Chapter 14

Business

The trading floor of the New York Stock Exchange during the 1929 stock market crash. By the year 2000, more than half of American households held equity in stocks. Courtesy of Library of Congress.
The Gross Domestic Product per capita, in constant dollars, grew eightfold during the century.

The Gross Domestic Product attempts to measure the entire output of the American economy that is traded in the marketplace: every computer, every haircut, every car, every college course taken by a student, and so forth. The “real” GDP is the GDP adjusted for changes in prices. When the real GDP is divided by the number of people in the U.S. population, an approximate measure of the nation’s standard of living is obtained. The United States enjoyed phenomenal economic growth in the twentieth century. The GDP per capita increased in every decade of the century. Even during the decade of the Depression, 1929–1939, the per capita GDP actually increased 2 percent, overcoming a sharp drop in the early years of the decade.

The extraordinary growth in GDP per capita was caused primarily by growth in inputs to the economy: more energy, more capital, better-educated workers, and research and development that produced better technologies. Some of the growth can also be traced to improved organization of productive activities.
Real Gross Domestic Product
1999 dollars per capita

1900 = $4,256
1999 = $34,565
In the first half of the century, large, year-to-year fluctuations in the real GDP indicated severe swings in the business cycle between expansion and contraction of the economy. In the second half of the century, as the chart shows, these fluctuations became much more moderate, while the economy continued to expand. The moderation of the business cycle after midcentury has often been attributed to improved monetary policy and the effects of government programs. Better monetary policy prevented rapid, “unsustainable” expansion of the economy and also arrested contractions of the economy. Some government spending programs, such as unemployment insurance and farm subsidies, were deliberately designed to counterbalance economic swings. Federal insurance of bank deposits prevented economic contractions from causing liquidity crises. Government spending, which tends to be independent of the business cycle, represented a larger part of the economy in the second half of the century. Government transfer programs such as Social Security were also insulated from the business cycle.
Fluctuations in Real Gross Domestic Product
Annual percent change
After 1939, business activity expanded enormously. The corporate share of business activity increased at the expense of proprietorships and partnerships.

The sheer size and growth of American business is difficult to comprehend. In 1939, American businesses had revenues of $2 trillion (in constant 1999 dollars). By 1996, these revenues had increased ninefold to $18 trillion, while the population had only doubled. As the chart indicates, between 1939 and 1996, the business revenues of corporations increased nearly tenfold, while those of partnerships and proprietorships grew sevenfold and threefold, respectively.

This remarkable growth in business revenues had three major components. Part of the increase represented a transfer of social activities to the business sector. Child care, for example, was almost completely noncommercial in 1939. By 1992, child care had become an $8 billion sector of private enterprise (see page 38). The largest component of the growth in business revenues, however, represented an increase in the quality and quantity of products and services. Most of the products available in 1939—automobiles, for example—were available at the end of the century, but in greater quantities and with much better quality. The final component of the increase in business revenues was the introduction of new products and services. Television shows, computer virus protection programs, and feng shui real estate consultations represented entirely new sources of business revenue.

Between 1939 and 1996, the proportion of business revenue that went to corporations increased from 78 percent to 89 percent. At the same time, the share that went to proprietorships decreased from 14 percent to 5 percent, while the proportion that went to partnerships declined from 8 percent to 6 percent.

The increase in the corporate share of business revenues was a natural outgrowth of the increasing size and scale of American business. As the overall economy expanded, many entrepreneurs with growing businesses that started as proprietorships or partnerships decided to incorporate. For growing businesses, incorporation often involved the sale of stock to the public, which allowed these entrepreneurs to raise capital for the business and receive cash for some share of the business.
Fluctuations in the volume of stock trading were much greater in the early years of the century when economic growth patterns were more volatile. A comparison of trading volume on the New York Stock Exchange during two consecutive five-year periods, for example, shows that annual trading volume decreased by 77 percent from 1909 to 1914 and then increased by 560 percent from 1914 to 1919. After 1960, trading volume increased almost every year. The number of shares traded on the least active day of 1999 greatly exceeded the number traded on the most active day of 1980.

Trading on the New York Stock Exchange does not tell the whole story, however. For most of the century, trading volume on the New York Stock Exchange constituted about 80 percent of the nation’s total trading volume, which also included other stock exchanges (American, Chicago, Pacific, Philadelphia). A new factor emerged in the 1970s as “over-the-counter” trading evolved into the computerized NASDAQ system under the auspices of the National Association of Securities Dealers. In 1994, for the first time, the number of NASDAQ shares traded surpassed the number traded on the New York Stock Exchange. The gap continued to widen and by 1999, trading volume on the NASDAQ exceeded that of the New York Stock Exchange by more than a third.

