



# *Revolutions* IN PRODUCTIVITY

*Will today's microchip-led surge take its place in history?*

*"The jury is still out on  
whether the recent surge in  
productivity will prove as  
durable as those of the past."*



**William Poole**  
President and CEO

**Charles W. Mueller**  
Chairman



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President and CEO

## A MESSAGE FROM OUR PRESIDENT

THE 20<sup>TH</sup> CENTURY HAS BEEN CALLED THE “AMERICAN CENTURY.” It was a century in which the standard of living of the average American increased six-fold. Economic booms lasted for decades—the 1920s, the 1950s and the 1960s all saw rapid economic growth and rising standard of living. But then our economy’s engine began to sputter. From the early 1970s to the mid-1990s, the average growth rate of our economy slowed to about two-thirds of its average pace from the 1920s to 1970. Starting about 1995, however, the U.S. economy began to expand rapidly, and unemployment and inflation fell to low levels not seen since the 1960s. Although the pace of economic activity slowed during the second half of 2000, many economists remain convinced that the economy’s growth potential remains high.

This year’s annual report is concerned with economic growth. Over long periods, the principal determinant of how fast our economy can grow—that is, how fast our standard of living can increase—is the growth of labor productivity. Since the mid-1990s, the United States has witnessed a remarkable increase in the growth of labor productivity, exceeding that of all other G-7 countries. In this report, we look to history for information about how such surges in productivity come about, how long they can last, and whether economic policy can do anything to boost our economy’s potential to grow.

Previous centuries’ productivity booms were associated with fundamental technological breakthroughs and their widespread commercial application. Industrial revolutions of the 18th and 19th centuries were jump-started by the invention of new general-purpose technologies, such as the steam engine and the electric motor, which had wide application throughout the economy.

The breakthrough invention of modern times is the microchip. Because it too is a general-purpose technology, many observers believe that the broad application of information and communications technology throughout the economy will spur a sustained increase in productivity and economic growth. But the jury is still out on whether the recent surge in productivity will prove as durable as those of the past.

Our examination of the links between technological progress and economic growth reveals how clusters of technological breakthroughs lead to sustained increases in productivity growth and standard of living. Our study shows also how government policy can affect economic growth, principally by helping ensure an economic environment that encourages inventive activity and the efficient allocation of economic resources. As a central bank, we can play a role in this effort by ensuring that the market signals of the price system are free of distortions caused by uncertainty about the general level of prices. Price stability contributes significantly to an environment in which technological progress and productivity growth are encouraged and our economy can achieve its maximum sustainable rate of growth.

I invite you to read this year’s annual report. By exploring the past, we can learn about the present and, perhaps, where our so-called new economy is headed.



**William Poole**, President and CEO

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## REVOLUTIONS IN PRODUCTIVITY

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### INTRODUCTION

*F*ROM THE TIME WE ARE YOUNG CHILDREN, WE MEASURE OUR ACHIEVEMENTS AGAINST THOSE OF OUR PREDECESSORS. In matters both trivial and weighty—height, athletic prowess, grades, ability to tie a shoe—we contrast and compare, gaining status from each piece of evidence that we are progressing faster or raising the bar higher. As we get older, such comparisons often focus on how well we are managing to improve our standard of living.

Every so often, an individual or an industry or a nation bursts through in some way that leaves its contemporaries and historical counterparts in the dust. Can anyone explain the remarkable achievements of golfer Tiger Woods? Using the same equipment as his competitors and playing the same courses, Woods rather suddenly began charging past opponents, setting tournament scoring records and, consequently, establishing a much higher standard of living for himself. In economic terms, you might say he has been more productive.

Although the inputs Tiger Woods uses to win golf tournaments are rather specialized, conceptually they are similar to the production of goods and services economy-wide. Woods employs both physical capital (golf clubs, tees, balls, etc.) and labor (physical exertion and skills, knowledge of the course, etc.) in some combination. In the economy, the production of some goods, like cars or corn, is inherently capital intensive—workers depend heavily on machines to get the job done. In the more

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dominant services sector of the economy, physical labor is the more abundant input.

What caused Woods' surge in productivity? We don't really know. It's likely to be some combination of experience, practice, coaching and other intangibles—what economists call human capital. Without some obvious technological breakthrough, however, other golfers may be at a loss as to how to duplicate Woods' efforts.

Another example that better shows how technological breakthroughs can lead to a significant jump in productivity is laser eye surgery. For hundreds of years, eyeglasses were the only remedy for human sight impairment. In the 1940s, the development of contact lenses enabled many people to throw away their glasses. Contact lenses soon became the most rapidly growing means of vision correction.

Until recently, that is. In the 1970s, a breakthrough surgical procedure called radial keratotomy appeared in Russia. Combined with another breakthrough technology, the excimer laser, which was originally developed to etch computer chips,

radial keratotomy revolutionized the field of eye surgery. Since FDA approval in 1998, such procedures are now so common that the advertising blitz for corrective laser eye surgery is quite impossible to avoid.

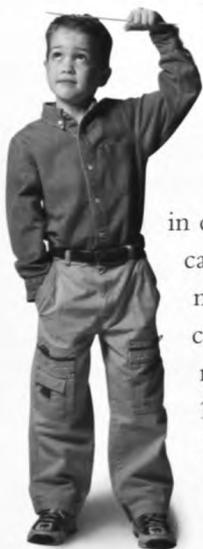
Still, such a specific technological change pales in comparison to an advance in what economists call a general-purpose technology. Clusters of new developments in these types of technologies characterized the major industrial revolutions, notably the British Industrial Revolution of the 18th and early 19th centuries and the so-called Second Industrial Revolution of the late 19th and early 20th centuries, in which the United States led the way. The British Industrial

Revolution brought the introduction of the steam engine, mechanization of textile manufacturing, locomotive engines, chemical processes like bleaching, and numerous other important inventions with commercial applications. The late 19th century witnessed the introduction of the internal combustion engine, important advances in chemistry, medicine and engineering, and great strides in the generation, distribution and application of electric power.

Now at the dawn of the 21st century, many observers believe the U.S. economy has entered a new era, reflecting revolutionary technological advances associated with the microchip. These advances, some economists claim, permit the economy to grow faster and, hence, living standards to rise higher than they have in recent decades. Others are skeptical, contending that the recent productivity spurt will prove to be an aberration and that the sustainable pace of economic growth has not increased appreciably.

What is not up for debate is the economy's strength over the recent past. The United States entered its record-setting ninth consecutive year of economic expansion in 2000. Although the pace of economic activity slowed during the second half of 2000, productivity growth—the principal engine of long-term economic growth—remained strong. In fact, since the mid-1990s, the United States has enjoyed a remarkable increase in the growth of average labor productivity—an increase matched by few other countries.

Can the U.S. productivity surge be credited to the invention of the microchip and related technologies, as past eras benefited from their own major inventions? Are we in the midst of another industrial revolution that will generate years of rapid productivity increase and prosperity? Or are we riding a wave that will crest sooner than we think? On the following pages, we attempt to answer these questions by looking back at the past. First, we examine more closely the staggering productivity leap the United States has made over the past half decade. ■

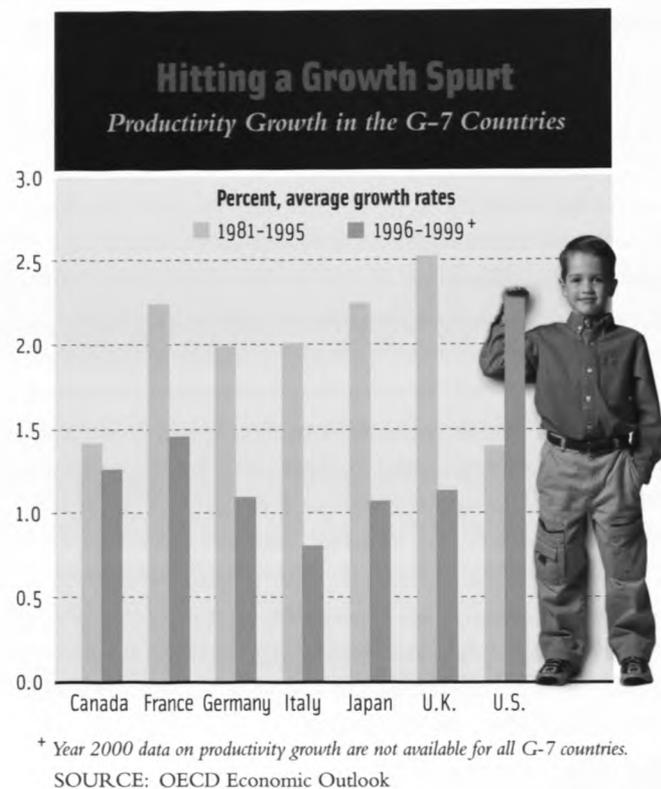


### WORST TO FIRST: WHERE DID THE PRODUCTIVITY SURGE COME FROM?

Between 1980 and 1995, total output per worker in the United States grew at the slowest rate of any G-7 country. Since then, however, the growth of U.S. labor productivity\* has exceeded that of all other G-7 countries (see chart), as has the growth of U.S. real Gross Domestic Product. Increased growth of labor productivity explains fully half of the increase in real economic growth in the United States since 1995. And, by expanding the economy's productive potential, faster productivity growth has resulted in rising real wages and declining unemployment without significantly higher inflation.

