

# *A Better Way*

**Productivity and Reorganization  
in the American Economy**



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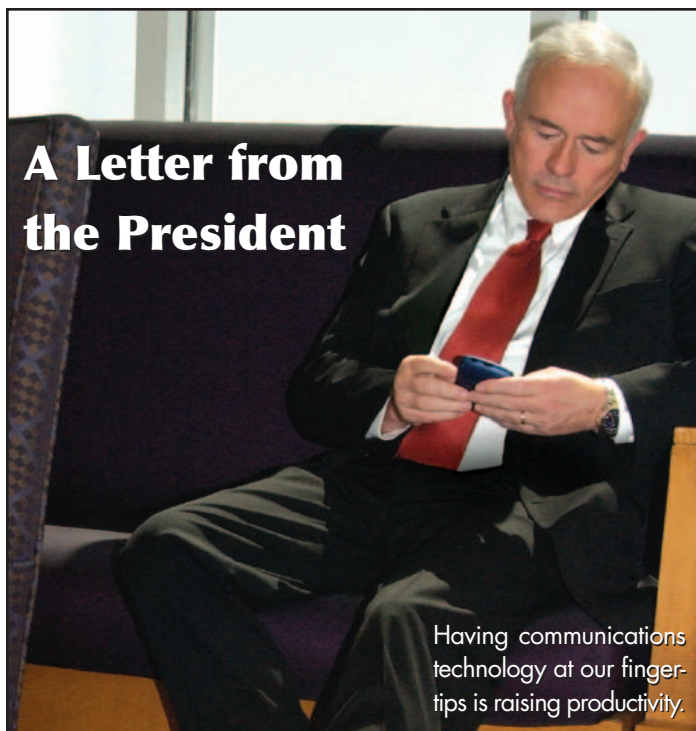
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## A Letter from the President



Having communications technology at our fingertips is raising productivity.

Federal Reserve Chairman Alan Greenspan was moderating a session at a conference a few years ago when the participants were slow returning from a coffee break. That prompted him to offer a little lesson in process improvement and productivity. “If you pour the coffee, add cream and then stir, it’s a three-step process,” he said. “If you put the cream in first and then pour, it’s a two-step process.”

Adam Smith, in *Wealth of Nations*, emphasizes the division and specialization of labor. By specializing, we gain skill and productivity. We do what we do best and trade for the rest. Productivity gains are limited only by the extent of the market. Bigger markets bring bigger gains.

Productivity is a hot topic these days. It’s also the subject of this year’s annual report essay.

Increasing productivity is what raises our standard of living. We have to produce more to consume more. Some productivity gains come from improved worker knowledge, skills and experience. Probably more come from workers’ having better technology and more capital to work with. And, yes, process improvements.

I’ve mentioned before my (thankfully) brief experience as a 10-year-old picking cotton on Billy Joe Hopper’s farm in North Georgia. My goal was to pick 100 pounds in a day. The adults alongside me could easily pick 300 pounds. With size and experience going for them, they were mainly responsible for their greater productivity. Today, one person driving a mechanical cotton picker can pick several acres a day.

Such quantum leaps in productivity have more to do with capital than with labor and have been common in agriculture. Indeed, the cotton gin was instrumental in ushering in the Industrial Revolution. Productivity growth on the farm now enables about 2 percent of U.S. workers to produce more food than 90 percent did in an earlier era. The same has been occurring in manufacturing for decades. Productivity gains enable fewer workers to manufacture more each year. Progress is measured by how few workers it takes to produce a given output, not by how many. We sometimes lose sight of this simple fact, especially during slack periods, such as we’ve had recently.

## The Essay

Economists have traditionally discussed productivity in terms of inventions, new technology, labor–capital ratios and the like. Our essay, “A Better Way,” focuses on broader, macroeconomic factors such as trade and competition.

Think about your productivity level today as you work and spend the resulting income on the output of others. Now imagine how productive you would be if you were transported back to the United States of 100 years ago or 200 years ago or to an underdeveloped country of today. You might work harder and longer, but without our modern infrastructure of capital and technology you are unlikely to be as productive and well-off. You could work harder, but not smarter.

Think about how productive and well-off you would be if trade barriers isolated you from the workers and output of other countries. You might produce as much, physically, but your output would buy less and your standard of living would be lower. How would it affect your standard of living if the government prevented all job losses resulting from new technology, trade or competition?

Our productivity is as much about our economic environment, infrastructure and interaction with others as it is about us personally. That’s just one more reason to celebrate living in the USA.

## The Economy

Recovery from the last recession began in November 2001, over two years ago. It was erratic initially and lost momentum, but it picked up in the second half of 2003 when GDP growth averaged over 6 percent. Unfortunately, new job creation did not match the recovery in output and income during the year. Job growth resumed in late 2003, but not vigorously. Productivity—a godsend in the long

## On a Personal Note

2003 was a good year for me in several respects. I saw China up close and personal and met many of its officials. Just as I had suspected, China is really big with lots of people. The supply of workers to the cities will likely be unlimited for a long time. China's rapid growth and growing market orientation are good not only for its citizens but for ours as well. We benefit when our trading partners prosper.

Last year's Friedman conference was the highlight of my conference career. Sharing a platform with them was a personal privilege and honor I shall always remember.

A more frivolous 2003 highlight was my virtual resurrection of Buddy Holly on NPR's *Morning Edition*. Host Bob Edwards recalled my pilgrimage to Buddy's grave in Lubbock and asked me about his contribution to economics. I told him "Rave On" would make a great anthem for the New Economy. When the interview aired two days later, it closed in that special NPR way with Buddy singing "Rave On." Was that cool or what?

Speaking of the New Economy, note that my new-paradigm frog is emerging from his lengthy hibernation with a distinctly Western look. It may just be a phase; he probably doesn't have many cattle.

2003 ended—literally—on a high note for me. On New Year's Eve I read my first drugstore cowboy poem with Allen Damron at Ms. Tracy's Cafe near Terlingua, Texas. Ms. Tracy's is pretty hard to get to but a mighty good place to be. If you're curious, see "Rhymes with No Reason" in my section of our web site. For more serious fare, see the other sections of [www.dallasfed.org](http://www.dallasfed.org). It's the best little web site in Texas.

—Bob McTeer



run—temporarily slowed job growth as businesses continued to find ways to produce more with fewer workers.

Until full employment is restored, we should do what we can to promote the dynamic growth needed to create new jobs, but avoid shortsighted actions that preserve the old jobs at the expense of new ones.

## The Dallas Fed

The Dallas Fed had a good year in 2003 despite the challenges brought on by a declining volume of paper checks. Like other businesses, we've had to adapt by reducing costs and staff, but the transition from paper to electronic payments is part of the productivity revolution that raises living standards.

We held several major conferences in 2003, the most notable of which marked the 25th anniversary of Milton and Rose Friedman's *Free to Choose*. The Friedmans participated in the conference, as did a long list of distinguished speakers who paid tribute to them and assessed their contributions to economic prosperity over the past quarter century. The Friedmans are national treasures—make that world treasures—and show no signs of slowing down in their 90s.

*Robert D. McTeer, Jr.*

Robert D. McTeer, Jr.  
President and CEO



Sharing the platform with the Friedmans.

# A Better Way

## Productivity and Reorganization in the American Economy

Compare America today with earlier times or other nations, and one fact stands out: We live better.

Give most of the credit to productivity. Through it, we get more goods and services from each bit of work effort. Through it, we secure economic progress and earn bigger paychecks. The power of productivity has made the United States the world's richest nation.

America has prospered by doing things a better way.

We've become more productive by building our capital stock—adding more machinery, factories, offices and research facilities.

We've become more productive by upgrading workers' skills, whether through formal schooling, on-the-job experience or retraining.

We've become more productive by introducing new technologies that increase output, improve efficiency and lower costs.

We've become more productive through trade, too. Open markets force companies to strive harder to compete. Through trade, companies gain access to cheaper inputs, a deeper pool of investment funds and technology from around the world. Trade enlarges markets so companies can exploit economies of scale.

Most Americans readily recognize—and celebrate—the forces that raise productivity in the workplace, but there's more to this engine of economic progress. As companies and workers achieve greater efficiency at the *micro-*

economic level, they unleash a power that reorganizes the whole economy, spurring further productivity gains at the *macroeconomic* level. (See Exhibit 1.)

Resources from streamlined operations aren't just cast out into idleness. With less labor needed to produce the existing output level, workers' talents and energy become available for other tasks, either at companies already in business or at new enterprises. Reorganization expands production throughout the economy, fulfilling wants that had been unmet or maybe even unknown.

Reorganization from trade provides another source of macroeconomic productivity. As competition forces producers to seek comparative advantage in the marketplace, resources shift to their best uses, creating a more efficient economywide deployment of labor.

History shows us the power of macroeconomic productivity in action. At its founding America was primarily agrarian, with more than 90 percent of the population toiling on farms. As tractors, threshers, irrigation and high-yield seeds made individual farmers more productive over the past century or so, the United States could feed itself—and expand its export markets—with far fewer agricultural workers.

Displaced farmhands flocked to cities, where they found work assembling cars, building houses, generating electricity and making an abundance of consumer goods. Over time, factories grew more automated and saw great leaps of productivity. Workers moved from assembly



## Exhibit 1. The Path to Progress

### MICROECONOMIC SOURCES OF PRODUCTIVITY GROWTH

Economies boost their productivity in two ways—micro and macro. Microeconomic gains take place within an enterprise as it invests, trains workers, innovates and competes. Macroeconomic gains occur when the overall economy reorganizes, shifting resources so they produce more than before. Both types of productivity make us better off. Statistics capture productivity's capacity to increase consumption and leisure, but they ignore other gains, such as better working conditions, new and better products, and greater variety.

#### INVESTMENT

Increasing the capital goods with which labor works raises output. In recent years, America has been putting more than 10 percent of its GDP into adding to its stock of machinery, factories, offices and research facilities.

#### INNOVATION

New technology has always played a leading role in raising productivity, by boosting output, improving quality, and saving time and other resources.

