

Objectives for Class 23 Economic Growth

At the end of Class 23, you will be able to:

1. Define the term “Nominal Gross Domestic Product (GDP)”.
2. Explain the difference between a **“final good”** and an **“intermediate good”**.
3. Name the four groups of final users. In particular, define **“consumption”**, **“business investment spending”**, and **“net exports”**.
4. Explain why the Nominal Gross Domestic Product (GDP) is not a good measure of the true standard of living of the people of a country.
5. Explain what is meant by the **“underground economy”**?
6. Define **“Real Gross Domestic Product (GDP)”**. Why is it a better measure of aggregate production than Nominal Gross Domestic Product (GDP)?
7. Given a set of numbers, calculate the Nominal Gross Domestic Product (GDP) and the Real Gross Domestic Product (GDP).
8. What is meant by **“Real Gross Domestic Product Per Capita”**?
9. What is meant by **“National Income”**? Why is it equal to the Real Gross Domestic Product (GDP)?
10. Explain the difference between **“extensive growth”** and **“intensive growth”**.
What have been the most important sources for each type of growth?
Which of the two has been more important in the United States in the past century?
11. Define **“productivity”**. How does it relate to the standard of living?
12. Name **two aspects of the “productivity problem”** experienced by the United States.
13. What effects has the “productivity problem” had on **the American standard of living**? In what ways has this changed American life?
14. What factors might be responsible for the slowdown in productivity growth?

Class 23 Economic Growth in the Twentieth Century (latest revision September 2004)

The 20th century experienced the most remarkable growth in the production of goods and services (and therefore growth in the standard of living) in human experience. For the United States, the standard of living of the average person is now many times greater than it was a century ago. In this chapter, we will examine this experience in detail. First, we will describe and evaluate the measure that we use to determine just how much the production of goods and services has changed. Second, we will consider the reasons for the phenomenal economic growth of the 20th century. And finally, we will consider the effects of the slowdown in economic growth that occurred from 1973 to the middle of the 1990s.

1. The Measure of Production of Goods and Services

In this course, our consideration is with aggregates --- large groupings of people or things. Aggregate production would be the total production of all goods and services. Our problem is that, in measuring aggregate production, we can’t add up production of 10 million cars, production of 1 million homes, production of 70 million baseball tickets, and so on for all goods and services? We cannot add homes, cars, and baseball tickets; so we must convert them all into dollars. We take the number of dollars people spent on cars, the number of

dollars people spent on homes, the number of dollars people spent on baseball tickets, and so on, and add these together. When we do this we get what is called the **Gross Domestic Product (GDP)**. Formally, *Gross Domestic Product (GDP) is defined as the value of all final goods and services produced in the United States for the purpose of being sold during a year.* Notice that, in this definition, three key parts are underlined. Let us examine each in turn.

First, let us consider the word “final”. **Only final goods and services are counted in Gross Domestic Product (GDP).** *Final goods and services are those sold to a final user --- one who does not plan to transform the goods or services and then sell them to someone else.* Other goods are called “**intermediate goods**”. *Intermediate goods are part of the production process. They are sold to someone who will transform them and sell them on to someone else.* Let us consider an example. An iron company mines iron and sells it to a steel company. The steel company makes it into steel and sells the steel to an automobile company. The automobile company makes it into a car and sells the car to a dealer. The dealer sells the car to you. Three years later, you sell the car to me. Notice that the same iron is sold five times. But it was only produced once. If we counted it each time it was sold, we would be exaggerating production. **So we count it only once -- when it is sold to the final user.** In this case, you are the final user. The production is counted when you buy the car. All of the sales prior to you buying the car-- the iron mine to the steel company, the steel company to the automobile company, the automobile company to the dealer -- are intermediate goods. We can't count it again when you sell your car to me because the production has already been counted.

Test Your Understanding. The farmer grows wheat and sells it to a miller. The miller mills the wheat and sells it to a baker. The baker bakes it into a loaf of bread and sells the bread to Vons. You buy the bread at Vons and make a sandwich with it. At what point is the production of the wheat counted as part of the Gross Domestic Product?