So why the dramatic reversal of fortune for the United States? Many attribute it to the microchip—more specifically, to investment by firms in computers and information processing equipment and software. Federal Reserve Chairman Alan Greenspan has noted that “technological innovation, and in particular the spread of information technology, has revolutionized the conduct of business over the past decade and resulted in rising productivity growth.” Economists estimate that one-half to three-quarters of the increase in trend labor productivity growth in the United States since 1995 can be attributed to rapid rates of investment in information and computer technology (ICT) equipment.

The spread of information technology noted by Chairman Greenspan and others has been encouraged by rapid declines in the prices of ICT equipment and software. Investment in ICT capital has increased productivity by placing more capital at the disposal of each worker—a process that economists refer to as “capital deepening.” For example, with a computer and simple software, a records-keeper in a medical office can maintain many more patient files than he or she can using a hand-filing



system. Similarly, the use of computerized robots on assembly lines has increased the number of automobiles and other goods assembled per worker employed in manufacturing industries. Computers are also used for designing and testing new products, operating precision equipment, managing inventory and personnel, and even for designing new computers. In many firms, investment in ICT capital permits increased production without additional labor. Indeed, in some cases, such investment enables

\* **LABOR PRODUCTIVITY** is the output of either an industry or the aggregate economy divided by labor input. A change in labor productivity reflects any change in output that cannot be accounted for by a change in labor input; such changes may be due, for example, to changes in the amount of capital used per person employed or to changes in technology.

**PLANTS POWERED BY STEAM** utilized a system of overhead shafts and belts. The advent of electric motors to drive individual machines made many such facilities obsolete.

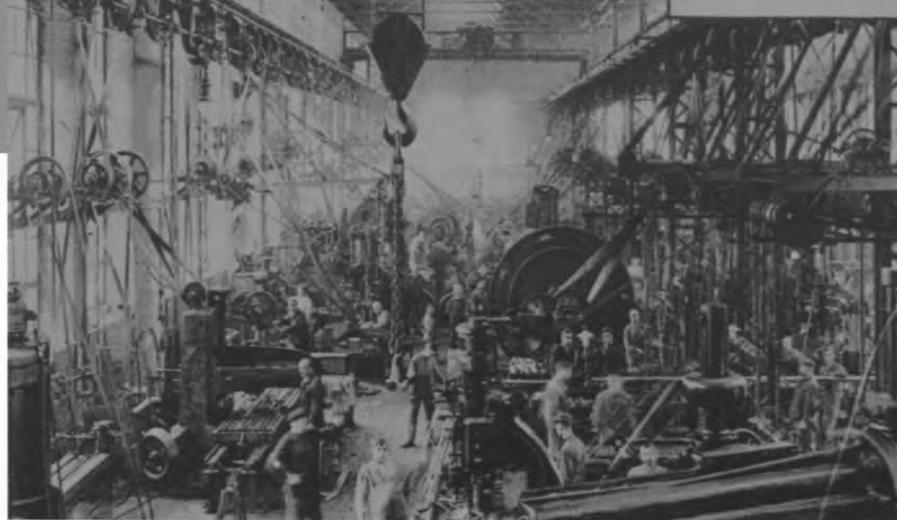
firms to adopt more efficient production technologies by aiding, for example, in the design of more efficient production lines. Through such efficiency gains, output increases without commensurate increases in labor or capital inputs.

Computer technology is not new. The first electronic digital computer was built before World War II, the transistor dates from the late 1940s, and the silicon microchip from about 1970. Personal computers became widely used in offices in the 1980s. Yet, aggregate U.S. labor productivity growth declined after about 1970 and remained low for another 25 years, even as other important computer technology breakthroughs occurred. Economists were puzzled. Why did it seem that the impact of computer and information technology was observed “everywhere but in the productivity statistics,” as Nobel-laureate economist Robert Solow once quipped? In fact, there often is a delay between the invention of a general-purpose technology and its impact on productivity. The next section takes a closer look at this phenomenon. ■

### **THE ECONOMIC IMPACT OF A NEW INVENTION: WHY DOES IT TAKE SO LONG?**

History shows that new technologies do not move instantly from the inventor’s laboratory to everyday usage. It can take a long time for them to increase productivity. The absence of immediate productivity improvement with the advent of new information processing technology was not unlike earlier experiences with general-purpose technologies. Similar delays in the impact of technological progress on aggregate productivity occurred during past industrial revolutions.

Part of the delay, according to Northwestern University economist Joel Mokyr, occurs because, important as they are, fundamental technological breakthroughs often require further inventions to make them broadly applicable: “Such gap-filling inventions are often the result of on-the-job learning or of a



development by a firm’s engineers realizing ad hoc opportunities to produce a good cheaper or better. Over time, a long sequence of such *microinventions* may lead to major gains in productivity, impressive advances in quality, fuel and material savings, durability and so on.”

For example:

- Although Thomas Newcomen built the first successful steam engine in 1712, it was not until about 1765 that major improvements in the engine by James Watt made it suitable for factory use. Additional improvements, which included the addition of a governor and rotary movement, made the steam engine a huge economic success in the 19th century. Recent estimates suggest that at the height of the British Industrial Revolution (1760 to 1830) output per capita in the United Kingdom grew at less than 0.5 percent per year on average, about the same rate as during the period between 1700 and 1760. By comparison, per capita output increased at an average rate of nearly 2 percent per year from 1830 to 1870. Mokyr argues that despite slow growth during the era of high invention, rapid growth in Britain after 1830 could not have occurred without the technological breakthroughs of the previous 70 years.

- Although Michael Faraday invented the first electric motor in 1821 and the dynamo in 1831, it took nearly a century of

# Revolutions in Productivity

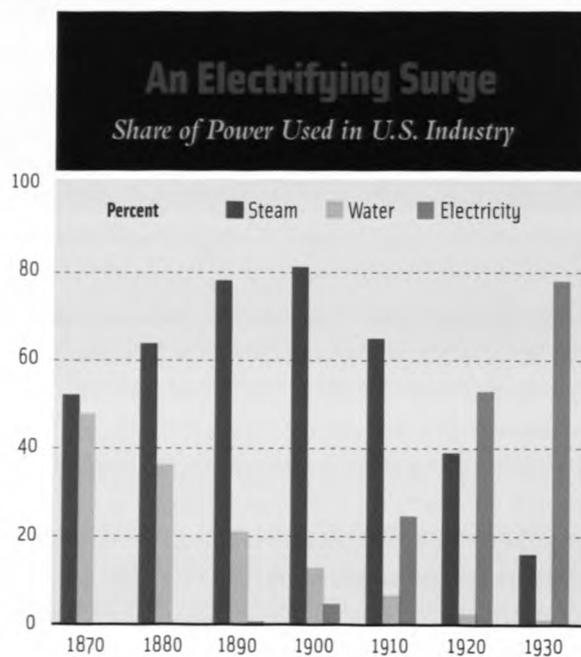
additional, substantial breakthroughs to make electricity the dominant source of power in manufacturing. Despite major technological breakthroughs in electricity, chemicals, steel production and other major sectors, American manufacturing productivity slowed in the late 19th century. Whereas output per hour increased at 1.7 percent per year from 1869 to 1889, output per hour increased at just 1.4 percent per year from 1889 to 1909. U.S. manufacturing productivity growth

tional inventions came along to apply the new technology. In banking, for example, microinventions like the ATM, the debit card and credit-scoring software were required to generate the productivity gains promised by the computer.

Stanford University economist Paul David explores the dynamics of technological diffusion by comparing the electric dynamo, a key technological advance of the 19th century, with the modern computer. The dynamo, like the computer and steam engine, is a general-purpose technology, having profound effects on nearly all sectors of the economy. Decades elapsed, however, between the introduction of reliable electric motors and their widespread use in industry. Some of the delay was accounted for by lags in the development of efficient means of electric power generation and by competition between direct and alternating current. Electric power generation was reasonably efficient and commercially viable by 1880, however, and the superiority of alternating current for most applications was clear by 1893. Yet, as the chart to the left illustrates, electricity accounted for just 5 percent of mechanical power in U.S. manufacturing in 1900 and did not exceed 50 percent until 1920.