#### EDUCATION AND TRAINING

Workers become more productive when they upgrade their skills and talents. Building human capital starts in the classroom, but modern economies reward workers for a wide range of abilities.

#### TRADE

Open markets intensify competition, giving companies greater incentive to lower costs and improve quality. Trade also provides access to technology, inputs and capital that might not be readily available at home.

### How America Works

Percentage of workforce



America's history has been one continual upheaval in jobs—first off the farms and into factories, then on to services. The economy's relentless reorganization raises productivity.

## MACROECONOMIC SOURCES OF PRODUCTIVITY GROWTH

### REORGANIZATION

As companies and workers become more efficient, the economy reallocates resources to more productive uses, either in existing companies or new ones. As the market recycles workers and other resources, the economy grows.

### TRADE

A powerful force for reorganization, trade makes economies more productive, even if enterprises don't become more efficient.

## THE PAYOFF FROM PRODUCTIVITY GROWTH

### MEASURED

- Higher GDP
- More leisure time

### UNMEASURED

- Better working conditions
- New and improved products
- More variety
- Greater safety and security
- Cleaner environment

lines to jobs in retailing, medical care, finance, management and services.

Over the grand sweep of history, the cumulative effects of productivity on living standards have been astounding. Per capita output has grown 25-fold since 1776. In just the past two generations, average real income in the United States has more than doubled, thanks largely to increased output per hour.

Productivity has also allowed Americans to reduce the average workweek from 76 hours in 1830 to 60 in 1890, 39 in 1950 and just 34 today. All told, productivity provides something close to economic alchemy: more for less. We get more of the goods and services we want for less time at work.

Human beings possess some innate instinct to innovate and improve, but

productivity advanced at a snail's pace for much of history. American farmers in the early 1800s worked the soil the same way their European forebears had for centuries. Not surprisingly, their living standards were about the same, too.

The advent of industrial capitalism in the 19th century quickened the pace of progress by providing a powerful, even ruthless impetus for productivity. The competitive hothouse of capitalism pits producers against one another in a contest for resources and customers. Market discipline rewards those who produce and punishes those who plunder. Winners in the productivity race reap increased profits and gain market share, while losers see their capacity to compete shrink until they eventually go out of business.

The efficiency gains that make firms leaner and the economywide reshuffling of jobs require painful adjustments. Some see only the hardships. Fearful of job loss and upheaval in their lives, such people have a single message: Preserve the status quo. What they fail to see is that society must endure the turmoil to get the payoff from productivity.

Taken together, micro- and macro-productivity are a potent brew for economic progress. Through a succession of technology revolutions and industrial reorganizations, the nation advanced from the horse-and-buggy age to one of jet travel, satellite communications, robotics, genetic engineering and the Internet—all generated by waves of productivity.

## Riding a Surge of Technology

Because productivity determines how well we live, Americans want to know how they're doing.

In an economy as large and diverse as ours, it's a Herculean task to calculate a productivity number that sums up the efforts of 130 million workers, employed in millions of establishments that produce more than \$11 trillion in output. The Bureau of Labor Statistics does the best it can in producing quarterly estimates of output per hour, derived largely from surveys of businesses.

BLS data show that U.S. productivity has grown steadily over the long haul, with output per hour rising an average 2.3 percent annually since 1870. A few percentage points a year

might not sound like much, but this historical rate doubles per capita income every three decades or so. (See *Exhibit 2.*)

The productivity path has been choppy due to business-cycle upturns and slowdowns as well as longer-term economic trends. From 1950 to 1973, for example, output per hour rose a healthy 2.7 percent annually. Over the next 22 years, productivity sank below its long-term trend, rising just 1.5 percent a year. The slowdown remains something of a mystery, although some economists suggest that early investments in computers and information technology didn't provide a big enough payoff.

Productivity broke out of its two-decade doldrums in the mid-1990s as computers, scanners, the Internet and other innovations finally reached critical mass in America's workplaces. Average annual productivity gains have surged at 3.2 percent since 1995.

The revival shows every sign of continuing. The economy emerged from the 2001 recession with productivity growth well above the average of the seven significant business cycles since 1960. In the first 11 quarters after employment peaked, productivity jumped 13 percent, compared with the historical norm of 8 percent. In another break with the past, the gains spread beyond manufacturing, the



The Internet and other innovations have helped ignite a surge in U.S. productivity since the mid-1990s. In the current economic recovery, companies are continuing to see gains from investments in new technologies.

traditional productivity leader, and into the whole economy, including retailing and services.

Productivity's postrecession surge has been strong enough to spark controversy. The labor market has languished, with no net job creation two years into the recovery. Some see productivity as a millstone that allows companies to expand without hiring more workers. But viewing productivity as a drag on employment is myopic. Americans don't face a choice between having work and working a better way. Higher productivity raises incomes and profits, which fuels demand, boosts investment and puts more people to work, usually at new jobs.

We could dismantle our factory robots and farm equipment with the idea of hiring lots of busy hands to build cars and till the soil. We could junk our backhoes and dig ditches with shovels. Doing so would be absurd. We'd immediately see that renouncing productivity would do us great harm. Prices would be higher, wages lower and the economy smaller. Work would be harder. Living standards would be dragged backward in time, sacrificed to the false god of more jobs.

Rather than shunning productivity, we should embrace it and move forward. As the economic recovery continues, the United States may not be able to sustain the same pace of productivity growth it has the past two years. Even with a slowdown, the nation will likely build on recent years' strong productivity growth, rather than relapse into the post-1973 slump.

The bullish case for future productivity centers on the technologies that have made U.S. workplaces more efficient in recent years. The microchip revolution still has plenty of kick left in it. And as world markets integrate,



Future productivity gains are likely to come from breakthroughs in biotechnology, a field just now tapping the possibilities opened by decoding the human genome.

we should add to our productivity gains from trade.

Further out, new generations of world-shaking technologies will impact the way we work. Take nanotechnology, the science of rearranging atoms and molecules. It promises to create new materials that are stronger, lighter and more flexible and substances with perfect insulating, lubricating and conducting properties. Biotechnology will emerge, too, as a potent force for progress.

When combined with America's entrepreneurial bent and open markets, the inventory of cutting-edge technologies should deliver rapid productivity growth for years. Healthy gains in output per hour may restore the luster of the New Economy, a concept tarnished by the dot-com implosion. The New Economy carries a powerful policy implication: With stronger productivity, the economy can grow faster without fueling inflation.

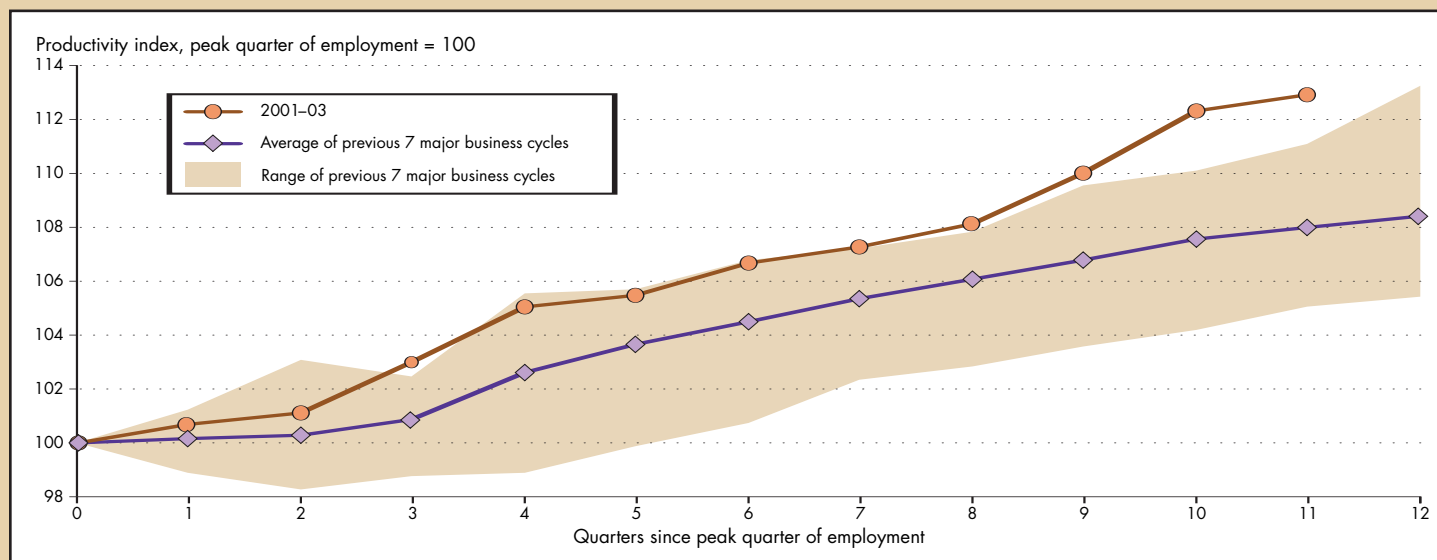
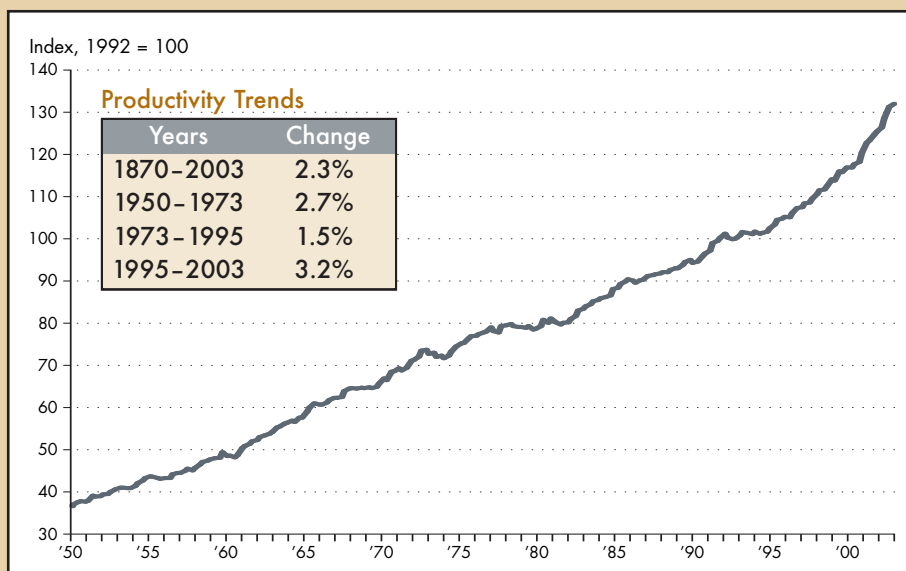
## Exhibit 2. Productivity by the Numbers