The Gross Domestic Product is the value of all goods and services that are sold to final users. In our analysis, we will consider four groups of final users. **The first final users are consumers**, people who buy goods and services to consume them, or use them up. *Spending by consumers is called consumption.* **The second final users are businesses that buy capital goods.** *Capital goods are goods that will increase the ability of the business to produce --- goods such as machines, tools, equipment, factory buildings, office buildings, and so forth.* *The purchase of capital goods is called Business Investment Spending.* (In this case, the word “investment” has a meaning different from other uses of the word with which you might be more familiar. “Investment” here refers to businesses buying capital goods. In this course, a person buying stock in Microsoft will not be called “investment” but will instead be considered as “saving”.) The third final users are **government** agencies. And the fourth final users are foreigners. This is called *net exports -- exports minus imports.* (We need to subtract the imports because they are counted as part of consumer spending and business investment spending but they are not goods or services that were produced in the United States.) **In summary, the Gross Domestic Product (GDP) is equal to Consumption + Business Investment Spending + Government Purchases + Net Exports.**

Test Your Understanding. Into which category would each of the following purchases belong:

1. You buy yourself a new Ford Mustang.
2. General Motors buys a new computer system.
3. Hondas are produced in Ohio and then sold back to Japan
4. The Defense Department buys new jets from Boeing Corporation

Refer back to the definition of Gross Domestic Product on Page 11. Notice the second underlined phrase **“United States”**. Consider Ford Escorts. Ford is an American owned company that produces Escorts in Mexico. Assume these Escorts are then sold in Canada. Which country can claim these Escorts as part of its Gross Domestic Product (GDP) --- the United States, because the company that produced the Escorts is owned by Americans, Mexico, because the production of the Escorts took place in Mexico, or Canada, because the Escorts were sold to a consumer in Canada? *The answer is that the production is counted as part of the Gross Domestic Product (GDP) of a country if the production takes place within the geographic boundaries of that country.* Therefore, the production of the Escorts becomes part of the Gross Domestic Product (GDP) of Mexico. Similarly, the Honda Accords that are produced in Ohio and then exported to Japan are part of the Gross Domestic Product of the United States.

Test Your Understanding. Assume that 100 million pounds of strawberries are grown in northern Mexico and sold to Ralph’s Grocery Stores for \$0.50 per pound. Ralph’s then sells the strawberries to you for \$0.89 per pound. How much do strawberries contribute to the Gross Domestic Product (GDP) of Mexico? How much do strawberries contribute to the Gross Domestic Product (GDP) of the United States?

The last underlined word in the definition of Gross Domestic Product is **“sold”**. With one exception that we will not consider here, **goods and services are counted only if they are sold in a market.** If I buy tomatoes at Albertson’s, the purchase is counted as part of the Gross Domestic Product (GDP). If I grow them myself in the backyard, they are not counted. If I pay someone to fix my car, or wash my clothes, or clean my house, these purchases are part of the Gross Domestic Product. If I do these things myself, they are not counted, even though the same goods or services are being produced. If I pay to put my children in day care, the purchase is counted as part of the Gross Domestic Product. If I spend time with my children at home, that “production” is not counted.

Test Your Understanding. Explain why the rise in the divorce rate could cause the measure of Gross Domestic Product to rise even though people’s standard of living has not risen.

2. Criticisms of the Gross Domestic Product Measure

There have been several criticisms of the Gross Domestic Product (GDP) as a measure of our standard of living. **First, as noted in the last paragraph, many goods or services that are produced are not counted because they are not sold in markets.** If people desire to work less in order to spend more time in leisure activities (such as being at home with one’s family), the Gross Domestic Product (GDP) measure does not show how much better off we are. For example, assume that Country A and Country B had the same Gross Domestic Product. Now assume that workers in Country A work 40 hours per week while workers in

Country B work 35 hours per week to produce this Gross Domestic Product. Undoubtedly, the people in Country B are better off. But the Gross Domestic Product measure would not show this.

Test Your Understanding. The workweek of the average American worker is about 25 hours less than it was a century ago. Explain why, because of this, the Gross Domestic Product measure understates the increase in our actual standard of living.