“Part of the delay in the exploitation of the potential industrial productivity gains offered by the [electric] dynamo,” according to David, “was due simply to the durability of old manufacturing plants embodying technology adapted to the regime of mechanical power derived from water and steam.” A slow rate of decline in the cost of adopting electric power also contributed to the delay. Between 1907 and 1917, the price of electricity to industrial users dropped sharply, however, and the technology began to spread rapidly.

Once electricity accounted for some 50 percent of the power sources used in American manufacturing, U.S. productivity began to accelerate. Electrification enhanced productivity by affording greater flexibility and more efficient use of labor and capital in manufacturing. For example, electrification

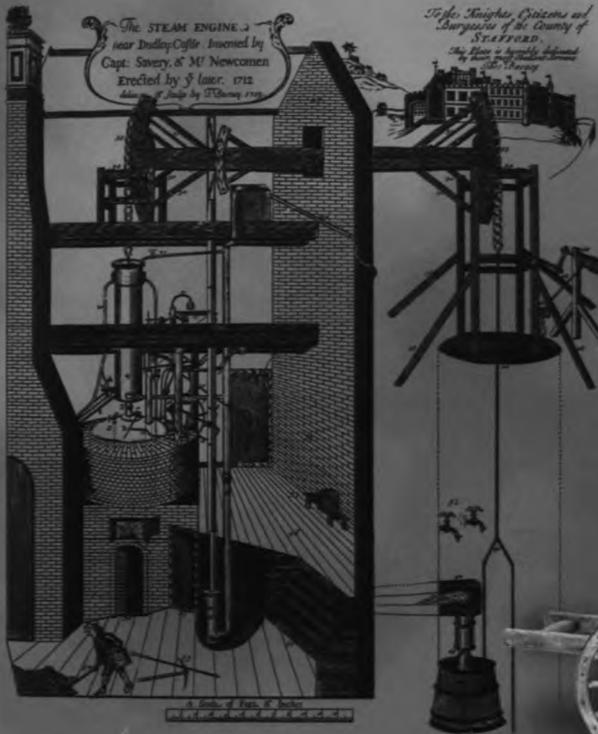


SOURCE: David (1991)

remained modest until after World War I, but grew during the 1920s at an astounding rate of 5.6 percent per year. Productivity growth remained high for another 40 years.

- As with the steam engine and electric motor, the computer chip did not affect productivity in many industries until addi-

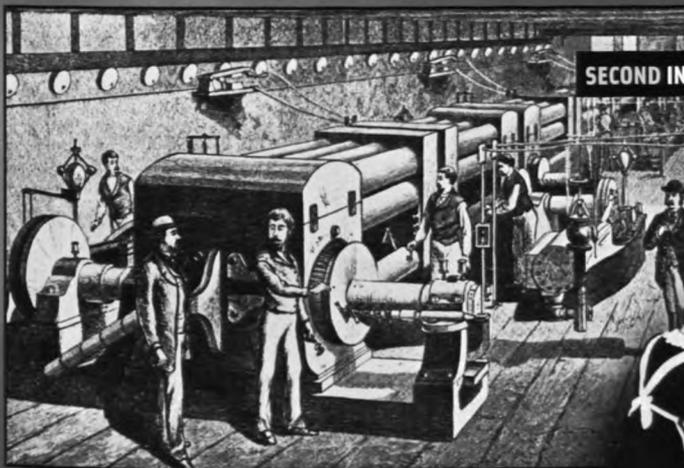
# Inventions THAT MADE HISTORY



## FIRST INDUSTRIAL REVOLUTION

**INVENTION:** Newcomen's steam engine, with its reciprocating piston working in a cylinder, was the first true steam engine. (1712)

**PRODUCT:** Road locomotive, first effective steam vehicle. (1769)



## SECOND INDUSTRIAL REVOLUTION

**INVENTION:** Pearl Street power station, the first public generating plant, opened in 1882.

**PRODUCT:** The distribution of electricity to individual households brought the proliferation of convenience products such as vacuum cleaners. (1906)



*In both the First and Second Industrial Revolutions, as well as in the modern world, major technological breakthroughs have led to a wide range of new applications.*

*On this page are examples of a key invention from each era and a product or service that resulted from it.*

## MODERN DAY



**PRODUCT:** Laser eye surgery is performed using an excimer laser controlled by a microcomputer.

**INVENTION:** Intel's first microprocessor, the 4004, paved the way for desktop, and even smaller, computers with processing capacity far exceeding that of many room-sized mainframe computers. (1971)

enabled more use of continuous-process techniques, such as the factory assembly line, which often reduced production times and waste. Efficiency was improved also by the wide adoption of "unit drive," that is, the use of dedicated electric motors to power individual machines and tools, rather than a system of shafts and belts powered by a single engine. Unit drive brought savings through reduced energy usage, less wear and tear, and more flexible and efficient factory design. Electrification also enhanced productivity by improving factory lighting and safety.

The histories of the steam engine and the electric dynamo show us that delays of years or even decades from the initial invention of a general-purpose technology and its impact on aggregate productivity and standard of living should not be surprising. Follow-up inventions and adaptations of existing workplaces and products to the new technology are required before large productivity gains arise. Is there any way to ensure that such microinventions do occur—that fundamental technological breakthroughs lead to growth in productivity and standard of living?

Many observers believe that a country's economic performance is related to its political and economic institutions. Countries with stable, democratic political systems, limited government involvement in economic decision-making, but strong protection of property rights, are thought to have institutions that are conducive for technological progress and economic growth. We turn next to how public policy might affect growth and what the histories of past industrial revolutions might teach us. ■

*Governments can encourage technological progress and productivity growth by enforcing contracts and protecting property rights. They can also provide special protections to inventors in the form of patents and copyrights.*

## IS THERE A ROLE FOR PUBLIC POLICY?

Thus far, we have focused on how technological progress can increase the growth of productivity and standard of living. But, how does technological progress come about and, specifically, can governments do anything to encourage it? During the industrial revolutions of the 18th and 19th centuries, invention and the application of new technologies were carried out by private individuals and firms, virtually without government subsidies or direction. Nonetheless, the histories of these industrial revolutions suggest that governments can have a powerful impact on growth.

Douglass North, a Nobel laureate economist at Washington University in St. Louis, argues that a nation's institutions, including its government, are fundamental determinants of economic growth. Focusing specifically on the role of government, North and his co-author Barry Weingast argue: "Successful economic performance ... must be accompanied by institutions that limit economic

intervention and allow private rights and markets to prevail in large segments of the economy. ...

The ability of a government to commit to private rights and exchange is thus an essential condition for growth." In his classic study of U.S. productivity growth, John Kendrick makes a similar point. Citing the importance of resources devoted to increasing scientific and technical knowledge, Kendrick contends that "the relative volume of resources devoted to research development and innovation depends on the basic values and motivations of a people and on the efficacy of the rewards and penalties provided by prevailing institutions for the success or failure in the efforts to improve productive efficiency."

In the view of North and Weingast, the "Glorious Revolution" of 1688 gave England political institutions, such as a



**FIRST U.S. PATENT**, issued July 30, 1790

representative parliament and independent judiciary, that produced a marked increase in the security of private rights. Secure property rights, in turn, provided the freedom and incentive to take economic risks, to invest in new technologies and to look for ways to use economic resources more efficiently. The United States inherited the English tradition of protecting property rights and, hence, the same fundamental mechanism for providing incentives for invention, investment and risk-taking that was in place in England by the early 18th century. Providing these incentives would seem to be a fundamental contribution that governments can make to encourage gains in productivity and standard of living.

In addition to enforcing contracts and limiting arbitrary confiscation of property, governments often extend special protections to inventors in the form of patents and copyrights. Such protections seem particularly important in the case of



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intellectual property or knowledge-based products, such as computer software. The initial development of a piece of software might be extremely costly, but the costs of producing and disseminating copies of the software are trivial. Without strong protection of intellectual property rights, such as a software developer's copyright, there will be little incentive to produce knowledge-based products. In other words, secure property rights encourage the technological breakthroughs that accelerate productivity growth and living standards.

British patent law dates from 1624, whereas France and other continental European countries did not have patent laws until at least 1791 (the first U.S. patent law was enacted in 1790). Scholars debate the extent to which patent protection contributed to the high rate of invention during the Industrial Revolution, in part because of inconsistent enforcement of patent laws by British courts. Enforcement of property rights granted by patents and copyrights is, of course, crucial to their success as stimulants to invention. Patents and copyrights can also inhibit innovation if firms are permitted to extend them indefinitely.

Well-designed patent and copyright laws, along with a legal system that protects property rights, are examples of how governments can promote economic development. Other contributions that governments can make include sound macroeconomic policies and, in the view of many economists, a strong education system. Paul Romer, a leading growth economist at Stanford University, for example, argues that "the real success of American economic policy has been to have moderately strong property rights with lots of subsidies for inputs—like research and education—that are used in the innovation process."