Between the early 1970s and 1999, the aggregate value of NASDAQ shares traded increased from a small fraction of the value of shares traded on the New York Stock Exchange to approximate parity. By the end of the century, the number of companies whose shares were listed by NASDAQ exceeded the number listed by all of the other exchanges combined. NASDAQ-listed companies tended to be younger and were more likely to be in the newer sectors of the economy.
Annual Trading Volume of Corporate Stocks
Billions of shares traded per year, logarithmic scale

- 1999: NASDAQ = 273 billion
  NYSE = 294 billion

1900 = 139 million
1975 = 1.4 billion

New York Stock Exchange
NASDAQ
In the first five decades of the century, the Dow Jones Industrial Average rose almost 250 percent. In the subsequent five decades, the average rose by more than 4,700 percent.

The Dow Jones Industrial Average, commonly known as “the Dow,” is a weighted composite of the prices of the common shares of thirty large industrial corporations. Some corporations are added or deleted from time to time as corporate circumstances change (Microsoft and Intel made the list in 1999), but the number of stocks remains at thirty. These thirty stocks alone represent about a fifth of the value of all stocks in the United States.

Although there are many other indexes of stock prices, the Dow commands more attention in the news media than all of the other indexes combined. The investing public, moreover, typically accepts the Dow as the basic measure of all stock prices.

Nothing in the history of the American stock market compares with the Dow’s elevenfold rise from 1982 to 1999. Accompanying this extraordinary growth were a decline in dividend yields and an increase in price-earnings ratios. The dividend yield of the Standard and Poor’s 500 fell from 5.8 percent in 1982 to 1.3 percent in 1999. In the same period, the average price-earnings ratio increased from 8 to 32.

The rise in stock market volume and value was partly attributable to two forms of tax-sheltered savings authorized by Congress in the 1970s—Individual Retirement Accounts and 401(k) plans. The combined assets in these special accounts, measured in constant dollars, rose from $300 billion in 1985 to more than $2.5 trillion in 1997, with a large proportion invested in common stocks.

Another factor that stimulated the equities market was the rapid growth of mutual funds, which combine the contributions of individual investors into large funds with stated investment objectives. By 1998, there were more than 3,500 equity funds (principally invested in stocks) and a like number of income, bond, and money market funds. The equity funds alone held assets of more than $3 trillion. In addition to household investors, mutual fund investors also included nonprofit organizations, business corporations, labor unions, bank-administered trusts and estates, private pension funds, credit unions, and state and local governments.

Other factors probably contributed to this phenomenal rise in equity values. For example, the baby boomers—the largest birth cohort in American history—recently entered the period in life when people focus on asset accumulation.
The Dow Jones Industrial Average
Value at end of year, logarithmic scale

1900 = 71
1999 = 11,497
For much of the century, only a small fraction of the population owned stock, but from 1980 to 1998, the proportion of stockholders grew rapidly.

In 1998, 52 percent of Americans owned shares in public companies or equity mutual funds, either directly in their own accounts, or indirectly in retirement and trust accounts. This percentage was four times higher than in 1980, when only 13 percent of Americans owned stock. By the end of the century, more than half the population were capitalists in some sense.

Many factors contributed to the broadening of stock ownership. New pension laws shifted many employees’ pensions to the new 401(k) plans, most of which are invested in stocks. Mutual funds made it easier and cheaper to start investing. Federal law deregulated brokerage commissions. On-line investing facilitated stock purchases by reducing both paperwork and commissions. Finally, after almost twenty years of unprecedented prosperity, many Americans had significant wealth with which to invest in equities.

Historically, according to Jeremy Siegel of the University of Pennsylvania, investments in equities have grown by 7 percent per year, after inflation. When compounded, such investments double in value every decade. At 7 percent compound interest, a twenty-two-year-old employee investing $2,000 a year with matching funds from his or her employer, would have $1.5 million at age seventy.
Stockholders
Percentage of population

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<th>Year</th>
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</thead>
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<tr>
<td>1900</td>
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<tr>
<td>1928</td>
<td>3%</td>
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<td>4%</td>
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<td>1989</td>
<td>32%</td>
</tr>
<tr>
<td>1998</td>
<td>52%</td>
</tr>
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Domestic petroleum production grew until 1970, when a steady decline ensued. Per capita consumption of petroleum peaked a decade later and declined moderately thereafter.

Coal was the principal fossil fuel of the nineteenth century. In the twentieth century, petroleum became the critical energy source. Unlike its adversaries in World War II, the United States was essentially self-supporting in petroleum. But thereafter, imports increased, reaching 20 percent of consumption in the early 1970s and exceeding half, for the first time, in 1994 (see upper chart). By 1998, imports constituted 58 percent of U.S. petroleum consumption.