Second, many other goods and services are not counted because they go through what is called the “underground economy”. Such goods or services may not be counted because they are illegal (prostitution or selling drugs) and no one will tell the government about them. Or such goods or services may not be counted because the one producing them wishes to avoid paying tax on the income earned. For example, a construction worker may do some repairs and ask to be paid in cash. No tax will be paid on the income earned. And the production will not be counted because no one will know that it took place. **Third, the Gross Domestic Product (GDP) measure makes no value judgment about the goods or services produced.** So, if people buy cigarettes, the Gross Domestic Product (GDP) rises. If they then have to pay for medical treatment because of the diseases caused by cigarettes, the Gross Domestic Product (GDP) measure rises again. Yet, people might have been better off not buying the cigarettes in the first place. Or, assume a company produces \$10 million worth of paper. But in doing so, it pollutes the nearby river, reducing its value by \$20 million. Society as a whole is worse off. But the Gross Domestic Product measure will show an increase in production of \$10 million. **Fourth, the Gross Domestic Product measure does not consider the distribution of income.** Assume that Country A and Country B have the same Gross Domestic Product. But in Country A, the goods are distributed relatively equally. In Country B, there are a small number of very rich people and a large number of very poor people. Most people would say that, as a country, Country A is better off. But the Gross Domestic Product measure would not show this. **These criticisms illustrate that the Gross Domestic Product is not a good measure of the well being of a country.**

3. Real Gross Domestic Product (GDP)

Our purpose in this chapter is to measure the production of all final goods and services that are produced in the United States in a year. The Gross Domestic Product (GDP) measure we have described is not adequate for this purpose. This can be seen in the following example. Assume there are only three goods: call them A, B, and C. Consider the following made up numbers:

	<u>2000 Price</u>	<u>2000 Quantity</u>	<u>2004 Price</u>	<u>2004 Quantity</u>
A	\$15	5	\$30	10
B	\$125	1	\$250	2
C	\$10	50	\$20	100

What is the Gross Domestic Product (GDP) for 2004? The answer is \$2,800 ($\$30 \times 10 + \$250 \times 2 + \20×100). What is the Gross Domestic Product (GDP) for 2000? The answer is \$700 ($\$15 \times 5 + \$125 \times 1 + \10×50). Using these numbers, we would say that production has quadrupled ($700 \times 4 = 2,800$). But it hasn't. If you look just at the quantity numbers,

you will see that quantity produced of each product has exactly doubled. The rest of the rise in the Gross Domestic Product (GDP) is caused by the rise in prices. This is NOT what we want to measure here. So, to focus on the rise in production alone, we need to take out the effect of the rise in prices. *We do this by evaluating the quantities of the year 2004 assuming that the prices of all products have not changed since the base year.* As of the time of this writing, the base year used by the government is 2000. When we do this calculation, we have what is called the **Real Gross Domestic Product or Real GDP**. **Real Gross Domestic Product (GDP) is our measure of production.** Real is a term you will see many times in this course. **Real always means “adjusted for inflation”.** (To make the distinction, **if the Gross Domestic Product is not adjusted for inflation, we will call it “Nominal GDP”.** “Nominal” simply means “name”.) Let us now calculate the Real GDP for the year 2004. **What would we have spent in 2004 if we bought the same things that we actually bought in 2004 (10 units of A, 2 units of B, and 100 units of C) but paid for each good the price that existed in 2000 (\$15 for each unit of A, \$125 for each unit of B, and \$10 for each unit of C)? The answer is \$1,400 ($\$15 \times 10 + \$125 \times 2 + \10×100).** The growth of Real GDP is solely due to the increase in quantity produced. This is the increase that we are trying to measure. Real GDP in 2000 was \$700. Real GDP in 2004 was \$1,400. Therefore, Real GDP (production) doubled. This is exactly what we saw when we examined the changes in the quantity produced of each good.

Test Your Understanding. Assume that there are only four goods produced. The following represent the prices and quantities sold in the base year (2000) and the current year (2005):

	Price ₀₀	Quantity ₀₀	Price ₀₅	Quantity ₀₅
Pizza	\$4	10	\$8	12
Cola	12	20	36	15
T - Shirts	6	5	10	15
Bus. Equipment	25	10	30	12

What was the **Nominal Gross Domestic Product (GDP)** in 2000? Show calculations.

What was the **Nominal Gross Domestic Product (GDP)** in 2005? Show calculations.