The United States has long supported both public and private education. In the 19th century, federal assistance to education was largely in the form of land grants used to finance the establishment of public schools and colleges. The Morrill Act of 1862, for example, provided land grants for the establishment of colleges

teaching "agricultural and mechanical arts," including engineering and other technical subjects. Economists widely believe that basic and technical education enhanced the productivity of American labor and contributed to the accelerated pace of productivity growth that began in the 1920s. High school graduation rates were at high levels in the 1920s, and, as in recent decades, income growth rates were higher for more-educated workers.

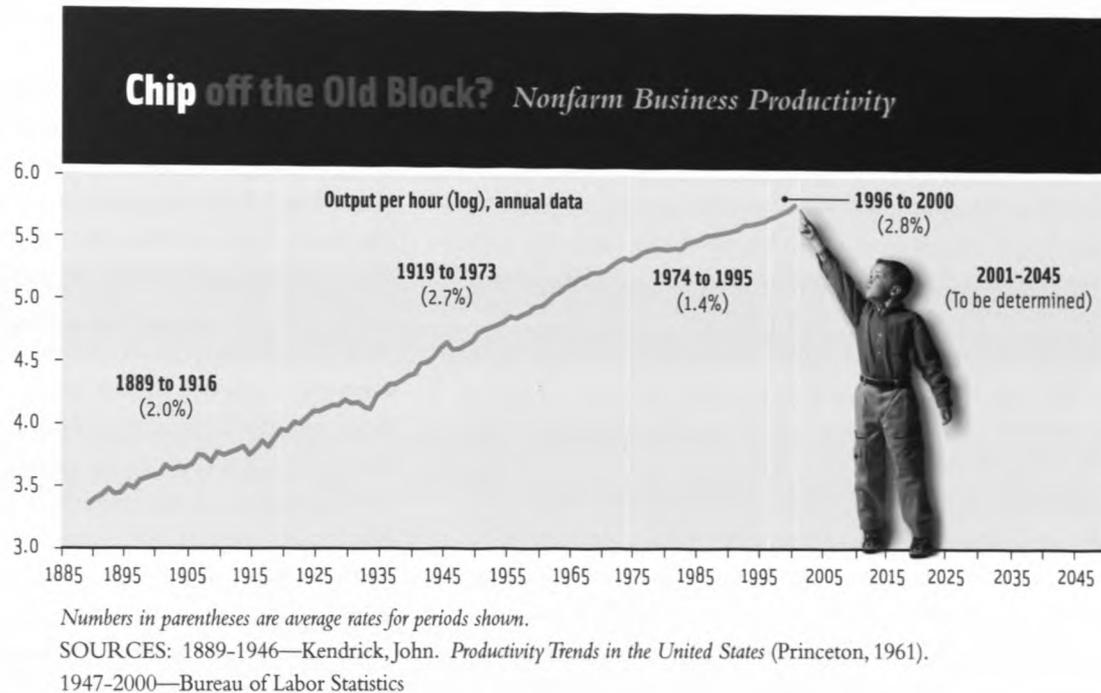
Defense of property rights, sound macroeconomic policies, a strong educational system, and patents and copyrights are institutional supports that governments can use to strengthen economic growth in a market system. Such supports promote the allocation of economic resources to their most productive uses and encourage technological progress by ensuring that inventors are rewarded for developing successful technologies. Many countries, however, have pursued technological progress and economic growth by limiting, even eliminating, market forces. Although growth rates can be high for short periods under government ownership and control of economic resources, history suggests that market-based economies have faster growth rates over the long term.

Today, few observers contend that highly controlled economies will grow faster for long periods than market economies. Nevertheless, many believe that governments can do more to promote technological progress and economic development than simply providing a conducive climate for markets to work their magic. Some countries have adopted formal "industrial policies" aimed at guiding technological change by subsidizing or otherwise promoting specific technologies, industries or firms over others. Economists do not agree whether such policies can enhance economic growth, and some argue that the policies are more likely to retard growth by interfering with the efficient allocation of economic resources.

To some extent, all countries, including the United States, have used subsidies, protective trade barriers, and other direct

## CONCLUSION

**FROM 1919 TO 1973**, the trend growth rate of U.S. productivity averaged 2.7 percent per year as Americans applied the great technological inventions of the late 19th and early 20th centuries: electric power, the internal combustion engine and major advances in steel-making, chemicals and numerous other industries. Productivity growth slowed from the early 1970s through 1995. Since then, however, productivity growth has been comparable to that earlier 54-year surge. But before our new era is considered as revolutionary as those of the past, several more decades of rapid productivity growth must occur.



means to foster technological development. A feature of the 18th and 19th century industrial revolutions, however, was the limited extent that governments sought to dictate or interfere with the form and extent of technological progress. The great economist Joseph Schumpeter coined the term “creative destruction” to describe how economic growth arises from the continual reallocation of economic resources as new, more productive firms and technologies replace old and inefficient firms and technologies. Paul Romer argues that America’s great success comes from allowing this process to occur: “The United States has maintained a regulatory and financial system that makes it easy to create new companies, raise capital and start new businesses. We also tolerate failure.” By contrast, other countries have “focused on what they call ‘national

champions,’ which they identify as a few big firms whose monopoly positions they try to protect. That really goes in all the wrong directions.” ■

### DEFINING THE RECENT PRODUCTIVITY ACCELERATION: BOOM OR BOOMLET?

The fundamental technological inventions of the past 50 years have given us an astonishing variety of new products and services, from cellular telephones to digital video to e-commerce. At the same time, ICT has also enabled firms to produce many old-economy goods and services, such as automobiles, steel and financial services, more efficiently. Since the mid-1990s, the U.S. economy has witnessed an astounding increase in productivity growth that has brought higher stan-

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dards of living, employment and real incomes to most Americans. How long can it last?

Although GDP growth slowed toward the end of 2000, there is no sign that the forces causing the rise in productivity growth have diminished. This suggests that the recent slowdown will prove to be a temporary, cyclical phenomenon and not the beginning of a return to a slower long-run growth path.

A more fundamental question, however, is whether the U.S. economy can sustain a high pace of trend economic growth over many years, even decades. Many economists think so, but there are skeptics. One skeptic is Robert Gordon, a professor of economics at Northwestern University. Gordon argues that much of the recent acceleration in U.S. productivity is due to cyclical forces, suggesting that productivity growth will fall as economic activity slows to a more modest pace. Moreover, he contends that the computer, the Internet and other high-tech products of the late 20th century pale in comparison with the great inventions of the late 19th century in terms of their impact on productivity and long-run standard of living. Electricity, the internal combustion engine, and significant advances in chemicals, medicine and communication were much more important for sustained economic development, Gordon contends, than the transistor, the microchip or the Internet.

Thus far, the short period since 1996 favors those who believe we have a “new economy.” As the chart on the previous page illustrates, average labor productivity growth in the United States has increased at an average rate of 2.8 percent since 1996. Productivity is now growing at about the same rate as it did during the halcyon productivity boom of 1919 to 1973, which scholars attribute to the industrial revolution of the late 19th century. Although interrupted by a major economic depression and a world war, the great boom of the mid-20th century produced a quadrupling in U.S. standard of living. By contrast, productivity grew only half as fast

between 1974 and 1995, at 1.4 percent per year. Were that rate to persist for 50 years, standard of living would only double. Obviously we hope that productivity will continue to grow at the pace of 1996–2000, but to be on par with the great booms of the past, our current rate of productivity growth will have to continue for decades more. It’s simply too soon to tell whether the productivity surge of the last five years will prove to be a boom or a boomlet.

In the past, long booms in productivity growth and standard of living proceeded from clusters of major technological breakthroughs, made commercially successful by subsequent inventions and gap-filling innovations. The histories of the great industrial revolutions of the 18th and 19th centuries teach us that technological progress and economic development are encouraged by a market system that rewards individuals and firms whose advances increase productivity and economic growth the most. A high standard of living and sustainable economic growth is surely a testament to our free market economic system and the opportunities for wealth creation that spring from it. Strong support of property rights, stable macroeconomic policies and a sound educational system underpin our market system and encourage technological progress and economic growth. *Macroeconomic* growth is, in the end, the product of countless *microeconomic* decisions made everyday in response to market signals. As a society, we can best ensure a high, sustainable rate of economic growth over the long term through a market system that encourages the search for new technologies and more efficient methods of production. ■

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*Each Reserve Bank and Branch has its own board of directors. Members of the board are drawn from the public and represent the varied economic activity of the District. The St. Louis office has nine directors; each Branch office has seven. The boards impart a private-like management perspective, emphasizing efficiency and quality.*

**RETIRING BOARD MEMBERS**

*Thank You!*

WE WOULD LIKE TO EXPRESS OUR DEEPEST GRATITUDE

to those members of our Eighth District Boards of Directors  
who retired at the end of 2000.