### After Picking Up in Recent Years ...

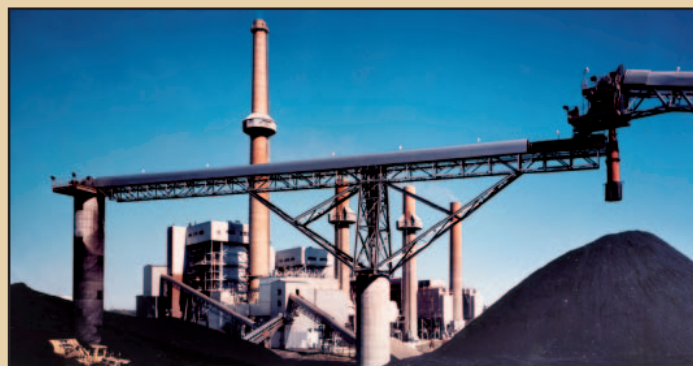
The U.S. economy has achieved steady increases in productivity over the past five decades (right). A surge since 1995 has not only reversed a 22-year slowdown but also eclipsed the historical trend of 2.3 percent a year.

### ... Productivity Really Takes Off

Productivity growth has been especially strong in the most recent business cycle (below). In the 11 quarters since the high point for employment, output per hour has increased faster than in any of the seven major recessions and recoveries that preceded it.



Better machinery, fertilizers, irrigation and high-yield seeds have made farms more productive. Corn output rose from 38 bushels per acre in 1950 to 142 in 2003, rice from 2,371 to 6,645 pounds, and potatoes from 15,300 to 36,700 pounds.



Technology makes electric power plants more efficient. Kilowatt-hours per ton of coal rose from 1,682 in 1950 to 1,955 in 2002; per barrel of oil, from 447 to 573; and per 1,000 cubic feet of natural gas, from 71 to 113.

## Jobs, Productivity Go Together

The causes of job losses include greater efficiency, rising import competition and other factors that spur reorganization in the economy. The number of workers filing initial claims for unemployment insurance shows layoffs are a routine part of economic life, whether employment is rising or falling (shaded).

|                                | 1979-80 | 1981-82 | 1983-90 | 1991    | 1992-2000 | 2001-03 |
|--------------------------------|---------|---------|---------|---------|-----------|---------|
| Monthly Average Initial Claims | 436,000 | 519,000 | 366,000 | 448,000 | 338,000   | 404,000 |

Except for brief recessions and their aftermath, the economy creates enough new opportunities for both those who've lost jobs and new entrants to the labor force, increasing total employment and lowering the unemployment rate.

|                                  |            |            |             |             |             |             |
|----------------------------------|------------|------------|-------------|-------------|-------------|-------------|
| Monthly Average Net Job Gain     | 94,000     | -91,000    | 212,000     | -71,000     | 224,000     | -67,000     |
| End-of-Period Employment         | 90,936,000 | 88,756,000 | 109,118,000 | 108,261,000 | 132,441,000 | 130,043,000 |
| Annual Average Unemployment Rate | 6.6%       | 9.7%       | 6.5%        | 7.3%        | 5.3%        | 5.8%        |

This reorganization, combined with efficiency gains in the workplace, forges a more productive economy with more jobs. Output per hour rose 67 percent in the past quarter century. At the same time, the United States added almost 40 million workers to the employment rolls.

|                             |     |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|
| End-of-Period Productivity* | 100 | 102 | 119 | 123 | 148 | 167 |
|-----------------------------|-----|-----|-----|-----|-----|-----|

\*Index, Fourth quarter 1979 = 100

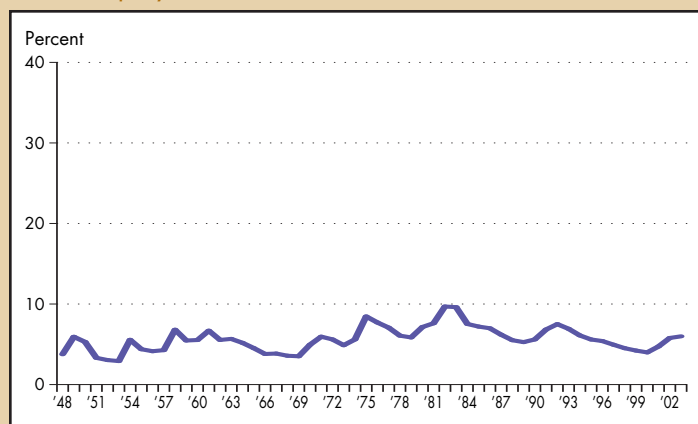


## Exhibit 2. Productivity by the Numbers (continued)

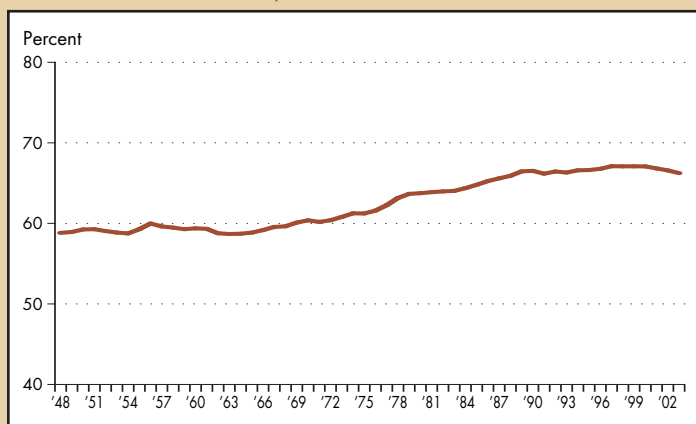
### Productivity Powers Progress

Increasing productivity holds the key to higher living standards. The U.S. economy hasn't seen big changes in the unemployment rate (1), labor force participation rate (2) or consumption as a share of income (3). Productivity (4) stands out as the prime force behind economic progress. Most of the productivity gains taken as time off the job occurred before 1980 (5). Today, we're taking most of the benefits of productivity in higher consumption (6) and unmeasured gains in living standards.