What was the **Real Gross Domestic Product (Real GDP)** in 2005? Show calculations.

Our discussion thus far has focused on the total of Real GDP. But it would not be helpful to compare the total Real GDP of the United States to the total Real GDP of Sweden. Sweden has fewer people than Los Angeles County. So to make countries comparable, we compare **Real GDP per person, or Real GDP per capita.**

4. Calculating the Rate of Growth of Real Gross Domestic Product (GDP)

We are interested in the rate at which the Real Gross Domestic Product (GDP) changes? How do we calculate the rate of growth? *The answer is that we take the change in the Real Gross Domestic Product (GDP) from one year to the next and divide by the Real Gross Domestic Product (GDP) in the first year.* For example, assume that in 2003, the Real GDP is \$1,000. In 2004, the Real GDP is \$1,100. The change in the Real GDP is \$100 ($\$1,100 - \$1,000$). Divide this by the Real GDP in 2000 (\$1,000) and we arrive at the result that Real GDP increased by 10% ($\$100$ divided by $\$1,000$).

Test Your Understanding. In the calculation at the top of this page, by what percent did the Real GDP rise between 2000 and 2004?

Once we have calculated the rate of growth, we can make an interesting calculation using **the Rule of 72**. Simply divide the rate of growth into 72. The result will provide a good approximation of the amount of time needed for the Real GDP to double. In this example, 72 divided by 10 equals 7.2. At this rate, Real GDP would double in 7.2 years.

Test Your Understanding. Assume that Real GDP Per Capita is \$10,000 in 2004. If it grows at 2% per year, what will the Real GDP per capita be in 2076? If it grows at 3% per year, what will the Real GDP Per Capita be in 2076? Notice how much of a difference a small change in the rate of growth can make.

5. National Income

How does a person earn income? The answer is that one produces goods and services that sell in a market. There is no other way. One person earns more than another because that person produces more goods and services than the other or because that person produces goods and services of higher value. So it is for a country. **The people in a country can earn more, and therefore live at a higher standard of living, only by producing and selling more goods and services.** To paraphrase a Beatles song, the value that you take is equal to the value that you make! As we have seen, the value that a country produces is called the Real Gross Domestic Product (GDP). ***The value that a country earns is called its National Income, defined simply as the income of everyone in the nation.*** Conceptually, these two concepts must be equal and will often be used interchangeably.

6. Sources of American Economic Growth

There are certain factors that are used to produce goods and services (these are known as the factors of production). First, to produce, people use natural resources. Nature provides land, minerals such as oil or coal, trees, water, fish, animals, and so forth. Second, there are the people who must do something to these natural resources --- harvest the fruits and vegetables, dig the minerals, cut the trees, catch the fish, and so on. ***The productive contribution made by these people is called their labor.*** Third, people have learned that they can produce more by taking some of the natural resources and converting them into capital goods. ***Capital goods are those goods made by people for the purpose of increasing production.*** As noted earlier, examples of capital goods include machines, tools, equipment, and factory or office buildings. ***And fourth, there is a need for someone to recognize the desires of consumers and then bring together the appropriate natural resources, labor, and capital to meet these desires. A person who undertakes this activity is called an entrepreneur.*** So, for example, Steve Wozniak and Steven Jobs recognized a desire of some people for a computer that could be operated at home. They developed such a computer, obtained the natural resources, hired and trained the workers, bought the necessary machinery, and organized the production process. The success of Apple allowed both of them to have great wealth. Entrepreneurs such as Ray Kroc (MacDonalds), Bill Gates (Microsoft), Sam Walton (Wal-Mart), Irwin Jacobs (Qualcomm) are well known. ***In summary, the factors of production include natural resources, labor, capital goods, and entrepreneurship.***

Basically, there are two ways that economic growth can occur. One is to increase the quantities of the factors of production. The other is to increase the quality of the factors of production. In short: “more” or “better”. ***Increasing the quantities of the factors of production is called extensive growth.*** While this would include increasing the quantities of any of the factors of production, **there have been two important sources of the extensive growth that occurred in the United States. One source of extensive growth was the increase in the amount of capital goods bought by private businesses (machines, tools, and buildings and so forth).** Businesses borrow from financial institutions to pay for most of their purchases of capital goods. Financial institutions obtain the funds to lend to the businesses from the savings of the public. ***Therefore, the amount of capital goods that can be purchased by private businesses ultimately depends on the amount the public is willing to save.*** This is an important point that we will return to several times in the text. ***The other important source of extensive growth was the infrastructure or public capital provided by government. This includes goods such as roads, ports, airports, and communication facilities.***