Our appreciation and best wishes go out to Susan S. Elliott,  
who served as chairman of the St. Louis Board,  
and Diana T. Hueter, chairman of the Little Rock Board.

We also thank the following board members  
for their distinguished service:

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**Robert L. Johnson**  
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Johnson Bryce Inc.  
Memphis, Tennessee

**Joseph E. Gliessner Jr.**  
Executive Director  
New Directions  
Housing Corporation  
Louisville, Kentucky

**Bert Greenwalt**  
Partner  
Greenwalt Company  
Hazen, Arkansas

**Walter L. Metcalfe Jr.**  
*Deputy Chairman*  
Chairman  
Bryan Cave LLP  
St. Louis, Missouri

*Not pictured:*

**Thomas H. Jacobsen**  
Chairman of the Board  
Firstar Corporation  
Milwaukee, Wisconsin

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Little Rock



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*Chairman*

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Southwestern Bell  
Telephone Company  
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**Everett Tucker III**

Chairman  
Moses Tucker Real Estate Inc.  
Little Rock, Arkansas

*Not pictured:*

**Raymond E. Skelton**

Regional President  
Firststar Bank N.A.  
Little Rock, Arkansas

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Louisville



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*Chairman*

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**Orson Oliver**

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Benton, Kentucky

**Marjorie Z. Soyugenc**

Executive Director  
Welborn Foundation  
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*Not pictured:*

**Edwin K. Page**

Vice President, External Affairs  
AP Technoglass Company  
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MEMPHIS BOARD OF DIRECTORS

Memphis



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*Chairman*

Senior Vice President and  
Corporate Counsel  
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**John C. Kelley Jr.**

President, Business  
Financial Services  
First Tennessee Bank  
Memphis, Tennessee

MEMPHIS BRANCH  
200 North Main Street  
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**Walter L. Morris Jr.**

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H&M Lumber Co. Inc.  
West Helena, Arkansas

**E.C. Neelly III**

Management Consultant  
First American National Bank  
Iuka, Mississippi

**Mike P. Sturdivant Jr.**

Partner  
Due West  
Glendora, Mississippi

**FINANCIAL STATEMENTS**

*Financials*

THE FEDERAL RESERVE BANK OF ST. LOUIS  
FINANCIAL STATEMENTS

*for the years ended December 31, 2000 and 1999*

LETTER TO BOARD OF DIRECTORS

March 2, 2001

TO THE BOARD OF DIRECTORS:

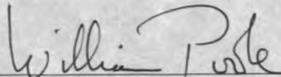
The management of the Federal Reserve Bank of St. Louis (the “Bank”) is responsible for the preparation and fair presentation of the Statement of Financial Condition, Statement of Income, and Statement of Changes in Capital as of December 31, 2000 (the “Financial Statements”). The Financial Statements have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of the Federal Reserve System and as set forth in the Financial Accounting Manual for the Federal Reserve Banks, and as such, include amounts, some of which are based on judgments and estimates of management.

The management of the Bank is responsible for maintaining an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements. Such internal controls are designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of reliable Financial Statements. This process of internal controls contains self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in the process of internal controls are reported to management, and appropriate corrective measures are implemented.

Even an effective process of internal controls, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements.

The management of the Bank assessed its process of internal controls over financial reporting including the safeguarding of assets reflected in the Financial Statements, based upon the criteria established in the “Internal Control—Integrated Framework” issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the management of the Bank believes that the Bank maintained an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements.

Federal Reserve Bank of St. Louis



**William Poole**

*President and Chief Executive Officer*



**W. LeGrande Rives**

*First Vice President and Chief Operating Officer*

**REPORT OF INDEPENDENT ACCOUNTANTS**

TO THE BOARD OF DIRECTORS OF THE FEDERAL RESERVE BANK OF ST. LOUIS

We have examined management's assertion that the Federal Reserve Bank of St. Louis ("FRBSTL") maintained effective internal control over financial reporting and the safeguarding of assets as they relate to the Financial Statements as of December 31, 2000, included in the accompanying Management's Assertion.

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants, and accordingly, included obtaining an understanding of the internal control over financial reporting, testing, and evaluating the design and operating effectiveness of the internal control, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal control, misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of the internal control over financial reporting to future periods are subject to the risk that the internal control may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion that the FRBSTL maintained effective internal control over financial reporting and over the safeguarding of assets as they relate to the Financial Statements as of December 31, 2000, is fairly stated, in all material respects, based upon criteria described in "Internal Control—Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.

*PricewaterhouseCoopers LLP*

March 2, 2001

St. Louis, Missouri

**REPORT OF INDEPENDENT ACCOUNTANTS**

TO THE BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM AND  
THE BOARD OF DIRECTORS OF THE FEDERAL RESERVE BANK OF ST. LOUIS:

We have audited the accompanying statements of condition of The Federal Reserve Bank of St. Louis (the "Bank") as of December 31, 2000 and 1999, and the related statements of income and changes in capital for the years then ended. These financial statements are the responsibility of the Bank's management. Our responsibility is to express an opinion on the financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3, the financial statements were prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of The Federal Reserve System. These principles, policies, and practices, which were designed to meet the specialized accounting and reporting needs of The Federal Reserve System, are set forth in the "Financial Accounting Manual for Federal Reserve Banks" and constitute a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 2000 and 1999, and results of its operations for the years then ended, on the basis of accounting described in Note 3.

*PricewaterhouseCoopers LLP*

March 2, 2001  
St. Louis, Missouri

**FINANCIALS**

**FEDERAL RESERVE BANK OF ST. LOUIS**  
**STATEMENTS OF CONDITION**  
*(in millions)*

	AS OF DECEMBER 31,	
	2000	1999
<b>ASSETS</b>		
Gold certificates	\$ 359	\$ 337
Special drawing rights certificates	71	175
Coin	51	10
Items in process of collection	539	471
Loans to depository institutions	8	37
U.S. government and federal agency securities, net	19,696	15,918
Investments denominated in foreign currencies	385	327
Accrued interest receivable	229	160
Interdistrict settlement account	—	5,176
Bank premises and equipment, net	57	55
Other assets	21	16
	<hr/>	<hr/>
<b>Total assets</b>	<b>\$ 21,416</b>	<b>\$ 22,682</b>
<b>LIABILITIES AND CAPITAL</b>		
Liabilities:		
Federal Reserve notes outstanding, net	\$ 19,410	\$ 21,575
Deposits:		
Depository institutions	596	440
Other deposits	2	1
Deferred credit items	296	272
Interest on Federal Reserve notes due to U.S. Treasury	38	19
Interdistrict settlement account	740	—
Accrued benefit costs	52	51
Other liabilities	6	8
	<hr/>	<hr/>
<b>Total liabilities</b>	<b>21,140</b>	<b>22,366</b>
Capital:		
Capital paid-in	138	158
Surplus	138	158
	<hr/>	<hr/>
<b>Total capital</b>	<b>276</b>	<b>316</b>
	<hr/>	<hr/>
<b>Total liabilities and capital</b>	<b>\$ 21,416</b>	<b>\$ 22,682</b>

*The accompanying notes are an integral part of these financial statements.*

**FINANCIALS**

**FEDERAL RESERVE BANK OF ST. LOUIS**  
**STATEMENTS OF INCOME**  
*(in millions)*

	FOR THE YEARS ENDED DECEMBER 31,	
	2000	1999
<b>INTEREST INCOME:</b>		
Interest on U.S. government and federal agency securities	\$ 1,151	\$ 917
Interest on investments denominated in foreign currencies	7	5
Interest on loans to depository institutions	3	2
<b>Total interest income</b>	<b>1,161</b>	<b>924</b>
<b>Other operating income (loss):</b>		
Income from services	47	42
Reimbursable services to government agencies	28	19
Foreign currency losses, net	(35)	(10)
U.S. government securities losses, net	(3)	(1)
Other income	2	1
<b>Total other operating income</b>	<b>39</b>	<b>51</b>
<b>Operating expenses:</b>		
Salaries and other benefits	74	70
Occupancy expense	7	7
Equipment expense	9	8
Assessments by Board of Governors	20	19
Other expenses	52	44
<b>Total operating expenses</b>	<b>162</b>	<b>148</b>
Net income prior to distribution	\$ 1,038	\$ 827
<b>Distribution of net income:</b>		
Dividends paid to member banks	\$ 9	\$ 9
Transferred to surplus	72	37
Payments to U.S. Treasury as interest on Federal Reserve notes	957	781
<b>Total distribution</b>	<b>\$ 1,038</b>	<b>\$ 827</b>