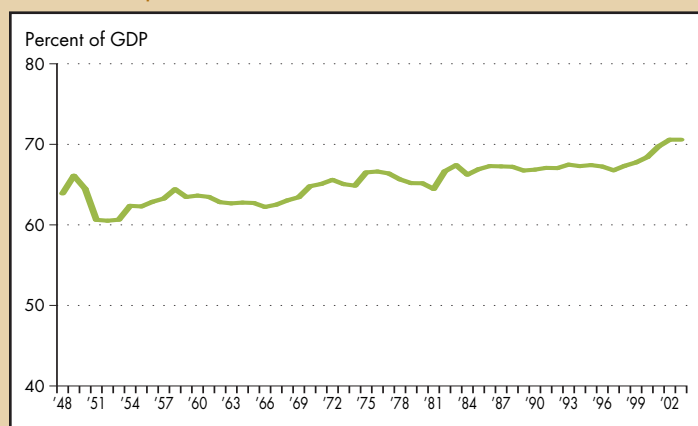
#### 1 Unemployment Rate



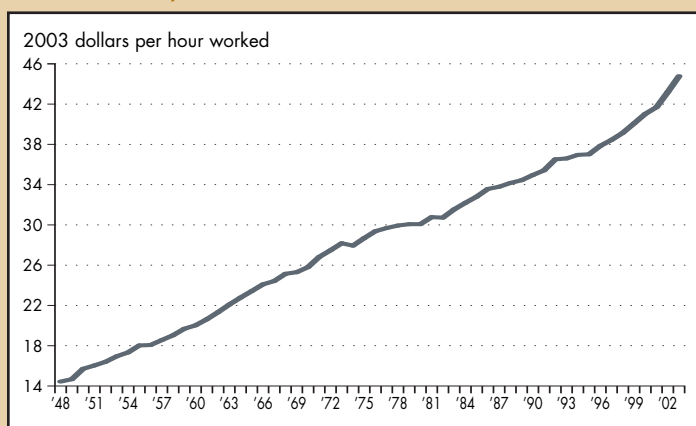
#### 2 Labor Force Participation Rate



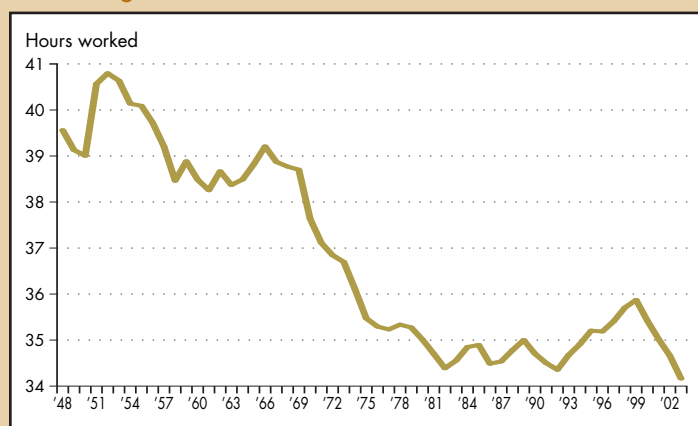
#### 3 Consumption as a Share of Income



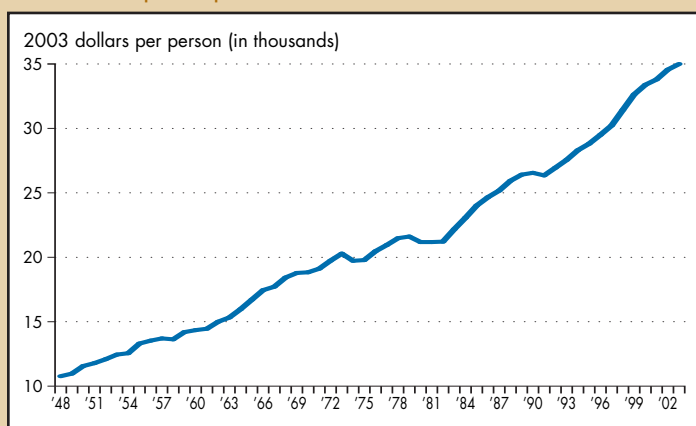
#### 4 Productivity



#### 5 Average Workweek



#### 6 Consumption per Person

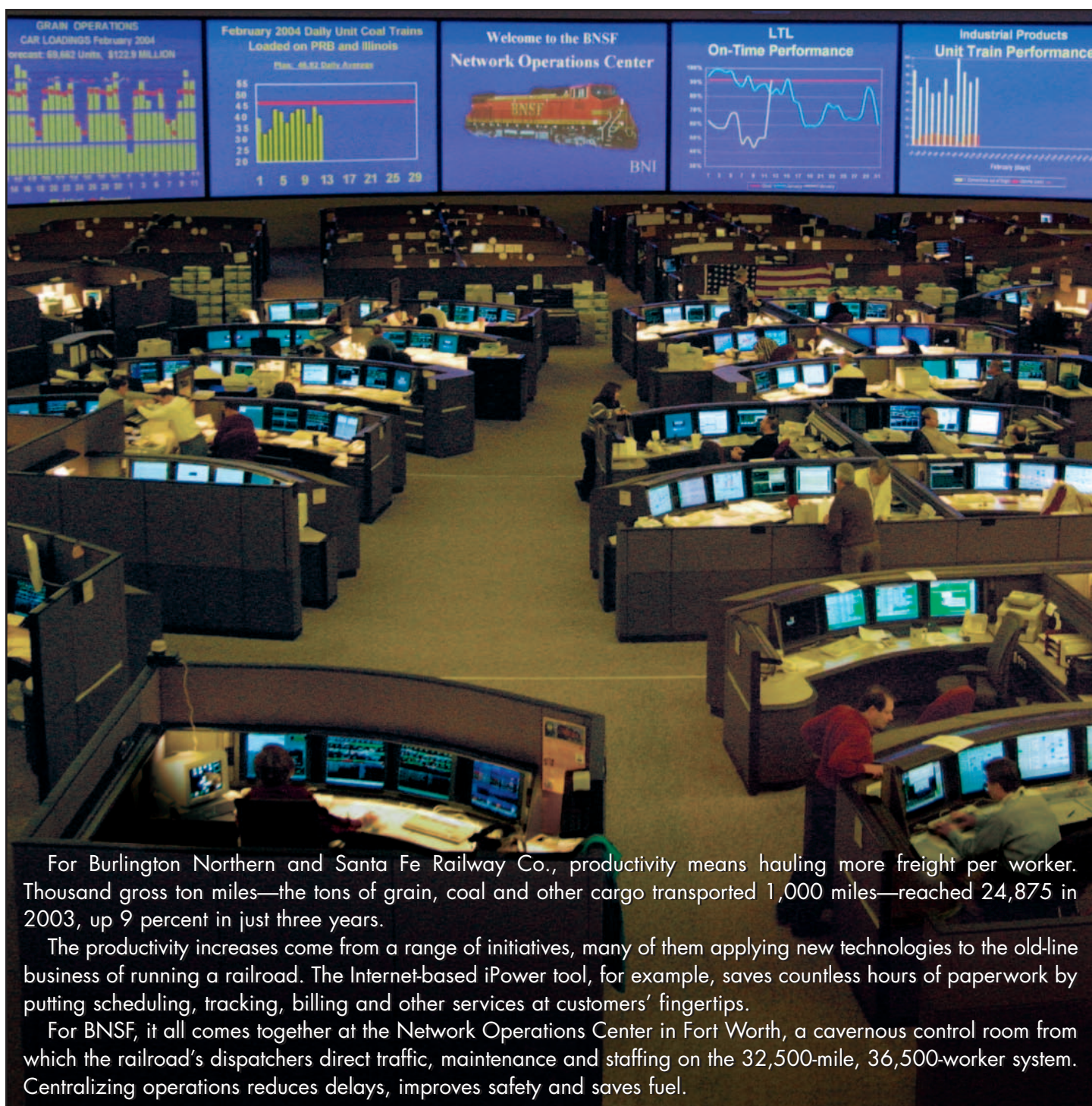


## Working Smarter, Not Harder

Day in and day out, markets encourage companies to push for greater output per hour. Do the job faster. Reduce inputs. Improve quality. Trim a few cents off the cost of production. The relentless march of productivity comes in myriad ways, limited only by technology and human ingenuity.

Burlington Northern and Santa Fe Railway Co. raised freight-hauling productivity with a computerized command center in Fort Worth. At Wal-Mart Stores Inc., the next leap forward in productivity will feature miniature tracking devices that simplify keeping tabs on inventory. Continental

Airlines Inc. increased productivity with hundreds of airport kiosks that allow passengers to get boarding passes without going to ticket agents. Dr Pepper/Seven Up Bottling Group Inc. grew more productive with huge machines that fill and package 800 bottles or 1,500 cans a minute.



Over the past few decades, America's farms, steel mills, automobile factories, power plants, banks and telecommunications firms have all shown strong gains in productivity. These industries and countless others are getting the payoff from a willingness to invest in new plant and equipment that embodies the latest technology. In real terms, nonresidential fixed investment has topped

10 percent of GDP every year since 1996, reaching 13 percent in 2000 before slipping to 11 percent in 2003. Between 1980 and 1995, nonresidential investment exceeded 9 percent of GDP only twice.

Companies are getting more bang for their investment buck. Some productivity-enhancing tools—most notably, computing power—keep getting cheaper. Each dollar of invest-

ment has greater weight because of new technologies. Handheld devices, wireless communications, faster Internet connections, satellite tracking, virtual reality software and other innovations are becoming more common.

Although strong investment spending coincided with the productivity surge in recent years, more output per hour isn't just a matter of money. Firms bolster productivity through business



Wal-Mart Stores Inc., the nation's largest retailer, sees the next round of productivity gains in radio-frequency identification tags—silicon chips that emit signals for electronic readers to receive and decode.

RFID tags can store information on a product's origin, location, expiration date and cost. New-generation RFID tags are small enough to embed in products and packaging and use frequencies that allow readers to identify individual items assembled in no particular order.

Wal-Mart will require RFID tags on shipments from its top 100 vendors in 2005 and all suppliers by year-end 2006. As a step up from bar codes, RFID technology will make Wal-Mart's inventory management more efficient. With incoming pallets and cases carrying the tags, the retailer will be able to track the exact location and condition of every item in stock.

strategies, both simple and sophisticated, to improve operations and take a bite out of costs.

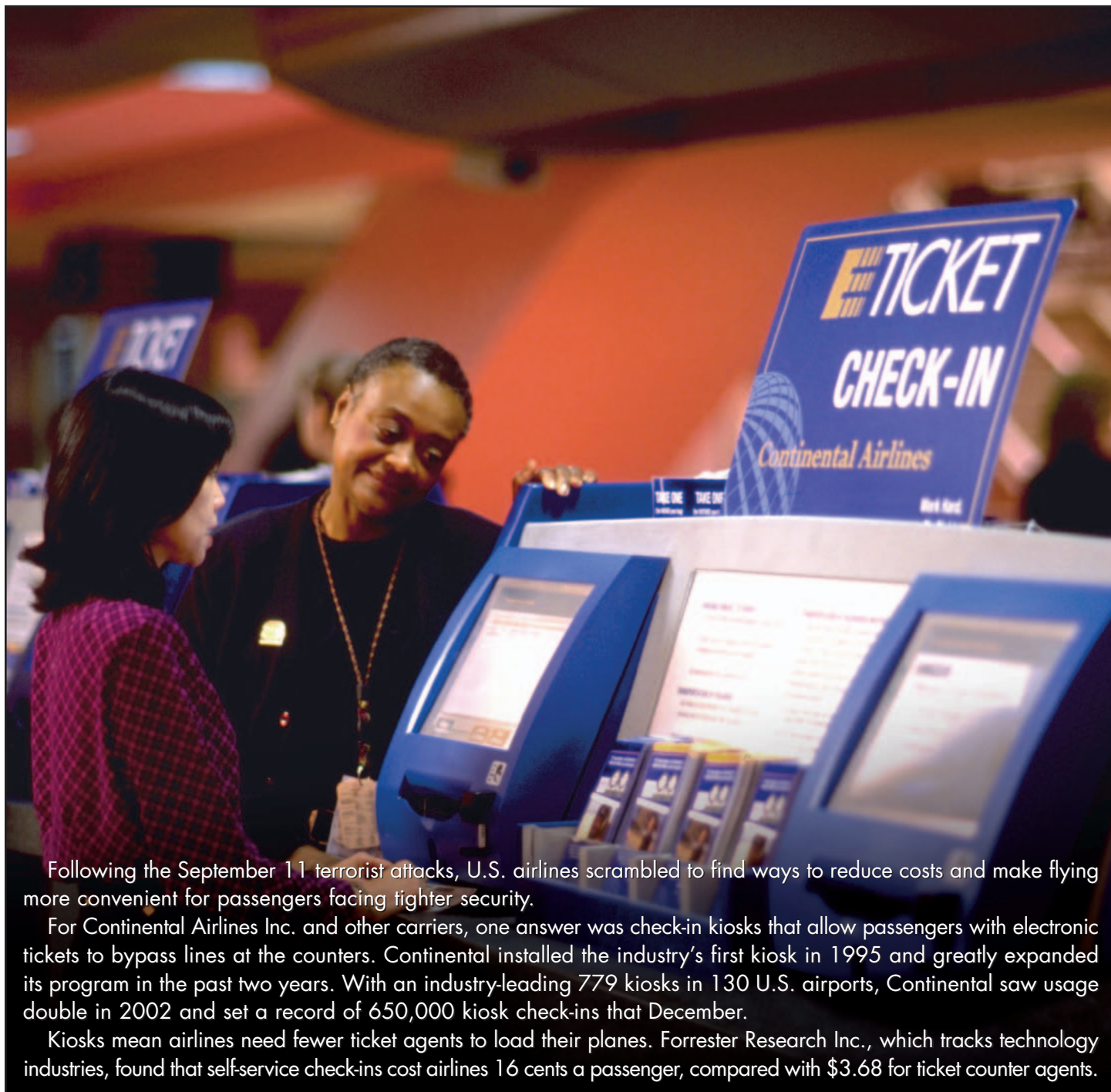
Mergers eliminate duplication and capture economies of scale. Outsourcing saves money by transferring peripheral functions to more efficient suppliers, allowing companies to focus on what they do best—their core business. By tightening supply chains, companies improve the process of getting inputs

from suppliers, tracking inventories and delivering products to customers.