Increasing the quality of the factors of production is called intensive growth. While this would include increasing the quality of any of the factors of production, **there have also been two main sources of the intensive growth that occurred in the United States. One source of intensive growth was the tremendous improvement in technology. The other source of intensive growth is the increase in the skills that workers gained as a result of education and training.**

There have been several studies trying to explain the sources of American economic growth. **A major conclusion of these studies is that most of American economic growth in the 20th century, and especially in the period after 1950, was intensive growth.** The increase in the productivity of our workers, due to improvements in technology and to the increased education and training of workers, was the most important cause of the enormous growth of our standard of living in the 20th century.

Test Your Understanding. Categorize each of these sources of growth as either **extensive growth or intensive growth** and then explain why.

1. Technological improvements allow modem speeds to increase from 2400 to 56K
2. A higher percent of American workers have a college education today than before
3. Immigration increases the American population
4. Disease resistant seeds are developed which mean that fewer wheat plants will die before harvest
5. Oil is discovered in Alaska.

7. The Slowing of Economic Growth: 1973 to 1995

Although production grew rapidly through most of the 20th century, it grew at a slower rate beginning in 1973. This slowing of economic growth resulted from a slowing of the increase of the productivity of American workers. ***Productivity of workers is measured by the amount produced (Real GDP) per hour of work.*** From 1947 to 1972, the productivity of American workers grew by an average of more than 3% per year. This means that each year, on average, for each hour of work, an American worker would produce about 3% more goods and services than had been produced the year before. At this rate, the average American worker in 1972 was producing more than double what had been produced in 1947 for each

hour of work (recall the Rule of 72). **But during the decade of the 1970s, the productivity of American workers grew each year by an average of only 1.8% per year. During the decade of the 1980s, the productivity of American workers grew each year by an average of only 1.2% per year. And from 1990 to 1995, the productivity of American workers grew each year by an average of less than 1% per year.** Beginning in 1996, productivity did begin to grow faster, although the rate of growth was still less than that achieved in the 1950s and 1960s. **(Notice that the productivity of the average American worker did not decrease. In 2000, American workers were producing more than they had been producing before. It is the *increase in the productivity of American workers that has been very low.*)**

The decrease in the rate of growth of the productivity of workers, beginning in the 1970s, was experienced by all of the Western industrial democracies. **However, the productivity of American workers grew at a lower rate than that of the workers of most of the other countries.** On average, American workers are still more productive than any other workers in the world. But throughout the last quarter of the century, the workers of Canada, Britain, Germany, Japan, Korea, France, and so forth came closer to the productivity level achieved by American workers.

Test Your Understanding. If productivity of workers is growing faster in these other countries than in the United States, what will be the effect on American exports and on American imports?

As noted above, there is only one way for a country to earn income and that is to produce and sell goods and services. **The amount we earn is determined by the amount we produce. If our productivity is growing slower, our incomes must also be growing slower.** Indeed, this is what we find. As one measure, consider the real median income of American families. **“Median” means “middle”**; if a family has the median income, half of American families earn more than this family while half of American families earn less. **“Real”, as noted earlier, means adjusted for inflation.** In the 25 years from 1948 to 1973, the real median income of American families more than doubled. But in the 25 years after 1973, the real median income of American families increased by only about 25%. As another measure, consider real hourly earnings. The hourly earnings of an average American worker, adjusted for inflation, grew 2.9% per year during the decade of the 1960s. They grew by 1.3% per year during the decade of the 1970s. But they grew by only 0.2% per year during the decade of the 1980s and by only 0.3% per year from 1990 to 1995. **Americans, on average, are richer now than they were in 1973. But incomes of Americans have grown much slower than they used to grow and much slower than we have come to expect them to grow.**