*The accompanying notes are an integral part of these financial statements.*

**FINANCIALS**

FEDERAL RESERVE BANK OF ST. LOUIS  
STATEMENTS OF CHANGES IN CAPITAL

*(in millions)*

FOR THE YEARS ENDED DECEMBER 31, 2000, AND DECEMBER 31, 1999

	Capital Paid-in	Surplus	Total Capital
Balance at January 1, 1999 (2.4 million shares)	\$ 121	\$ 121	\$ 242
Net income transferred to surplus		37	37
Net change in capital stock issued (0.8 million shares)	37		37
Balance at December 31, 1999 (3.2 million shares)	\$ 158	\$ 158	\$ 316
Net income transferred to surplus		72	72
Surplus transfer to the U.S. Treasury		(92)	(92)
Net change in capital stock redeemed (0.4 million shares)	(20)		(20)
Balance at December 31, 2000 (2.8 million shares)	\$ 138	\$ 138	\$ 276

*The accompanying notes are an integral part of these financial statements.*

## FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

### 1. ORGANIZATION

The Federal Reserve Bank of ST. LOUIS ("Bank") is part of the Federal Reserve System ("System") created by Congress under the Federal Reserve Act of 1913 ("Federal Reserve Act") which established the central bank of the United States. The System consists of the Board of Governors of the Federal Reserve System ("Board of Governors") and twelve Federal Reserve Banks ("Reserve Banks"). The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics. Other major elements of the System are the Federal Open Market Committee ("FOMC") and the Federal Advisory Council. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York ("FRBNY") and, on a rotating basis, four other Reserve Bank presidents.

#### *Structure*

The Bank and its branches in Little Rock, Louisville and Memphis, serve the Eighth Federal Reserve District, which includes Arkansas, portions of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. In accordance with the Federal Reserve Act, supervision and control of the Bank is exercised by a Board of Directors. Banks that are members of the System include all national banks and any state chartered bank that applies and is approved for membership in the System.

#### *Board of Directors*

The Federal Reserve Act specifies the composition of the Board of Directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as Chairman and Deputy Chairman, are appointed by the Board of Governors, and six directors are elected by member banks. Of the six elected by member banks, three represent the public and three represent member banks. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

### 2. OPERATIONS AND SERVICES

The System performs a variety of services and operations. Functions include: formulating and conducting monetary policy; participating actively

in the payments mechanism, including large-dollar transfers of funds, automated clearinghouse operations and check processing; distribution of coin and currency; fiscal agency functions for the U.S. Treasury and certain federal agencies; serving as the federal government's bank; providing short-term loans to depository institutions; serving the consumer and the community by providing educational materials and information regarding consumer laws; supervising bank holding companies, and state member banks; and administering other regulations of the Board of Governors. The Board of Governors' operating costs are funded through assessments on the Reserve Banks.

The FOMC establishes policy regarding open market operations, oversees these operations, and issues authorizations and directives to the FRBNY for its execution of transactions. Authorized transaction types include direct purchase and sale of securities, matched sale-purchase transactions, the purchase of securities under agreements to resell, and the lending of U.S. government securities. The FRBNY is authorized by the FOMC to hold balances of and to execute spot and forward foreign exchange and securities contracts in nine foreign currencies, maintain reciprocal currency arrangements ("F/X swaps") with various central banks, and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks.

### 3. SIGNIFICANT ACCOUNTING POLICIES

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by the Financial Accounting Standards Board. The Board of Governors has developed specialized accounting principles and practices that it believes are appropriate for the significantly different nature and function of a central bank as compared to the private sector. These accounting principles and practices are documented in the "Financial Accounting Manual for Federal Reserve Banks" ("Financial Accounting Manual"), which is issued by the Board of Governors. All Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual.

The financial statements have been prepared in accordance with the Financial Accounting Manual. Differences exist between the accounting principles and practices of the System and generally accepted accounting principles ("GAAP"). The primary differences are the presentation of all security holdings at amortized cost, rather than at the fair value presentation requirements of GAAP, and the accounting for matched sale-purchase transactions as separate sales and purchases, rather than secured borrowings with pledged collateral, as is generally required by GAAP. In addition, the Bank

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

has elected not to present a Statement of Cash Flows. The Statement of Cash Flows has not been included as the liquidity and cash position of the Bank are not of primary concern to the users of these financial statements. Other information regarding the Bank's activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. Therefore, a Statement of Cash Flows would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Unique accounts and significant accounting policies are explained below.

#### *a. Gold Certificates*

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks to monetize gold held by the U.S. Treasury. Payment for the gold certificates by the Reserve Banks is made by crediting equivalent amounts in dollars into the account established for the U.S. Treasury. These gold certificates held by the Reserve Banks are required to be backed by the gold of the U.S. Treasury. The U.S. Treasury may reacquire the gold certificates at any time and the Reserve Banks must deliver them to the U.S. Treasury. At such time, the U.S. Treasury's account is charged and the Reserve Banks' gold certificate accounts are lowered. The value of gold for purposes of backing the gold certificates is set by law at \$42 2/9 a fine troy ounce. The Board of Governors allocates the gold certificates among Reserve Banks once a year based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

#### *b. Special Drawing Rights Certificates*

Special drawing rights ("SDRs") are issued by the International Monetary Fund ("Fund") to its members in proportion to each member's quota in the Fund at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for United States participation in the SDR system, the Secretary of the U.S. Treasury is authorized to issue SDR certificates, somewhat like gold certificates, to the Reserve Banks. At such time, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDRs, at the direction of the U.S. Treasury, for the purpose of financing SDR certi-

fy acquisitions or for financing exchange stabilization operations. The Board of Governors allocates each SDR transaction among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

#### *c. Loans to Depository Institutions*

The Depository Institutions Deregulation and Monetary Control Act of 1980 provides that all depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in Regulation D issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Banks. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. If any loans were deemed to be uncollectible, an appropriate reserve would be established. Interest is recorded on the accrual basis and is charged at the applicable discount rate established at least every fourteen days by the Board of Directors of the Reserve Banks, subject to review by the Board of Governors. However, Reserve Banks retain the option to impose a surcharge above the basic rate in certain circumstances.

#### *d. U.S. Government and Federal Agency Securities and Investments Denominated in Foreign Currencies*

The FOMC has designated the FRBNY to execute open market transactions on its behalf and to hold the resulting securities in the portfolio known as the System Open Market Account ("SOMA"). In addition to authorizing and directing operations in the domestic securities market, the FOMC authorizes and directs the FRBNY to execute operations in foreign markets for major currencies in order to counter disorderly conditions in exchange markets or other needs specified by the FOMC in carrying out the System's central bank responsibilities.

Purchases of securities under agreements to resell and matched sale-purchase transactions are accounted for as separate sale and purchase transactions. Purchases under agreements to resell are transactions in which the FRBNY purchases a security and sells it back at the rate specified at the commencement of the transaction. Matched sale-purchase transactions are transactions in which the FRBNY sells a security and buys it back at the rate specified at the commencement of the transaction.

Effective April 26, 1999, FRBNY was given the sole authorization by the FOMC to lend U.S. government securities held in the SOMA to U.S. government securities dealers and to banks participating in U.S. government securities clearing arrangements, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions

FEDERAL RESERVE BANK OF ST. LOUIS  
NOTES TO FINANCIAL STATEMENTS

are fully collateralized by other U.S. government securities. FOMC policy requires FRBNY to take possession of collateral in excess of the market values of the securities loaned. The market values of the collateral and the securities loaned are monitored by FRBNY on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in the SOMA. Prior to April 26, 1999, all Reserve Banks were authorized to engage in such lending activity.

Foreign exchange contracts are contractual agreements between two parties to exchange specified currencies, at a specified price, on a specified date. Spot foreign contracts normally settle two days after the trade date, whereas the settlement date on forward contracts is negotiated between the contracting parties, but will extend beyond two days from the trade date. The FRBNY generally enters into spot contracts, with any forward contracts generally limited to the second leg of a swap/warehousing transaction.

The FRBNY, on behalf of the Reserve Banks, maintains renewable, short-term F/X swap arrangements with two authorized foreign central banks. The parties agree to exchange their currencies up to a pre-arranged maximum amount and for an agreed upon period of time (up to twelve months), at an agreed upon interest rate. These arrangements give the FOMC temporary access to foreign currencies that it may need for intervention operations to support the dollar and give the partner foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the F/X swap arrangements can be initiated by either the FRBNY or the partner foreign central bank, and must be agreed to by the drawee. The F/X swaps are structured so that the party initiating the transaction (the drawer) bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an F/X swap in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the Treasury, U.S. dollars for foreign currencies held by the Treasury or ESF over a limited period of time. The purpose of the warehousing facility is to supplement the U.S. dollar resources of the Treasury and ESF for financing purchases of foreign currencies and related international operations.