One emerging industry centers on *selling* productivity solutions. Teleportec Inc. has developed a technology that projects a three-dimensional image, making teleconferencing more attractive as an alternative to business trips. Adrenaline Inc. simplifies outsourcing through its 00Voice service, which allows busy professionals to input data,

make notes and arrange schedules via cell phone calls to transcribers.

In the end, productivity depends on people. America's economy benefits from a highly skilled labor force—well-educated at the top, experienced throughout and highly motivated even at the bottom. Workers with more education and experience are usually more productive, and it shows up in the higher pay they receive.



Following the September 11 terrorist attacks, U.S. airlines scrambled to find ways to reduce costs and make flying more convenient for passengers facing tighter security.

For Continental Airlines Inc. and other carriers, one answer was check-in kiosks that allow passengers with electronic tickets to bypass lines at the counters. Continental installed the industry's first kiosk in 1995 and greatly expanded its program in the past two years. With an industry-leading 779 kiosks in 130 U.S. airports, Continental saw usage double in 2002 and set a record of 650,000 kiosk check-ins that December.

Kiosks mean airlines need fewer ticket agents to load their planes. Forrester Research Inc., which tracks technology industries, found that self-service check-ins cost airlines 16 cents a passenger, compared with \$3.68 for ticket counter agents.

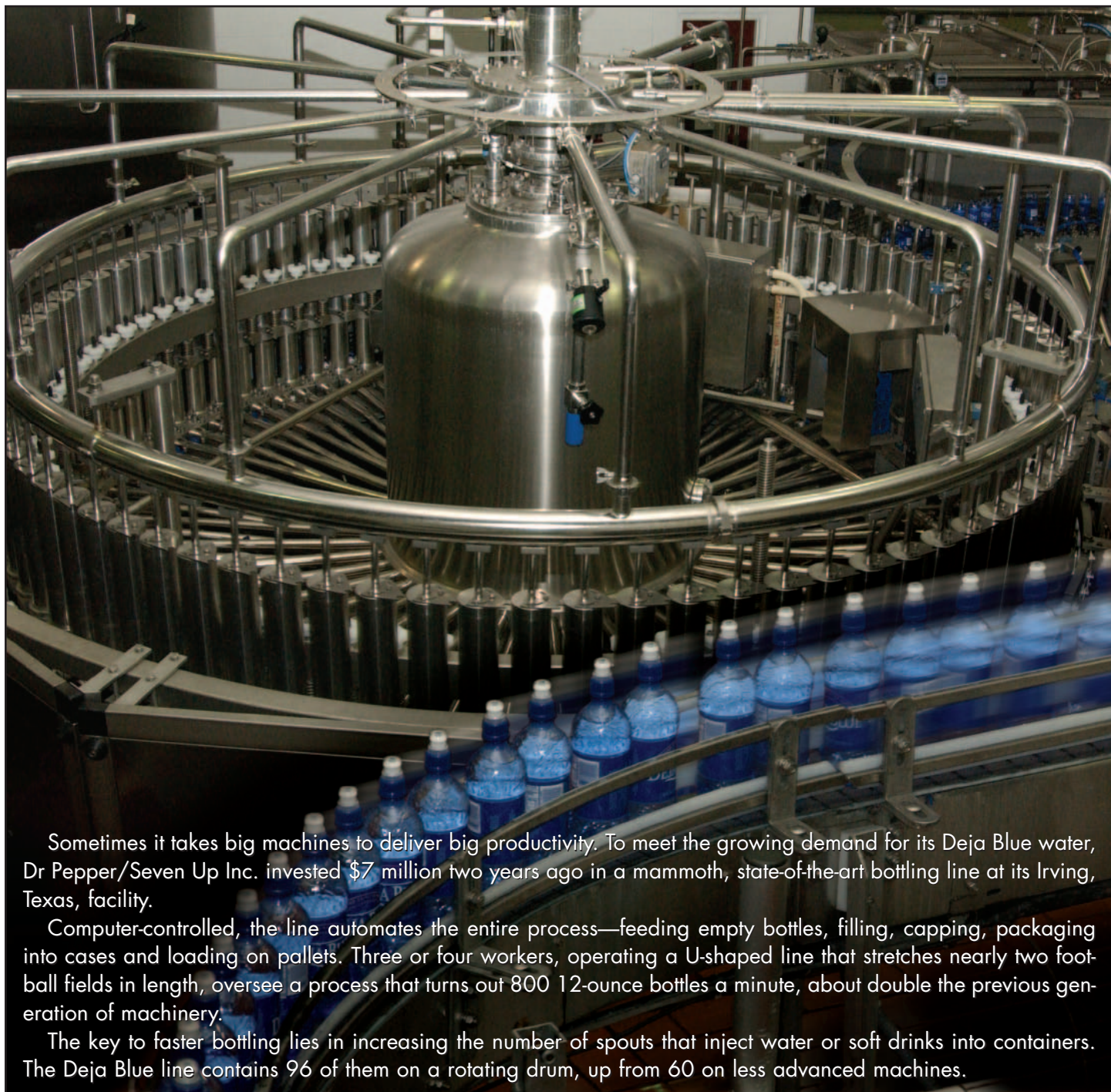
High wages mean companies need to get the most out of their human capital by improving skills and incentives. Soviet-style central planning used fear and propaganda to push workers to produce more. Early industrialists employed time and motion experts in their quest to raise output per hour. The tyranny of state and stopwatch both proved unsuccessful. Today's managers stress

motivation and communication to encourage productivity in an increasingly adaptable and educated workforce. They engage employees in improving quality and production processes. New and better ideas often move from the bottom up.

Beyond improvements in basic education, the United States faces the challenge of retraining workers for new employment opportunities.

Rapid productivity growth puts a premium on retraining because progress entails job losses. The faster workers recycle into new employment, the better.

In our highly competitive economy, companies can't afford to relent in their quest to find a better way. More often than not, productivity gains result from working smarter rather than simply working harder.



Sometimes it takes big machines to deliver big productivity. To meet the growing demand for its Deja Blue water, Dr Pepper/Seven Up Inc. invested \$7 million two years ago in a mammoth, state-of-the-art bottling line at its Irving, Texas, facility.

Computer-controlled, the line automates the entire process—feeding empty bottles, filling, capping, packaging into cases and loading on pallets. Three or four workers, operating a U-shaped line that stretches nearly two football fields in length, oversee a process that turns out 800 12-ounce bottles a minute, about double the previous generation of machinery.

The key to faster bottling lies in increasing the number of spouts that inject water or soft drinks into containers. The Deja Blue line contains 96 of them on a rotating drum, up from 60 on less advanced machines.

## The Wringer of Reorganization

The *Star Trek* TV series' futuristic wonders included the transporter, a marvelous device that could zap people and objects from one place to another.

What a boon to productivity! Commutes and business trips would take no time at all. Work would speed up as companies moved raw materials, inventories and finished products in the blink of an eye.

The transporter, if it ever came to be, would trigger an economic revolution, as unsettling as it would be miraculous. Instant transport would render obsolete our entire transportation infrastructure—cars, trucks, boats, airplanes, railroads, warehouses and more. Most workers in these industries would lose their jobs.

Teleportation provides a fanciful illustration of the paradox of productivity. It makes us better off, but not without a gut-wrenching reorganization that changes both where and how we work.

Manufacturing provides an ongoing case study of productivity in action. Since the Industrial Revolution, the sector has endured wave upon wave of reorganization, largely because of new technology that increased average worker output per hour. The number of factory workers peaked in 1979 at 20 million and slipped to a low of 14 million in 2003. Manufacturing has also been falling as a percentage of total employment since World War II, hitting a low of 11 percent in 2003.

The job losses didn't mean consumers lacked manufactured goods. Bolstered by greater productivity, domestic factory output has held its own, ranging between 15 percent and 17 percent of an expanding GDP since 1977. At the same time, we've

been able to trade our farm output, services and other products for foreign manufactured goods.

While U.S. manufacturing employment shrank, the overall labor market kept moving forward (*Exhibit 2*). From 1979 to 2003, Americans filed more than 114 million initial claims for unemployment benefits, a figure that captures just a fraction of the number of job losses. Yet during this same period, America created enough work for a growing labor force, with total employment rising from 91 million to 130 million. For the most part, the additional workers produced new goods and services, expanding the size of the economic pie.

Despite the job losses during the recent recession, the U.S. unemployment rate has been relatively low in recent years. And out of all the shuffling and reshuffling, productivity marched ever upward, posting an increase of 67 percent from 1979 to 2003.

Strong productivity and job growth go hand in hand because the United States hasn't tried to thwart the reorganization of the labor market with excessive regulation. In 2003, *Forbes* magazine concluded that the United States had the world's freest labor market—by a wide margin.

Countries that impede economic change become laggards, not just in the race for productivity but in living standards as well. Laws making it hard to fire workers and mandates for excessive severance pay hinder the changes that are the lifeblood of productivity. The cost of good intentions continues to be high in Latin America, for example. Most nations in the region thwart reorganization by favoring entrenched economic interests.



Trade increases productivity in both exporting and importing nations.