In 1973, the Organization of Petroleum Exporting Countries (OPEC), led by Saudi Arabia and Iran, took advantage of U.S. (and European and Japanese) dependence on Persian Gulf oil to raise the price of crude oil from about $3 a barrel to more than $12. Later that year, some oil-exporting countries declared an embargo on oil shipments to the United States. The oil embargo and its effects temporarily disrupted daily life in the United States. Gasoline and heating oil became scarce. A national speed limit was imposed to save fuel. A scheme of odd-even days of gasoline buying was imposed. The U.S. government established a “Strategic Petroleum Reserve” to stockpile oil. Further OPEC price increases brought the price to $32 in 1980.

But the high price could not be sustained. In the 1980s, the elevated price of oil led to the discovery of new fields, as well as increased availability from fields in Mexico, Russia, Alaska, and the North Sea. High prices also brought sharp increases in energy efficiency, especially in automobiles. As the lower chart shows, U.S. consumption of petroleum, which peaked at 1,214 gallons per capita in 1980, declined to an annual average of 1,062 gallons per capita during the 1990s. Contrary to all expectations, the real price of oil in the 1990s dropped to near pre-OPEC levels. In 1999, however, the price began to rise again, exceeding $35 per barrel by September 2000.
Crude Oil Consumed
Billions of barrels per year

1900 1920 1940 1960 1980 2000

Domestic production

1998 = 3.1

1998 = 2.3

Imported

Petroleum Products Consumed
Gallons per capita per year

1900 1920 1940 1960 1980 2000

1900 = 34

1998 = 1,072
Material progress required large inputs of mechanical energy and greater efficiency in the use of that energy.

The enormous gulf between high-energy and low-energy societies was dramatized by Buckminster Fuller when he proposed the unit of an “energy-slave,” based on the average output of a hard-working man doing 150,000 foot-pounds of work per day and working 250 days per year. In low-energy societies, the nonhuman energy slaves are typically horses, oxen, windmills, and riverboats. Using Fuller’s unit, the average American at the end of the century had more than 8,000 energy-slaves at his or her disposal. Moreover, Fuller pointed out, “energy-slaves, although doing only the foot-pounds of humans, are enormously more effective because they can work under conditions intolerable to man, e.g., 5,000 °F, no sleep, thousandths of an inch tolerance, one million times magnification, 400,000 pounds per square inch pressure, 186,000 miles per second alacrity and so forth.”

By 1900, as shown in the upper chart, the United States already used a vast amount of energy, much of it in factories and commercial establishments. Per capita energy use grew substantially during the century, but the American standard of living increased even more. Between 1900 and 1997, per capita energy consumption nearly tripled, but the U.S. standard of living, measured as real GDP per capita, increased more than sevenfold (see page 242).

Technological advances led to greatly increased efficiency in the extraction of energy from fuel and in the application of energy to work. As the lower chart shows, the energy efficiency of the economy—the amount of goods and services the economy produces with a single barrel of oil or ton of coal—more than doubled during the century. This impressive rise in efficiency accelerated around 1973. In that year, per capita energy use reached 351 million British thermal units (Btu) per year. After 1973, energy use per capita barely changed. But economic output per capita grew by 51 percent without any increase in energy consumption per capita.
As the number of U.S. patents grew, fewer patents were issued to individuals and more were issued to corporations. The proportion of U.S. patents issued to foreigners increased.

Patents allow their owners to prohibit others from making, using, or selling the invention for a period of twenty years from the date of application for the patent. About 95 percent of all patents are issued for inventions, as distinct from the small number of patents issued for designs and botanical plants. Prior to 1986, the charts show only patents for inventions; starting in 1986, patents of all types are included.

The lone inventor whose Yankee ingenuity enables him to build and patent a better mousetrap is a stock American hero. In 1901, four out of five U.S. patents were issued to individuals. In 1999, more than four out of five were issued to corporations (see upper chart). Some of this change occurred as individuals incorporated their businesses (see page 246), but the trend toward larger-scale organization of technological innovation is clear.

In the early part of the century, nearly all U.S. patents were issued to Americans. The lower chart shows the steadily increasing share of foreign corporations receiving U.S. patents. The ten largest recipients of patents from 1977 through 1999 were evenly divided between U.S. and Japanese corporations: IBM, Canon, GE, Hitachi, Toshiba, Mitsubishi, Motorola, Eastman Kodak, U.S. Philips, and NEC. Foreign individuals also received about a quarter of the small number of patents issued to individuals. Counting corporations and individuals, the foreign share of U.S. patents issued in 1999 was 44 percent.

