades, there is a broad consensus among policy makers and the general public that this should be a moment of pause and sincere reflection. From the vantage point of economics and statistics, three intimately related key questions should form the focus of such considerations: First, how can we improve our monitoring of economic performance in order to allow policy makers to gauge the current state of affairs and to react timely and appropriately when crises emerge? Second, how can we broaden our perspective from its current focus on economic performance to an assessment of the quality of life more generally, in order to appreciate what really counts for human welfare? And third, how can we design warning signals that alert us whenever the current manner of organizing our lives endangers sustainability, in order to correct our course of action for the sake of our own future and that of generations to come?

The first and arguably most important conclusion of our study is that a single-indicator approach to measuring human progress is inherently insufficient. Complexity of life and the demands on statistical reporting are too diverse to allow a meaningful condensation of the current state of affairs into a single comprehensive indicator. Instead, we suggest that comprehensive statistical reporting should entail a dashboard of indicators. The dashboard we propose is meant to be a starting point for discussion. It is intended to be rich enough to facilitate a sensible discussion of the relevant facets of human welfare, but it is also not overwhelmingly extensive. Moreover, it provides a balanced representation of the three areas addressed by the key questions, economic performance, quality of life and sustainability. This approach acknowledges that monitoring material well-being is an indispensable prerequisite for sensible economic policy, that life is about more than material well-being, but that human progress in non-material aspects is quite difficult to capture, and that it is wise to take a long-term perspective by outlining the consequences of unmodified human behavior.

3. The two involved institutions prepared this report with the following division of labour: The CAE took the lead in preparing Chapter II and section 2 of Chapter IV, while the GCEE took the lead in drafting Chapter III and section 3 of Chapter IV. Sections 1, 4 and 5 of Chapter IV are a joint product. Chapter I constitutes an introduction and summary of the report.

4. The CAE would like to thank Professor Christian Saint-Etienne for having kindly agreed to be the coordinator for the French Council.

The CAE is also grateful to Philippe Cunéo and Claire Plateau from INSEE for their comments and contributions to this report. The whole staff of the Conseil d'Analyse Économique has helped by providing research and logistic support and must be thanked, especially Christine Carl for editing the French version and Agnès Mouze for documentation.

French contributions owe a lot to the work of CAE's scientific advisers, Associate Professor Jézabel Couppey-Soubeyran, Professor Jérôme Glachant, Professor Lionel Ragot, Professor Stéphane Saussier, Professor Thomas Weitzenblum and Associate Professor Anne Yvrande-Billon. They must be thanked for it.

The General-Secretary Pierre Joly can be praised for his contributions and for coordinating this joint report on the French side.

5. The GCEE would like to express his profound gratitude to Professor Dr. Christoph M. Schmidt. His intense efforts as the main author and coordinator on the German side helped immensely in producing the report.

The GCEE would also like to thank staff from the German Statistical Office, specifically from the national and environmental accounts units, for providing helpful comments. As usual the members of the branch that work with the GCEE on a daily basis have helped prepare this report. We would like to thank Anita Demir, Diplom-Volkswirt Wolfgang Glöckler, Diplom-Volkswirtin Birgit Hein, Christoph Hesse, Klaus-Peter Klein, Uwe Krüger, Sabrina Mäncher, Volker Schmitt and Hans-Jürgen Schwab for their reliable and valuable input.

Last but not least, the GCEE would like to express his gratitude for the tireless efforts of its staff without which the German contribution to the report would not have been possible. Therefore, the GCEE specifically thanks Diplom-Volkswirtin and Diplom-Wirtschaftssinologin Ulrike Bechmann, Hasan Doluca, M.S., Dr. Malte Hübner, Dr. Anabell Kohlmeier, Dr. Heiko Peters, Dr. Stefan Ried, Diplom-Volkswirt Dominik Rumpf, Dr. Christoph Swonke, Dr. Marco Wagner and Dr. Benjamin Weigert. Special thanks go to Dr. Ulrich Klüh, whose input as Secretary-General until July 31 contributed considerably in preparing this report. Thanks also go to Dr. Jens Clausen, who as Secretary-General from August 1 on contributed to this report by coordinating the work of the staff and providing valuable inputs.

6. All views expressed in this report as well as all remaining errors should only be attributed to the authors mentioned below.