In connection with its foreign currency activities, the FRBNY, on behalf of the Reserve Banks, may enter into contracts which contain varying degrees of off-balance sheet market risk, because they represent contractual commitments involving future settlement, and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

While the application of current market prices to the securities currently held in the SOMA portfolio and investments denominated in foreign curren-

cies may result in values substantially above or below their carrying values, these unrealized changes in value would have no direct effect on the quantity of reserves available to the banking system or on the prospects for future Reserve Bank earnings or capital. Both the domestic and foreign components of the SOMA portfolio from time to time involve transactions that can result in gains or losses when holdings are sold prior to maturity. However, decisions regarding the securities and foreign currencies transactions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions.

U.S. government and federal agency securities and investments denominated in foreign currencies comprising the SOMA are recorded at cost, on a settlement-date basis, and adjusted for amortization of premiums or accretion of discounts on a straight-line basis. Interest income is accrued on a straight-line basis and is reported as "Interest on U.S. government and federal agency securities" or "Interest on investments denominated in foreign currencies," as appropriate. Income earned on securities lending transactions is reported as a component of "Other income." Gains and losses resulting from sales of securities are determined by specific issues based on average cost. Gains and losses on the sales of U.S. government and federal agency securities are reported as "U.S. government securities gains (losses), net." Foreign currency denominated assets are revalued monthly at current market exchange rates in order to report these assets in U.S. dollars. Realized and unrealized gains and losses on investments denominated in foreign currencies are reported as "Foreign currency gains (losses), net." Foreign currencies held through F/X swaps, when initiated by the counter-party, and warehousing arrangements are revalued monthly, with the unrealized gain or loss reported by the FRBNY as a component of "Other assets" or "Other liabilities," as appropriate.

Balances of U.S. government and federal agency securities bought outright, investments denominated in foreign currency, interest income, amortization of premiums and discounts on securities bought outright, gains and losses on sales of securities, and realized and unrealized gains and losses on investments denominated in foreign currencies, excluding those held under an F/X swap arrangement, are allocated to each Reserve Bank. Effective April 26, 1999, income from securities lending transactions undertaken by FRBNY was also allocated to each Reserve Bank. Securities purchased under agreements to resell and unrealized gains and losses on the revaluation of foreign currency holdings under F/X swaps and warehousing arrangements are allocated to the FRBNY and not to other Reserve Banks.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

#### *e. Bank Premises and Equipment*

Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over estimated useful lives of assets ranging from 2 to 50 years. New assets, major alterations, renovations and improvements are capitalized at cost as additions to the asset accounts. Maintenance, repairs and minor replacements are charged to operations in the year incurred. Internally developed software is capitalized based on the cost of direct materials and services and those indirect costs associated with developing, implementing, or testing software.

#### *f. Interdistrict Settlement Account*

At the close of business each day, all Reserve Banks and branches assemble the payments due to or from other Reserve Banks and branches as a result of transactions involving accounts residing in other Districts that occurred during the day's operations. Such transactions may include funds settlement, check clearing and automated clearinghouse operations, and allocations of shared expenses. The cumulative net amount due to or from other Reserve Banks is reported as the "Interdistrict settlement account."

#### *g. Federal Reserve Notes*

Federal Reserve notes are the circulating currency of the United States. These notes are issued through the various Federal Reserve agents to the Reserve Banks upon deposit with such Agents of certain classes of collateral security, typically U.S. government securities. These notes are identified as issued to a specific Reserve Bank. The Federal Reserve Act provides that the collateral security tendered by the Reserve Bank to the Federal Reserve Agent must be equal to the sum of the notes applied for by such Reserve Bank. In accordance with the Federal Reserve Act, gold certificates, special drawing rights certificates, U.S. government and federal agency securities, triparty agreements, loans to depository institutions, and investments denominated in foreign currencies are pledged as collateral for net Federal Reserve notes outstanding. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, whose collateral value is equal to the par value of the securities tendered. The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. The Reserve Banks have entered into an agreement which provides for certain assets of the Reserve Banks to be jointly pledged as collateral for the Federal Reserve notes of all Reserve Banks in order to satisfy their obligation of providing sufficient collateral for outstanding Federal Reserve notes. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks.

Finally, as obligations of the United States, Federal Reserve notes are backed by the full faith and credit of the United States government.

The "Federal Reserve notes outstanding, net" account represents Federal Reserve notes reduced by currency held in the vaults of the Bank of \$3,770 million, and \$4,689 million at December 31, 2000 and 1999, respectively.

#### *h. Capital Paid-in*

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6 percent of the capital and surplus of the member bank. As a member bank's capital and surplus changes, its holdings of the Reserve Bank's stock must be adjusted. Member banks are those state-chartered banks that apply and are approved for membership in the System and all national banks. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. These shares are nonvoting with a par value of \$100. They may not be transferred or hypothecated. By law, each member bank is entitled to receive an annual dividend of 6 percent on the paid-in capital stock. This cumulative dividend is paid semiannually. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

#### *i. Surplus*

The Board of Governors requires Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31. This amount is intended to provide additional capital and reduce the possibility that the Reserve Banks would be required to call on member banks for additional capital. Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury excess earnings, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in.

The Consolidated Appropriations Act of 2000 (Public Law 106-113, Section 302) directed the Reserve Banks to transfer to the U.S. Treasury additional surplus funds of \$3,752 million during the Federal Government's 2000 fiscal year. Federal Reserve Bank of St. Louis transferred \$92 million to the U.S. Treasury during the year ended December 31, 2000. Reserve Banks were not permitted to replenish surplus for these amounts during fiscal year 2000 which ended September 30, 2000. However, the surplus was replenished by December 31, 2000.

In the event of losses or a substantial increase in capital, payments to the U.S. Treasury are suspended until such losses or increases in capital are recovered through subsequent earnings. Weekly payments to the U.S. Treasury may vary significantly.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

*j. Income and Costs related to Treasury Services*

The Bank is required by the Federal Reserve Act to serve as fiscal agent and depository of the United States. By statute, the Department of the Treasury is permitted, but not required, to pay for these services. The costs of providing fiscal agency and depository services to the Treasury Department that have been billed but will not be paid are immaterial and included in "Other expenses."

*k. Taxes*

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property, which are reported as a component of "Occupancy expense."

**4. U.S. GOVERNMENT AND FEDERAL AGENCY SECURITIES**

Securities bought outright are held in the SOMA at the FRBNY. An undivided interest in SOMA activity, with the exception of securities held under agreements to resell and the related premiums, discounts and income, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings. The settlement, performed in April of each year, equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding. The Bank's allocated share of SOMA balances was 3.799 percent and 3.289 percent at December 31, 2000 and 1999, respectively.

The Bank's allocated share of securities held in the SOMA at December 31, that were bought outright, were as follows (in millions):

	2000	1999
PAR VALUE:		
Federal agency	\$ 5	\$ 6
U.S. government:		
Bills	6,790	5,806
Notes	9,124	7,186
Bonds	3,524	2,730
<b>Total par value</b>	19,443	15,728
Unamortized premiums	370	299
Unaccreted discounts	(117)	(109)
<b>Total allocated to Bank</b>	<b>\$ 19,696</b>	<b>\$ 15,918</b>

Total SOMA securities bought outright were \$518,501 million and \$483,902 million at December 31, 2000 and 1999, respectively.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

The maturity distribution of U.S. government and federal agency securities bought outright, which were allocated to the Bank at December 31, 2000, were as follows (in millions):

MATURITIES OF SECURITIES HELD	PAR VALUE		
	U.S. Government Securities	Federal Agency Obligations	Total
Within 15 days	\$ 686	\$	\$ 686
16 days to 90 days	4,139		4,139
91 days to 1 year	4,769		4,769
Over 1 year to 5 years	5,044	5	5,049
Over 5 years to 10 years	2,107		2,107
Over 10 years	2,693		2,693
<b>Total</b>	<b>\$ 19,438</b>	<b>\$ 5</b>	<b>\$ 19,443</b>

At December 31, 2000 and 1999, matched sale-purchase transactions involving U.S. government securities with par values of \$21,112 million and \$39,182 million, respectively, were outstanding, of which \$802 million and \$1,289 million were allocated to the Bank. Matched sale-purchase transactions are generally overnight arrangements.

#### 5. INVESTMENTS DENOMINATED IN FOREIGN CURRENCIES

The FRBNY, on behalf of the Reserve Banks, holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments. Foreign government debt instruments held include both securities bought outright and securities held under agreements to resell. These investments are guaranteed as to principal and interest by the foreign governments.