In this chapter, we have focused on “averages”. But the use of the average as our measure can be misleading. **On average, Americans are richer than they were in the 1970s. But not all Americans are richer.** Imagine that American families are ranked in order of their income. The 60% of Americans with the lowest incomes found that their incomes, adjusted for inflation, actually declined in the period from 1973 to 1995. The next 20% (the 61st to 80th percentile) found that their incomes stayed about the same. **All of the increase in income in this period went to the richest 20% of Americans.**

To illustrate the slow increase in incomes, economist Frank Levy provided the following example. He examined the average rise in income between the ages of 30 and 40, the ages during which income typically increases the most. For a typical male born in 1919, income

(adjusted for inflation) rose by 63% between his 30th birthday (in 1949) and his 40th birthday (in 1959). For a typical male born in 1929, income (adjusted for inflation) rose by 49% between his 30th birthday (in 1959) and his 40th birthday (in 1969). But for a typical male born in 1943, income (adjusted for inflation) actually *fell* 1% between his 30th birthday (in 1973) and his 40th birthday (in 1983). Subsequent generations have also experienced little or no gain in income in this decade of life. During the decade of one's 30s, one expects to be able to buy a home, to be able to buy furniture and appliances for the home, to be able to buy a decent car, to take vacations, and so on. In short, during the decade of one's 30s, one expects to be able to buy the "American dream". **But for the generations that reached age 30 after 1973, this ability to buy the "American dream" simply did not happen.** Levy's data also showed that, until 1973, a man reaching the age of 30 would be earning substantially more than men of earlier generations had earned at age 30. We expect and want each generation to live better than earlier generations. Since 1973, however, this desire has not been achieved. **A man who reached age 30 in 1973 earned more (adjusted for inflation) than any subsequent group of men were earning on their 30th birthday.**

8. Effects of the Slowing of Economic Growth

People's lives have changed greatly because their incomes have been rising less than was expected. **First, families are working more hours to make up for the slow growth of their incomes.** For most families, this means that more family members are working. **The most significant change has been the increase in the proportion of married women, especially those with small children, who work.** Indeed, this is one of the most significant social changes of the 20th century. The whole nature of the family has changed dramatically as women who are full-time housewives and mothers have become increasingly rare. **Another significant change has been the increase in the proportion of high school and college students who work as well as the increased number of hours they work per week.** Several books have been written documenting the enormous stress in people's lives as they try to balance work with other responsibilities – home, children, school, and so forth. **Second, because their incomes have been growing slowly, people have increased the proportion of their incomes that they spend and decreased the proportion of their incomes that they save.** In doing so, they must have believed that the slow growth in their incomes was temporary. That is, they must have believed that could postpone saving now and begin saving later on when incomes began to rise. But incomes did not begin to rise. **As a result, savings in American have been extremely low.** Remember that savings ultimately finance the purchases of capital goods by businesses. Since capital goods are very important in increasing production, the low rate of savings has been a major problem for the United States. **Third, for the same reasons that people have saved less, they have also become more deeply in debt.** The recession that began in 1990 was caused in part by the fact that people had become so deeply in debt that they believed that they had to pay off bills rather than buy new goods and services. **Fourth, as incomes have grown slower, people have chosen to get married later in life.** As of now, on first marriage, men, on average, are over age 28 while women are over age 25. This is the oldest average age of first marriage in American history. Undoubtedly, the inability to afford a standard of living that is considered desirable is one reason that people are postponing marriage. **Fifth, the number of children per family has fallen greatly.** In the years of the baby boom (1946 to 1964), it was not

uncommon to see families with four, five, six, or more children. Today, these families are much less common and families with two, one, or even no children are more common. As incomes rise slowly, it is harder for families to afford having many children. **Sixth, the slow growth in incomes had had political ramifications. One ramification, it might be argued, is that the *tax revolt* is a result of the slow growth of incomes.** People have always hated to pay taxes. But the tax revolt dates only from the passage of Proposition 13 in California in 1978. Taxes do not take a significantly larger portion of people's incomes than they did forty years ago. But when incomes were growing rapidly, people could pay their taxes and still live better than before. When incomes started growing slowly, people could see that every dollar paid in tax was taking away from the ability to buy the goods and services they desired. And so, they became angry. **Another ramification of the slow growth of income was the election of Bill Clinton to the Presidency in 1992.** The campaign slogan "it's the economy, stupid" was designed to remind those campaigning for Bill Clinton to emphasize the fact that incomes had not been growing up to expectations for a long time and that people were suffering because of this ("I feel your pain").