## Exhibit 3. Trading Up: How Simple Exchange Boosts Productivity

### Two Nations, Two Goods

Trade seems to create productivity out of thin air. To illustrate how, simplify the world into China and the United States, each endowed with a hypothetical labor force, money supply and production capacity. As the more advanced nation, the United States maintains an absolute advantage in producing both products.

|                    | CHINA  | UNITED STATES |
|--------------------|--------|---------------|
| Labor Force        | 500    | 100           |
| Money Supply       | ¥4,000 | \$10,000      |
| Output per Worker  |        |               |
| Shoes (pairs)      | 4      | 5             |
| Soybeans (bushels) | 8      | 100           |

### Trade Expands the Pie

Without trade, each country meets its own needs. Both China and the United States allocate labor to produce soybeans and shoes. Given their labor supply and productivity, the nations turn out a combined 800 pairs of shoes and 7,000 bushels of soybeans. With free trade, China exploits its comparative advantage in producing shoes. The U.S. edge lies in growing soybeans. Trade increases total output: Shoes rise to 2,000 pairs, while soybeans increase to 10,000 bushels. With increased output, both China and the United States consume more shoes and more soybeans.

|             | CHINA    |            | UNITED STATES |            |
|-------------|----------|------------|---------------|------------|
| Employment  | No Trade | Free Trade | No Trade      | Free Trade |
| Shoes       | 125      | 500        | 60            | 0          |
| Soybeans    | 375      | 0          | 40            | 100        |
| Production  |          |            |               |            |
| Shoes       | 500      | 2,000      | 300           | 0          |
| Soybeans    | 3,000    | 0          | 4,000         | 10,000     |
| Consumption |          |            |               |            |
| Shoes       | 500      | 1,500      | 300           | 500        |
| Soybeans    | 3,000    | 5,000      | 4,000         | 5,000      |

### Prices Down, Productivity Up

Imports lower prices. U.S. soybeans cost Chinese consumers 80 percent less than those grown at home. Chinese shoes cost Americans 50 percent less than domestic ones. Neither country became more efficient in producing shoes or soybeans, but an hour of work now buys more than it did before. Simply through trade, productivity grows 122 percent in China and 47 percent in the United States.

|               | CHINA    |            | UNITED STATES |            |
|---------------|----------|------------|---------------|------------|
| Prices        | No Trade | Free Trade | No Trade      | Free Trade |
| Shoes         | ¥2       | ¥2         | \$20          | \$10       |
| Soybeans      | ¥1       | ¥0.2       | \$1           | \$1        |
| Overall Index | 100      | 45         | 100           | 68         |
| Productivity  |          |            |               |            |
| Overall Index | 100      | 222        | 100           | 147        |

By doing so, they've cheated themselves out of economic progress.

Labor mobility, of course, isn't the only driver of macroeconomic productivity. As the economy reorganizes to produce more, it also lowers prices relative to wages, so that our paychecks buy more. The price effect is particularly visible with the productivity gains from trade, where cheaper imports make consumers' budgets go further. To illustrate how exchange generates greater productivity, let's simplify the world to just two countries and two goods—the United States and China, producing soybeans and shoes.

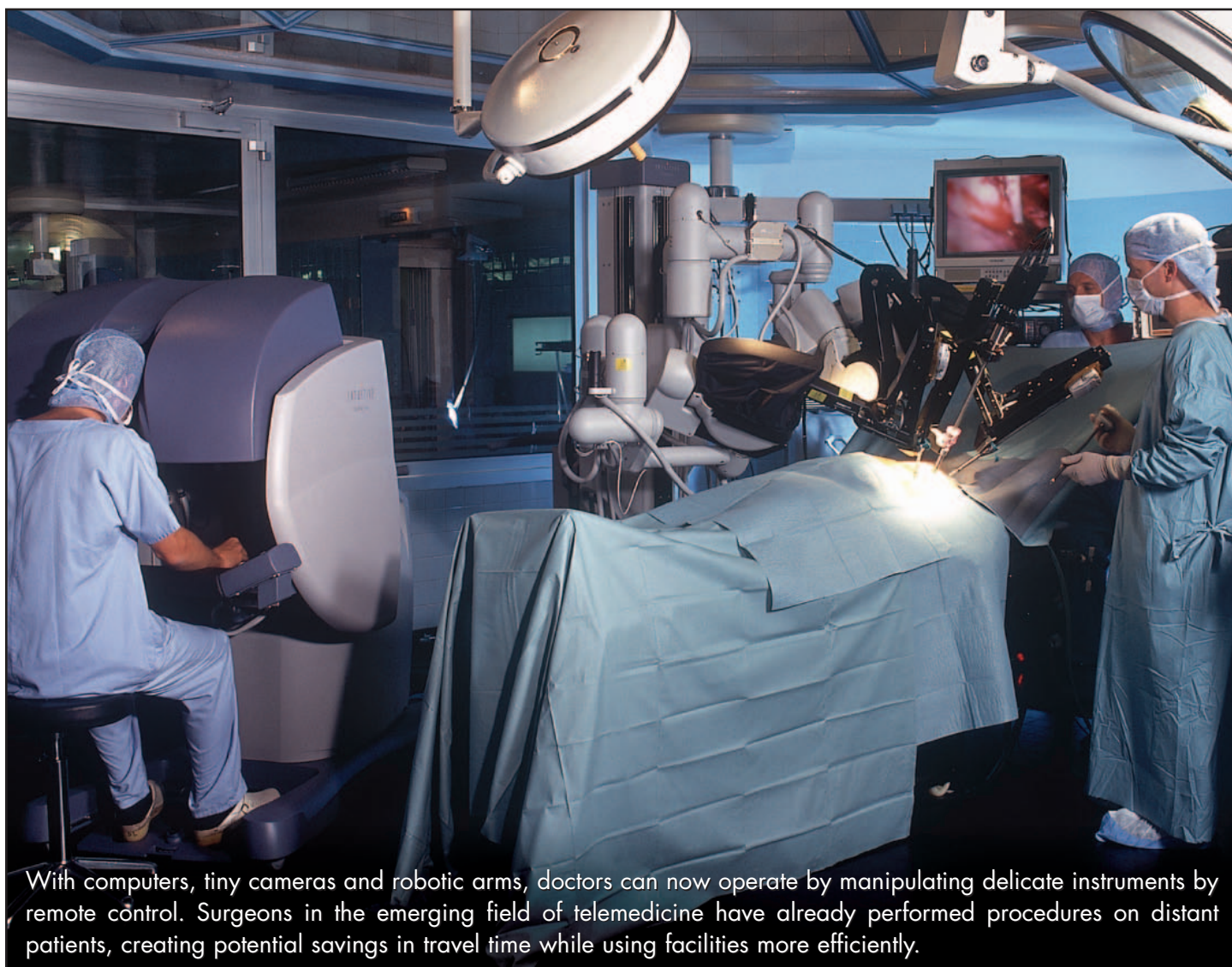
In a world without trade, each country makes both products. Their

combined output totals 800 pairs of shoes and 7,000 bushels of soybeans. Introducing trade into this stylized world allows the United States to specialize in soybeans while China makes shoes—a reflection of comparative advantage. (See *Exhibit 3.*)

What happens? The total output of shoes increases to 2,000 pairs, all made in China. At the same time, production of soybeans rises to 10,000 bushels, all grown in the United States. Both countries consume more of both products and pay less for the one they import. Calculating productivity, we find increases of 122 percent for China and 47 percent for the United States.

The added productivity represents a bonus from trade—and trade alone. Labor forces and money supplies stayed the same in both the United States and China. Neither country raised output per hour in either shoes or soybeans. Trade made both of them more productive, even though firms and workers didn't get any more efficient on their own.

Trade can be every bit as powerful as technology in making us productive. To achieve the same results without trade, the United States would require new technology good enough to double its productivity in shoes. China would need to become four times more efficient in soybean farming.



With computers, tiny cameras and robotic arms, doctors can now operate by manipulating delicate instruments by remote control. Surgeons in the emerging field of telemedicine have already performed procedures on distant patients, creating potential savings in travel time while using facilities more efficiently.



Using radio scanners to collect tolls makes transportation more efficient, saving motorists time. Open-road toll lanes can handle about 2,000 cars an hour, compared with 750 for automated coin boxes and 360 for human toll-takers.

The example highlights what occurs with a wide range of goods and services in the real world. Like technology and other sources of productivity, trade makes a powerful contribution to the economy's overall efficiency. Trade's productivity gains provide a strong justification for open markets. Enormous benefits are lost when countries bow to their producers' narrow interests and enact protectionist measures that block imports or raise their price.

Productivity gains from trade often entail overseas outsourcing, a controversial trend because of its impact on U.S. jobs. Moving employment offshore is not new in manufacturing, but the Internet and other networking technologies have made it possible to shift some service jobs to lower-wage countries. Computer programmers are writing code from distant lands. Call centers in India, not Indiana, are handling inquiries from American customers.

Technology and open markets dictate that production will continue to shift overseas. Outsourcing does mean some job losses at home, but we can't ignore the corresponding gains: Companies reduce costs. Consumers see lower prices. The economy becomes more productive, fueling growth and new jobs. A more efficient global division of labor will give the U.S. economy a big productivity boost for years to come.

## The Evolution of Work

Nature endowed human beings with numerous characteristics that can create economic value. Our arms, legs and backs can perform physical labor. Our hands and fingers can mold and manipulate objects. Our brains can reason, imagine and innovate. Our human spirit can entertain, comfort and inspire.

As productivity reorganizes the economy, it changes how we use our innate skills and talents in the workplace. The progression flows mainly from technology and trade. Each generation of inventions and innovations produces tools to take on more of the tasks once done by human beings. Each expansion of trade opens the possibility of doing tasks more economically in countries paying lower wages.