The trends shown in these charts are attributable primarily to two related factors: the rising cost of the patent process and globalization. As the patent archives grew, the process of searching and validating a patent claim became the domain of experts whose services could be formidably expensive. Moreover, because a U.S. patent provides no protection against imitations produced and sold abroad, and only partial protection against imitations produced abroad and imported into this country, significant inventions had to be patented worldwide. Unlike U.S. patents, many foreign patents require annual maintenance payments to remain in force. These procedures are far beyond the means of the typical individual inventor. Furthermore, nearly all corporate organizations, including universities and research centers, reserve the right to patent any invention made by an employee, often, but not always, with some financial reward for the inventor.
In the last three decades of the century, U.S. imports and exports increased nearly fivefold, while the trade balance shifted. In every year from 1900 to 1970, the value of the raw materials and manufactured products exported from the United States exceeded the value of imported goods. In 1971, for the first time in the century, the merchandise trade balance was negative—imports exceeded exports by $9.5 billion, measured in 1999 dollars. The balance was positive again in 1973 and 1975, but every year thereafter the balance was negative. In the last two decades of the century, U.S. merchandise trade, in 1999 dollars, increased 78 percent, while the excess of merchandise imports over exports widened from $52 billion in 1980 to $346 billion in 1999.

The initial shift from surplus to deficit in the merchandise trade balance was attributable to the oil shock of the early 1970s, which sharply raised the price of imported oil. Subsequent deficits were more strongly influenced by America’s uneven trade relationships with Japan and other Asian countries.

Imports and exports of services increased as well, as shown in the lower chart. Services include airfares, film royalties, engineering consultations, and insurance premiums, for example. U.S. exports of services first exceeded imports of services in 1971, and the nation maintained this positive balance in services in subsequent decades. The excess of service exports over imports, measured in constant dollars, increased significantly during the last decade of the century, from $28 billion in 1990 to $81 billion in 1999. This positive balance in payments for services partly offsets the negative trade balance in merchandise.

The overall balance of international transactions also includes transfers of income and capital, government grants, and other intangible items. With everything factored in, the U.S. deficit in its exchanges with other countries was calculated as $46 billion in 1999. Most of the dollars retained by foreigners when these international accounts are settled come back to the United States for the purchase of income-producing assets in this country. Others remain in circulation indefinitely overseas because the U.S. dollar functions as the “reserve currency” for the world economy.
Imports and Exports of Goods
1999 dollars per capita, logarithmic scale

Exports = $360
Imports = $223

1999
Exports = $3,774
Imports = $2,508

Imports and Exports of Services
1999 dollars per capita, logarithmic scale

Exports = $996
Imports = $701

1960
Imports = $241
Exports = $197
From colonial times until 1918, foreign, principally European, investments in the United States always exceeded American investments abroad. European capital helped to create the infrastructure of the new continent—canals and railroads, mines and mills. In World War I, European investments in the United States were consumed to pay for war materials, while new opportunities for American investors opened up abroad. The United States became a creditor nation and remained so for seventy-five years.

At first, these international investments were relatively modest and their effects were barely visible. As late as 1970, foreigners owned very few American enterprises outright, and U.S. investment abroad consisted largely of the foreign branches of large corporations.

This changed with the advent of globalization and the sharp increase in international transactions that occurred in the last two decades of the century. Between 1980 and 1999, the value of the foreign assets owned by Americans, corrected for inflation, increased sixfold. Ford and General Motors bought all or part of Isuzu, Mazda, Subaru, Jaguar, Saab, and Volvo. McDonald’s Corporation opened restaurants in 118 foreign countries. As the chart indicates, U.S. investment abroad, on a per capita basis, increased from $5,406 per American in 1980 to $26,286 per American in 1999.

The value of the domestic assets owned by foreigners increased more than eightfold. On a per capita basis, foreign investment in the United States increased from $4,461 per American in 1980 to $31,688 per American in 1999. Foreign ownership and management of domestic enterprises—factories, farms, retail chains, commercial buildings, publishing companies, film studios—became commonplace. By 1999, foreign investments in this country exceeded U.S. investments abroad by more than a trillion dollars. Much of this increase was the result of the huge rise in U.S. stock prices, which raised the value of foreign investments here.

In *The Illustrated Guide to the American Economy*, Herbert Stein and Murray Foss pointed out that the consequences of the nation’s international investment position are less serious than might be supposed, because the total wealth of Americans continued to increase, greatly exceeding American liabilities to the rest of the world.
International Investment Position of the United States
1999 dollars per capita (American population), logarithmic scale

Total Foreign Investment in the U.S. = $31,688 per American
Total U.S. Investment Abroad = $26,286 per American

1900
Foreign Investment in the U.S. = $894 per American
U.S. Investment Abroad = $184 per American

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