9. Causes of the Slowing of Economic Growth

We need to understand the causes of the slowdown in the growth of productivity in order to know how to solve it. Since it was such an important problem, many studies have been done to try to explain it. Many reasons have been suggested for the problem. Yet we still do not have definitive answers.

When the problem first developed in the 1970s, some economists blamed **the rapid rise in oil prices** that took place in that decade. A barrel of oil (42 gallons) that sold for \$4 in 1972 was selling for \$28 in 1979. Higher oil prices increased the costs of making products. This reduced the incentive for companies to produce goods. Other economists blamed **the increase in the number of inexperienced workers in the labor force**. The number of inexperienced workers increased in the 1970s because the baby boomers reached the age to enter the labor force and because large numbers of women entered the labor force for the first time. Inexperienced workers are likely to be less productive. But it has become obvious that these two factors could not be major causes of the problem. Oil prices stabilized, and even fell, from 1979 to 2000. The baby boomers and women became more productive as they gained more experience. But the problem of slow economic growth has persisted.

Other reasons that have been suggested have been shown to be valid. However, their effects have been shown to be small. **Some economists blamed government regulations for some of the slow growth in productivity.** It was argued that regulations imposed by government agencies, such as the Environmental Protection Agency (EPA) or the Occupational Safety and Health Agency (OSHA), prevent businesses from undertaking activities that could lead to increased productivity. **Other economists blamed insufficient spending by government on infrastructure (roads, bridges, airports, communication facilities, and so forth).** What good is a new truck, they argued, if the roads are full of potholes and the bridges are closed? These economists also focused on **Research and Development (R&D) spending. They believed that the United States was not spending enough on R&D and that too much of the R&D spending in the United States was oriented to military and space activities that have little spillover to civilian products.**

There is validity to all of these arguments. Had the regulations been different, had there been more spending on infrastructure, and had there been more R&D spending and had more of it been directed to civilian goods, it is likely that productivity would have grown more.

But the evidence shows that the effects of these were quite small. Productivity would still have grown very slowly, incomes would still have grown very slowly, and the economic problems of the period would still have existed.

Other analysts have focused on reasons that cannot be measured. Several books have been written blaming American management. **One charge made against American managers was that their thinking is too short-term.** They do not look far enough into the future and therefore fail to undertake certain activities that might increase productivity. Other authors blamed the nature of the relationship between managers and workers. **In the United States, they argued, the relationship between management and workers is often hostile and bitter.** Each side distrusts the other. Occasionally, each side wants nothing more than to hurt the other. You be familiar with this if you are familiar with the recent strikes involving Greyhound, UPS, and Major League Baseball. Some authors compared the governance of American companies with those of Japanese companies, and found the American companies lacking (these books were written before the major drop in the performance of the Japanese economy).

Earlier, the factors responsible for most of the economic growth of the 20th century were given as (1) the increase in the amount of capital goods used by businesses, (2) the advances in technology, and (3) the increase in the skills of the workforce. So we might expect that changes in these have been responsible for much of the problem of the slow economic growth. Let us examine these. **(1) First, by all accounts, business investment spending – the buying of capital goods --- has been too low in the United States for many years. American businesses have not been spending enough on new machinery, equipment, and buildings.** (2) Second, advances in technology have been very great. A list of the astonishing technological advances of the past thirty years would take a complete book. Yet, for a long time, productivity did not grow very much. **It seems that it took people a long time to learn to use the new technologies in ways that raise productivity.** The time to learn to use the new technologies may have been increased because the technology changed so rapidly. For example, by the time one had learned Windows 3.1, one would have to learn Windows 95. By the middle of the 1990s, people seem to have become better at using the new technologies. As a result, productivity has begun to grow more rapidly. (3) Third, while the number of years that people attend school has been increasing, there have been many criticisms as to the quality of the schooling they receive. These three areas were the areas on which President Clinton focused as he attempted to raise the rate of growth of productivity and therefore of income.