Each Reserve Bank is allocated a share of foreign-currency-denominated assets, the related interest income, and realized and unrealized foreign currency

gains and losses, with the exception of unrealized gains and losses on F/X swaps and warehousing transactions. This allocation is based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31. The Bank's allocated share of investments denominated in foreign currencies was approximately 2.456 percent and 2.028 percent at December 31, 2000 and 1999, respectively.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

The Bank's allocated share of investments denominated in foreign currencies, valued at current exchange rates at December 31, were as follows (in millions):

	2000	1999
<b>EUROPEAN UNION EURO:</b>		
Foreign currency deposits	\$ 114	\$ 88
Government debt instruments including agreements to resell	67	51
<b>JAPANESE YEN:</b>		
Foreign currency deposits	68	7
Government debt instruments including agreements to resell	135	180
<b>ACCRUED INTEREST</b>		
	1	1
<b>Total</b>	<b>\$ 385</b>	<b>\$ 327</b>

Total investments denominated in foreign currencies were \$15,700 million and \$16,140 million at December 31, 2000 and 1999, respectively. The 2000 balance includes \$49 million in unearned interest collected on certain foreign currency holding that is allocated solely to the FRBNY.

The maturity distribution of investments denominated in foreign currencies which were allocated to the Bank at December 31, 2000, were as follows (in millions):

<b>MATURITIES OF INVESTMENTS DENOMINATED IN FOREIGN CURRENCIES</b>	
Within 1 year	\$ 361
Over 1 year to 5 years	10
Over 5 years to 10 years	11
Over 10 years	3
<b>Total</b>	<b>\$ 385</b>

At December 31, 2000 and 1999, there were no open foreign exchange contracts or outstanding F/X swaps. At December 31, 2000 and 1999, the warehousing facility was \$5,000 million, with no balance outstanding.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

#### 6. BANK PREMISES AND EQUIPMENT

A summary of bank premises and equipment at December 31 is as follows (in millions):

	2000	1999
<b>BANK PREMISES AND EQUIPMENT:</b>		
Land	\$ 4	\$ 4
Buildings	36	34
Building machinery and equipment	15	12
Construction in progress	1	1
Furniture and equipment	52	50
	<hr/> 108	<hr/> 101
Accumulated depreciation	(51)	(46)
Bank premises and equipment, net	<hr/> \$ 57	<hr/> \$ 55

Depreciation expense was \$8.7 million and \$7.4 million for the years ended December 31, 2000 and 1999, respectively.

#### 7. COMMITMENTS AND CONTINGENCIES

At December 31, 2000, the Bank was obligated under noncancelable leases for premises and equipment with terms ranging from 1 to approximately 3 years. These leases provide for increased rentals based upon increases in real estate taxes, operating costs or selected price indices.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance and maintenance when included in rent), net of sublease rentals, was \$1 million for both years ended December 31, 2000 and 1999. Certain of the Bank's leases have options to renew.

Under the Insurance Agreement of the Federal Reserve Banks dated as of March 2, 1999, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1 percent of the capital paid-in of the claiming Reserve Bank, up to 50 percent of the total capital paid-in of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank's capital paid-in bears to the total capital paid-in of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under such agreement at December 31, 2000 or 1999.

The Bank is involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with counsel, the aforementioned litigation and claims will be resolved without

material adverse effect on the financial position or results of operations of the Bank.

#### 8. RETIREMENT AND THRIFT PLANS

##### *Retirement Plans*

The Bank currently offers two defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the Bank's employees participate in the Retirement Plan for Employees of the Federal Reserve System ("System Plan") and the Benefit Equalization Retirement Plan ("BEP"). The System Plan is a multi-employer plan with contributions fully funded by participating employers. No separate accounting is maintained of assets contributed by the participating employers. The Bank's projected benefit obligation and net pension costs for the BEP at December 31, 2000 and 1999, and for the years then ended, are not material.

##### *Thrift Plan*

Employees of the Bank may also participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System ("Thrift Plan"). The Bank's Thrift Plan contributions totaled \$2 million for both years ended December 31, 2000 and 1999, and are reported as a component of "Salaries and other benefits."

**FINANCIALS**

**FEDERAL RESERVE BANK OF ST. LOUIS  
NOTES TO FINANCIAL STATEMENTS**

**9. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS AND  
POSTEMPLOYMENT BENEFITS**

*Postretirement benefits other than pensions*

In addition to the Bank's retirement plans, employees who have met certain age and length of service requirements are eligible for both medical benefits and life insurance coverage during retirement.

The Bank funds benefits payable under the medical and life insurance plans as due and, accordingly, has no plan assets. Net postretirement benefit costs are actuarially determined using a January 1 measurement date.

Following is a reconciliation of beginning and ending balances of the benefit obligation (in millions):

	2000	1999
Accumulated postretirement benefit obligation at January 1	\$ 42.0	\$ 43.8
Service cost-benefits earned during the period	1.0	1.0
Interest cost of accumulated benefit obligation	2.9	2.6
Actuarial (gain)	(0.9)	(3.9)
Contributions by plan participants	0.1	0.1
Benefits paid	(2.2)	(1.7)
Accumulated postretirement benefit obligation at December 31	\$ 42.9	\$ 41.9

Following is a reconciliation of the beginning and ending balance of the plan assets, the unfunded postretirement benefit obligation, and the accrued postretirement benefit costs (in millions):

	2000	1999
Fair value of plan assets at January 1	\$ —	\$ —
Contributions by the employer	2.0	1.5
Contributions by plan participants	0.2	0.1
Benefits paid	(2.2)	(1.6)
Fair value of plan assets at December 31	\$ —	\$ —
Unfunded postretirement benefit obligation	\$ 42.9	\$ 41.9
Unrecognized prior service cost	0.7	0.8
Unrecognized net actuarial gain	4.8	4.1
Accrued postretirement benefit costs	\$ 48.4	\$ 46.8

Accrued postretirement benefit costs are reported as a component of "Accrued benefit costs."

At December 31, 2000 and 1999, the weighted-average assumption used in developing the postretirement benefit obligation was 7.5 percent.

For measurement purposes, an 8.75 percent annual rate of increase in the cost of covered health care benefits was assumed for 2001.

Ultimately, the health care cost trend rate is expected to decrease gradually to 5.50 percent by 2008, and remain at that level thereafter.

## FINANCIALS

### FEDERAL RESERVE BANK OF ST. LOUIS NOTES TO FINANCIAL STATEMENTS

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effects for the year ended December 31, 2000 (in millions):

	1 Percentage Point Increase	1 Percentage Point Decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit costs	\$ 0.9	\$ 0.7
Effect on accumulated postretirement benefit obligation	8.6	6.9

The following is a summary of the components of net periodic postretirement benefit costs for the years ended December 31 (in millions):

	2000	1999
Service cost-benefits earned during the period	\$ 0.9	\$ 1.0
Interest cost of accumulated benefit obligation	2.9	2.6
Amortization of prior service costs	(0.2)	—
Net periodic postretirement benefit costs	\$ 3.6	\$ 3.6

Net periodic postretirement benefit costs are reported as a component of "Salaries and other benefits."

#### *Postemployment benefits*

The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined and include the cost of medical and dental insurance, survivor income, and disability benefits. Costs were projected using the same discount rate and health care trend rates as were

used for projecting postretirement costs. The accrued postemployment benefit costs recognized by the Bank at both December 31, 2000 and 1999, were \$4 million. This cost is included as a component of "Accrued benefit costs." Net periodic postemployment benefit costs included in 2000 and 1999 operating expenses were \$1 million for both years.

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## SUMMARY OF OPERATIONS

### SUMMARY OF OPERATIONS

*Summary of Key Operation Statistics for Services Provided to Depository Institutions and the U.S. Treasury*

	Number of Items		Dollar Amount (Millions)	
	2000	1999	2000	1999
Government Checks Processed	21,625,000	22,894,000	\$ 20,151	\$ 22,100
Postal Money Orders Processed	230,133,000	225,853,000	30,036	29,118
Commercial Checks Processed	1,087,336,000	1,062,774,000	547,758	537,430
ACH Commercial Items Originated	167,204	155,877	302,412	279,070
Currency Processed	1,074,327,000	1,007,593,000	16,407	13,921
Funds Transfers	4,814,815	4,791,747	3,597,950	3,524,052
Loans to Depository Institutions	801	595	1,690	2,656
Transfer of Government Securities	126,077	137,644	768,228	851,898
Food Coupons Destroyed	18,783,000	55,915,000	95	282

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*The mission of  
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is to encourage maximum sustainable  
economic growth by: advancing monetary policy  
focused on price stability, providing  
and promoting efficient and reliable  
payments services, and fostering safe and  
responsible banking practices.*

THE FEDERAL RESERVE BANK OF ST. LOUIS is one of 12 regional Reserve Banks, which together with the Board of Governors, make up the nation's central bank. The Fed carries out U.S. monetary policy, regulates certain depository institutions, provides wholesale-priced services to banks and acts as fiscal agent for the U.S. Treasury. The St. Louis Fed serves the Eighth Federal Reserve District, which includes all of Arkansas, eastern Missouri, southern Indiana, southern Illinois, western Kentucky, western Tennessee and northern Mississippi. Branch offices are located in Little Rock, Louisville and Memphis.

# *Eighth District*

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