Paris and Wiesbaden on December 6, 2010

Conseil d'Analyse Économique

Christian de Boissieu

Jean-Philippe Cotis

Michel Didier

Christian Saint-Etienne

Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung

Peter Bofinger

Wolfgang Franz

Christoph M. Schmidt

Beatrice Weder di Mauro

Wolfgang Wiegard

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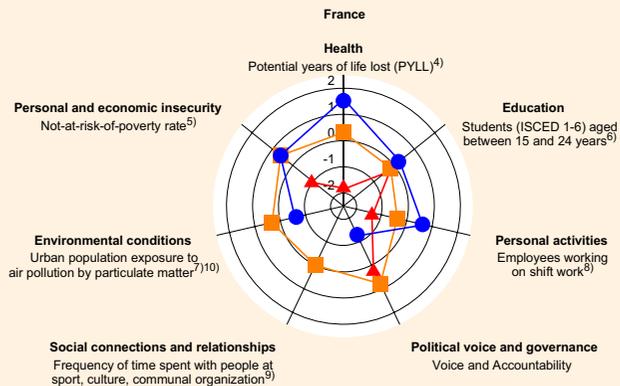
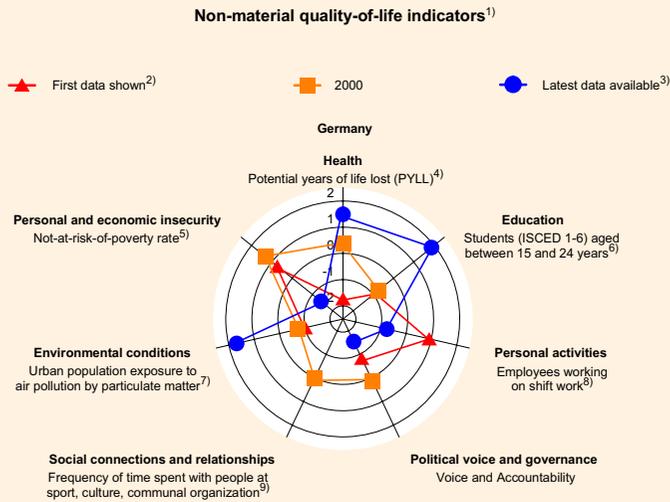
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CHAPTER I

Conceptual Foundations and Guiding Principles

1. The challenge
 2. State of affairs
 - Elements of economic performance and social progress
 - Unresolved issues
 3. Principles and obstacles
 4. Key results
 - Economic performance and material well-being
 - Quality of life
 - Sustainability
 5. The road ahead
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Chart 3



1) Own calculations; values are not comparable across countries. Average = 0; value higher than 0 implies better conditions and vice versa. – 2) Health: 1991, Personal activities: 1992, Political voice and governance: 1996, Education: Germany: 1992, France: 1993, Environmental conditions: Germany: 1999, France: 2001, Personal and economic insecurity: Germany: 1992, France: 1995. – 3) Health: 2006, Education and Personal activities: 2009, Political voice and governance and Environmental conditions: 2008, Personal and economic insecurity: Germany: 2009, France: 2008. – 4) PYLL is a summary measure of premature mortality which provides an explicit way of weighting deaths occurring at younger ages, which are, a priori, preventable. In relation to 100,000 population, calculated by the OECD Secretariat based on age-specific death statistics provided by the World Health Organization. – 5) One minus share of persons with an equalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equalised disposable income after social transfers. – 6) In relation to the population in the same age group. – 7) The indicator shows the population weighted annual mean concentration of particulate matter at urban background stations in agglomerations. – 8) As a percentage of total employees. – 9) Only data available: 1999. – 10) For 2000: 2001 data.

Sources for calculations: EU, OECD, SOEP, The World Bank, World Values Survey

Appendix

Chart 5

Dashboard for Monitoring Economic Performance, Quality of Life and Sustainability

Economic Performance (A)	Quality of Life (B)	Sustainability (C)
GDP per capita	Health: Potential years of life lost	Private sector net fixed capital formation (% of GDP)
GDP per hours worked	Education: Students (ISCED 1-6) aged between 15 and 24 years	R&D investment (% of GDP)
Employment rate (15 - 64 age group)	Personal activities: Employees working on shift work	Cyclically adjusted fiscal balance (% of GDP)
Net national income per capita	Political voice and governance: Voice and Accountability	Fiscal sustainability gap S2
Final consumption expenditure per capita (including government consumption)	Social connections and relationships: Frequency of time spent with people at sport, culture, communal organization	Total private credit to GDP gap
Distribution measure of net income per consumption unit (income quintile share ratio (S80/S20); internationally harmonized)	Environmental conditions: Urban population exposure to air pollution by particulate matter	Real equity price gap
	Personal and economic insecurity: Not-at-risk-of-poverty rate	Real property price gap
		Level of greenhouse gas emissions
		Greenhouse gas emissions per capita
		Resource productivity (GDP relative to non-renewable Domestic Material Input, DMI)
		Resource consumption (non-renewable Domestic Material Consumption - DMC, per capita)
		Biodiversity (preliminary indicator: bird index)