10. Summary

This chapter has examined economic growth in America in the 20th century. First, we examined the measures of the production all goods and services. We defined **Nominal Gross Domestic Product (GDP)** as the value of all final goods and services produced in the United States and then listed some of the reasons that it might not be a good measure of the standard

of living of the people of a country. We also defined **Real Gross Domestic Product (GDP)** as being the Gross Domestic Product (GDP) adjusted for inflation. **Real Gross Domestic Product (GDP) is the measure we use of the aggregate production of goods and services. The rate of change of Real Gross Domestic Product (GDP) tells us how much aggregate production of goods and services has changed – that is, how much economic growth there has been.**

Second, we examined the reasons for the enormous economic growth of the 20th century. We distinguished between extensive growth (economic growth caused by increases in the quantities of the factors of production) and intensive growth (economic growth caused by improvements in the quality of the factors of production). **Studies show that three factors were mostly responsible for the enormous economic growth experienced by the United States in the 20th century: the growth in the amount of capital goods per worker, the great advances in technology, and the increases in the skills of American workers.**

Third, we looked at the period from 1973 to about 1995, a period during which economic growth slowed significantly. This resulted from a slower increase in the productivity of American workers and caused a slow increase in incomes (nearly all of which went to the richest 20% of the population). Because incomes were rising slowly, married women and young people devoted more time to work. People saved less and became more deeply in debt. People married later and had fewer children. In short, the lives of Americans were affected deeply as the growth of income slowed.

Finally, we looked at some suggested explanations for the slowing of economic growth. We do not have definitive answers as to the causes. But we do know that the insufficient amount spent by businesses on new capital goods, the difficulty of keeping up with rapidly changing technology, and problems with the school system caused some of the problem. The Clinton administration attempted to address these areas. Future Presidents will do the same.

Practice Quiz for Class 23

- Assume that there are two goods, A and B. In 2000, Americans produced 10 units of A at a price of \$10 and 20 units of B at a price of \$20. In 2004, Americans produced 15 units of A at a price of \$20 and 25 units of B at a price of \$30. The **Nominal GDP** for 2004 is:
 - \$300
 - \$500
 - \$600
 - \$750
 - \$1,050
- Using the numbers in question 1, the **Real GDP** for 2004 is:
 - \$300
 - \$500
 - \$600
 - \$750
 - \$1,050
- Which of the following **would** be counted as part of the American **Gross Domestic Product**?
 - Ford produces automobiles in Mexico and exports them back to the United States
 - I fix the plumbing in my house
 - Bethlehem Steel produces steel that is sold to General Motors to be made into cars
 - Honda produces automobiles in Ohio and then exports them back to Japan
- Which of the following statements is/are true?
 - If a couple gets a divorce and rents two apartments, the Gross Domestic Product (GDP) rises
 - If people decide to work only three days a week and have the rest of the time for activities at home with their children, the Gross Domestic Product (GDP) rises.
 - When people buy cigarettes, the Gross Domestic Product (GDP) rises. But when they must buy the services of doctors and hospitals to overcome the health problems caused by cigarettes, the Gross Domestic Product (GDP) is not affected.
 - Production that takes place in the underground economy is always counted in Gross Domestic Product (GDP)

5. A business such as General Motors buys a new computer system from IBM. This would be an example of which of the following:
a. consumption b. investment spending c. government spending d. net exports
6. If Real Gross Domestic Product (GDP) grows at a rate of 6% per year, according to the Rule of 72, how long will it take for Real Gross Domestic Product (GDP) to double?
a. 6 years b. 12 years c. 24 years d. 72 years
7. Which of the following is would create **intensive growth**?
a. more oil is discovered
b. more capital goods are produced
c. immigration increases the number of workers
d. technology improves the quality of computers by making them faster
8. What happened to the **productivity of American workers** between 1973 and 1995?
a. It was falling c. It stayed constant
b. It was growing slowly d. It was growing rapidly
9. As a **result** of the American productivity problem:
a. Incomes of American workers grew more slowly than in the past
b. More members of American households are in the labor force than in the past
c. Americans have been saving a much smaller part of their incomes
d. All of the above
10. Which of the following has been suggested as a **cause** of the productivity problem of 1973 to 1995?
a. There are been too little business investment spending
b. There has been too much spending for R&D
c. There has been too much spending on infrastructure
d. Oil prices fell from \$28 per barrel to \$16 per barrel