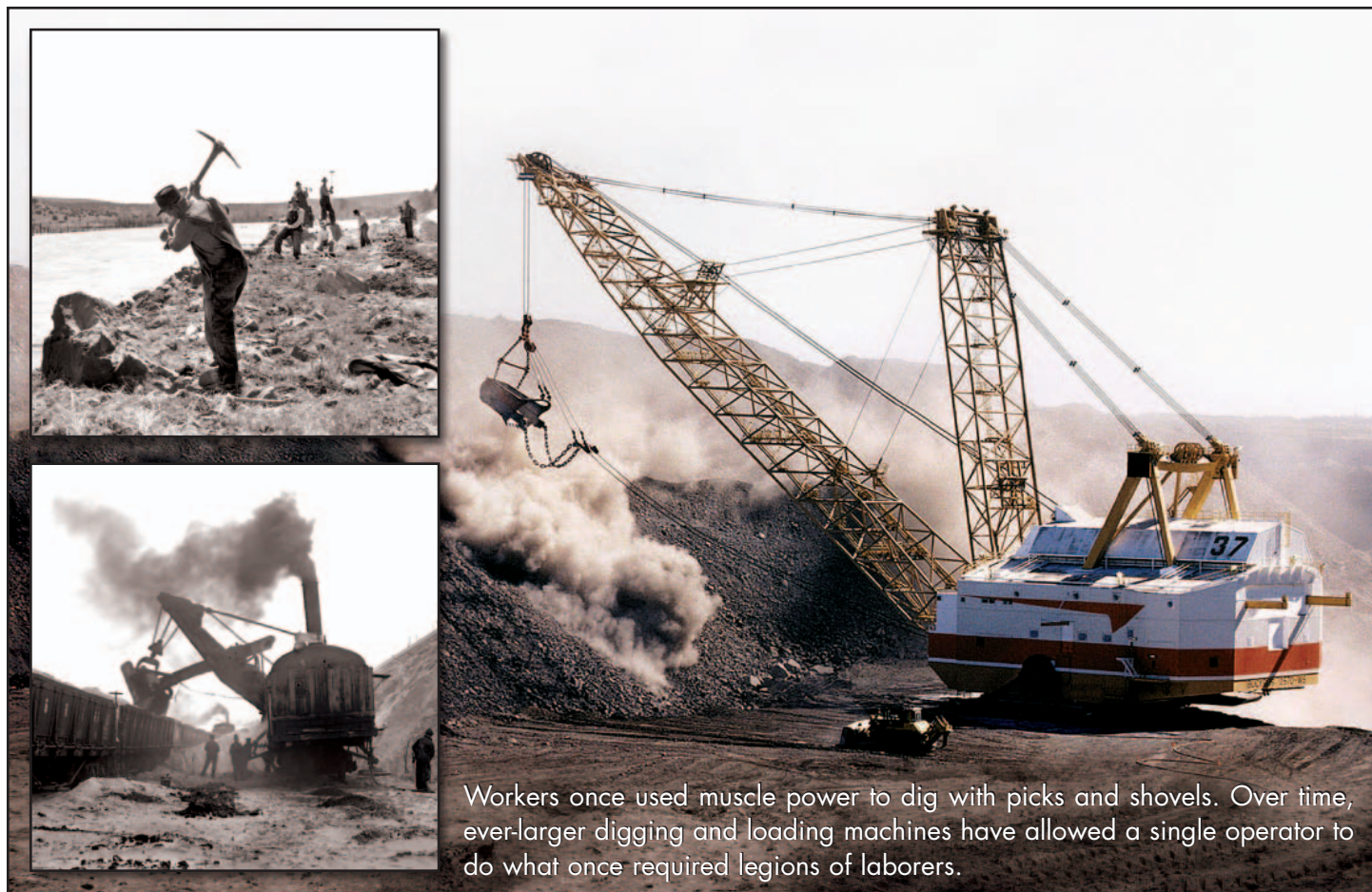
Americans adjust by taking jobs that put our other talents to work. Over time, our work moves up a hierarchy of human talents, focusing on new tasks that require higher-order skills, ones that machinery or outsourcing can't do as well. By redefining the way we work, the economy creates a new and more productive mix of technology and human talents.

At the most primitive level of economic development, work involved sheer muscle power—digging, lifting, hauling and the like. Our forebears hunted, gathered and carved furrows for crops eventually harvested by hand. Armies of workers, hauling huge stones with only simple tools, built Egypt's pyramids. Some workers earned their living exploiting other talents, but muscle power dominated

economic life until the Industrial Revolution. (See Exhibit 4.)

The new age brought machines stronger and more durable than muscle power, and they took on more of the physical work. People's niche became manual dexterity, the ability to control tools with motor skills. Human hands were needed to operate machinery. We worked with power drills and forklifts rather than picks and shovels. Millions of Americans took jobs on the nation's assembly lines, becoming cogs in the vast machinery that churned out steel, cars, processed food and much more.

New technology led to automation sophisticated enough to run the machines, reducing the number of workers on the factory floor. Many modern factories employ just a few



Workers once used muscle power to dig with picks and shovels. Over time, ever-larger digging and loading machines have allowed a single operator to do what once required legions of laborers.

## Exhibit 4. Hierarchy of Human Talents

The work we do has evolved in response to economic progress. Advances in technology create tools capable of doing tasks better or cheaper than human beings. As machines make some talents obsolete, people move on to jobs that use others. In this way, workers move upward over time to jobs demanding more sophisticated talents. In the past decade, the United States saw employment declines in jobs requiring muscle power, manual dexterity and formulaic intelligence. The nation has added jobs that use analytic reasoning, imagination and creativity, and people skills.

|                                                                                    | Employment Gains<br>('92-'02)         | Percent<br>Change |
|------------------------------------------------------------------------------------|---------------------------------------|-------------------|
|    | PEOPLE SKILLS/EMOTIONAL INTELLIGENCE  |                   |
|                                                                                    | Registered nurses                     | +512,000 +28      |
|                                                                                    | Financial-services sales              | +248,000 +78      |
|                                                                                    | Lawyers                               | +182,000 +24      |
|                                                                                    | Educational and vocational counselors | +48,000 +21       |
|                                                                                    | Recreation workers                    | +35,000 +37       |
|    | IMAGINATION/CREATIVITY                |                   |
|                                                                                    | Designers                             | +230,000 +43      |
|                                                                                    | Hairstylists and cosmetologists       | +146,000 +19      |
|                                                                                    | Architects                            | +60,000 +44       |
|                                                                                    | Actors and directors                  | +59,000 +61       |
|                                                                                    | Photographers                         | +49,000 +38       |
|   | ANALYTIC REASONING                    |                   |
|                                                                                    | Legal assistants                      | +159,000 +66      |
|                                                                                    | Electronic engineers                  | +147,000 +28      |
|                                                                                    | Medical scientists                    | +22,000 +33       |
|                                                                                    | Metallurgical engineers               | -2,000 -8         |
|                                                                                    | Computer operators                    | -367,000 -55      |
|  | FORMULAIC INTELLIGENCE                |                   |
|                                                                                    | Cost and rate clerks                  | -16,000 -24       |
|                                                                                    | Health records technicians            | -36,000 -63       |
|                                                                                    | Telephone operators                   | -98,000 -45       |
|                                                                                    | Bookkeepers                           | -247,000 -13      |
|                                                                                    | Secretaries and typists               | -1,305,000 -30    |
|  | MANUAL DEXTERITY                      |                   |
|                                                                                    | Tool and die makers                   | -30,000 -23       |
|                                                                                    | Lathe operators                       | -30,000 -49       |
|                                                                                    | Typesetters                           | -34,000 -62       |
|                                                                                    | Butchers                              | -67,000 -23       |
|                                                                                    | Sewing machine operators              | -347,000 -50      |
|  | MUSCLE POWER                          |                   |
|                                                                                    | Garbage collectors                    | -2,000 -4         |
|                                                                                    | Stevedores                            | -3,000 -17        |
|                                                                                    | Fishing workers                       | -14,000 -27       |
|                                                                                    | Timber cutters                        | -25,000 -32       |
|                                                                                    | Farmworkers                           | -182,000 -20      |

highly trained technicians to maintain the computers that run nearly all phases of production.

People who once operated machinery found work that relied more on using their minds. At first, many jobs called for formulaic intelligence, applying rote standards in keeping ledgers, counting and other duties. The next step upward involved jobs that required analytical reasoning, the ability to solve problems. We took jobs as engineers, managers and programmers.

In our time, computers are taking on many of the mental tasks that not long ago only humans could do. At first, the machines could handle only the relatively simple tasks of formulaic intelligence, proving faster and more accurate in calculating than the human brain. Increasingly powerful computers, capable of running huge programs, now perform more of our analytical tasks. Advances in artificial intelligence enable computers to fly planes, answer phone calls and track buying patterns. An IBM computer even beat world chess champion Garry Kasparov in 1997.

In today's world, companies and workers face the challenge of ascending the hierarchy of human talents. Workers are increasingly using those traits that make us truly human. Some jobs require imagination and creativity, including the ability to design, innovate and entertain. Other jobs rely on such social skills as conflict resolution, cooperation and even humor. Work is more likely to put a premium on the ability to inspire and motivate, a capacity social scientists call emotional intelligence.

Many jobs requiring muscle power, manual dexterity and formulaic intelligence are increasingly performed by workers in other countries. As the



People skills and emotional intelligence will become increasingly important to work in the 21st century. Employment opportunities are growing for teachers as well as nurses, sales representatives, lawyers, counselors and recreation workers.

Internet speeds communications, companies are hiring more foreigners with analytical skills. Not all old-line jobs have left the United States, but more of us are earning our paychecks at the upper echelon of the hierarchy of human talents.

Over the past decade, an era of rapid technological change and globalization, big employment gains came in occupations that rely on people skills and emotional intelligence. We added 512,000 registered nurses and 248,000 people in financial-services sales. Others in growing occupations include lawyers, educational and vocational counselors, and recreation workers.

The past decade also saw gains in jobs that involve imagination and creativity—designers, architects, photographers, actors and directors. The hairstylists and cosmetologists category rose by 146,000 jobs. Many occupations that use analytic reasoning have continued to grow, too, but

computer operators and others are beginning to see their numbers fall.

The occupations in eclipse are generally those that involve muscle power, manual dexterity and formulaic intelligence. The number of secretaries and typists, for example, has fallen by 1.3 million since 1992, as more computers, printers, voice mail and other office machines have entered the workplace. The ranks of sewing machine operators have declined by 347,000, those of farmers by 182,000.

The United States will continue to move up the hierarchy of human talents as it becomes more productive. Fewer jobs at relatively lower pay will be available for those who offer employers only muscle power, manual dexterity or formulaic intelligence. Americans who want to prepare for the better jobs of the future will concentrate on developing their creativity, imagination, people skills and emotional intelligence.



Cell phones can save time and money by keeping us in touch.

## Reaping Productivity's Payoff

No matter how much we focus on work and jobs, an economy's true test lies in how well it provides for the vast majority of consumers. Even the most spectacular advances in productivity would be hollow if they didn't translate into better living standards.

As they get richer, most societies move down a list of priorities. We first take care of the basics of food, clothing and shelter. We then move to furniture, transportation, health care, and a long list of other goods and services. At some point, most of us begin to prefer nonmaterial benefits, ranging from leisure time to a cleaner environment. The richer the society, the more likely it will take productivity gains as something other than more consumer goods.

As output per hour has increased steadily over the years, we've taken plenty of our added productivity as material gains—more cars, bigger and better-equipped houses, an abundance of goods and services. We consume more than any other nation, but we've sacrificed some potential consumption to take at least part of our productivity gains in other ways.

For example, we work less. Over the past few generations, the typical worker has gone from a six-day workweek with little vacation to an average of 34 hours plus three weeks off. Anecdotal reports suggest that Americans have begun working longer hours in recent years, but the trend doesn't show up in the systematic studies of how we use our time. Neither Department of Labor surveys of work hours nor University of Maryland time diaries find lengthening average workweeks.

Statistics measuring productivity capture added output and the shorter workweek. Still other ways of capitalizing on greater productivity don't show up in the numbers, largely because they aren't fully accounted for in gross domestic product. Unmeasured payoffs of productivity include better working conditions, new products and greater variety. All improve living standards, and all ultimately derive from increased productivity:<sup>1</sup>

■ Compared with what previous generations experienced, modern workplaces are safer, cleaner, quieter and less crowded. Employers, aware that happy workers are more productive, offer relaxed dress codes, flexible work schedules and other extras not included in GDP.

■ Today's Americans pack cell phones in their pockets, pull in television signals from outer space and shop the world over the Internet. Our daily lives are filled with new and better products, improving life by more than the GDP numbers indicate.

■ We're also enjoying a dazzling diversity of goods and services in the marketplace, an array of sizes, colors and flavors—yet the explosion of consumer choice barely shows up in GDP.

Commerce Department statistics show the U.S. economy has been doing very well in becoming more productive. In reality, it's even better. The numbers capture productivity's contribution to greater consumption and leisure, but they miss the gains we've achieved in other areas.

## The Best Hope for a Better Future

Productivity matters because it determines how well we live. Go around the globe. Go back in time. Poorer countries aren't nearly as productive as richer ones. Societies that have risen from poverty to affluence have done it by finding ways to get more from their labor and other resources.

Looking back, it's clear that productivity has made the United States a rich nation. Looking ahead, it should be just as clear that productivity remains America's best hope for improving living standards in the future. Other possible paths to a better life don't hold much promise. We can't consume a larger portion of our national output. Family obligations and lifestyle choices suggest we won't increase the proportion of the population at work. The unemployment rate rose during the recession and its

aftermath, so it could come down—but only a percentage point or so.

Productivity differs from these limited sources of progress. Productivity promises a better way because it's boundless. It draws on the vast potential of modern technology. It flows from the infinite promise of human ingenuity. It taps into the endless capacity to organize the economy more efficiently. Productivity will take us as far as we let it.

History tells us that economic progress can be a messy, often chaotic process. There are lags as well as costs for worker retraining and relocation. Turmoil in the job market causes hardships for displaced workers and their families. Some workers end up worse off. But the harsh realities of economic life can't be short-circuited.

Some of the troubling aspects of economic life—the job losses, the outsourcing—are good for productivity, the wellspring of progress. Understanding that, we can face economic change with less fear.

Human nature clings to the status quo: Most people are in favor of progress; it's change they don't like. We can't fall into that trap. We won't achieve greater productivity without shifting resources from existing to new uses. When labor moves from where it's no longer needed, we profit by whatever the recycled workers produce elsewhere.

Letting the economy reorganize to become more productive has worked wonders for the United States. Our future, no less, depends on doing things a better way.

—W. Michael Cox and Richard Alm



Bar codes and scanners are making the service sector more productive. Supermarkets and other retailers are installing \$25,000 self-service checkout stations, reaping an average cost savings of about 40 percent.

## Acknowledgments

"A Better Way" was written by W. Michael Cox and Richard Alm. The essay is based on research conducted by Cox, senior vice president and chief economist, Federal Reserve Bank of Dallas. Alm is an economics writer in the Bank's Research Department. Julia Kedrova provided important research assistance on the project. Charlene Howell assisted with photo research.

## Note

<sup>1</sup>For more information, see the Dallas Fed's Annual Report essays for 2000, "Have a Nice Day!"; 1993, "These Are the Good Old Days"; and 1998, "The Right Stuff."

## Exhibit Notes and Data Sources

### Exhibit 2. Productivity by the Numbers

The 1980 business cycle is not included among "major business cycles" because it was only six months long.

■ Bureau of Labor Statistics (BLS); Bureau of Economic Analysis (BEA), national income and product accounts. Historical productivity trends for 1870–1973 were calculated using Angus Maddison, *Monitoring the World Economy: 1820–1992* (table J-5); for 1973–2003, BLS.

■ Agriculture: U.S. Department of Agriculture, Economics and Statistics System, <http://jan.mannlib.cornell.edu>; National Agricultural Statistics Service, *Crop Production*, Jan. 12, 2004.

■ Energy: Energy Information Administration, *Annual Energy Review*, 2002 (tables 8.2a and 8.3c).

■ Banking: *Statistical Abstract of the United States* 1987 (table 673), 1996 (table 655) and 2002 (table 604); BLS.

■ Telephone operators: *Statistical Abstract* 1955 (tables 241 and 605); Federal Communications Commission, *Statistics of Communications Common Carriers*, 2002–03; BLS.

■ Steel: U.S. Geological Survey: <http://minerals.usgs.gov/minerals/>

<pubs/of01-006/ironandsteel.html> and *Mineral Commodity Summaries* 2004, <http://minerals.usgs.gov/minerals/pubs/mcs/2004/mcs2004.pdf>; BLS.

■ Auto manufacturing: *Ward's Motor Vehicle Facts & Figures* 2003; BLS.

### Exhibit 3. Trading Up

■ Authors' calculations.

### Exhibit 4. Hierarchy of Human Talents

■ BLS.

### Page 18

■ Toll lane productivity: International Bridge, Tunnel and Turnpike Association estimates, [www.ibtta.org](http://www.ibtta.org).

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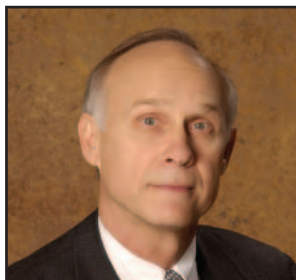
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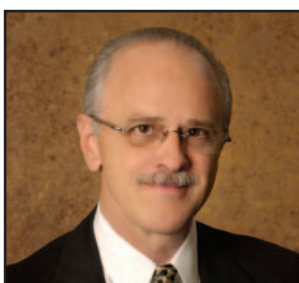
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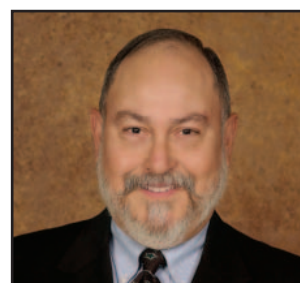
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**C. LaVor Lym**  
Assistant Vice President

**Harvey R. Mitchell III**  
Assistant Vice President

**Dean A. Pankonien**  
Assistant Vice President

**John R. Phillips**  
Assistant Vice President

**Victor A. Schreck**  
Assistant Vice President

**Gayle Teague**  
Assistant Vice President

**Michael N. Turner**  
Assistant Vice President

**Marion E. White**  
Assistant Vice President

**Bob W. Williams**  
Assistant Vice President

**E. Ann Worthy**  
Assistant Vice President

**Mark A. Wynne**  
Assistant Vice President

**Stephan D. Booker**  
Accounting Officer

**Jeffery W. Gunther**  
Research Officer

**Lawrence E. Hall**  
Director of Security Operations

**Lawrence G. Rex**  
Audit Officer

**Sherry M. Kidd**  
Information Technology Officer

### El Paso

**Robert W. Gilmer**  
Acting Vice President in Charge

**Javier R. Jimenez**  
Assistant Vice President

### Houston

**Robert Smith III**  
Senior Vice President in Charge

**René G. Gonzales**  
Vice President

**Luther E. Richards**  
Vice President

**Richard J. Burda**  
Assistant Vice President

**Daron D. Peschel**  
Assistant Vice President

**Donald N. Bowers II**  
Operations Officer

### San Antonio

**James L. Stull**  
Senior Vice President in Charge

**Taylor H. Barbee**  
Assistant Vice President

**D. Karen Diaz**  
Assistant Vice President

**Richard A. Gutierrez**  
Assistant Vice President

As of December 31, 2003

## Small Business and Agriculture Advisory Council

**Frank M. Aldridge III**  
President and CEO  
Circa Capital Corp.  
Dallas

**Johnny N. Cavazos**  
Owner  
Cavazos Insurance Agency  
Brownsville, Texas

**François Chandou**  
Owner  
La Cave Warehouse  
Dallas

**Hattie Hill**  
Chief Executive Officer  
Hattie Hill Enterprises Inc.  
Dallas

**Ray Joe Riley**  
Chairman and President  
Estacado Industries Inc.  
Hart, Texas

**Gregory J. Rohan**  
President  
Heritage Capital Corp.  
Dallas

**Steven R. Vandegrift**  
General Partner  
Techxas Ventures  
Austin

## Federal Advisory Council Member

**Gayle M. Earls**  
President and CEO  
TIB—The Independent Bankers Bank  
Irving, Texas

As of December 31, 2003

## MANAGEMENT'S ASSERTION

February 12, 2004

To the Board of Directors of the  
Federal Reserve Bank of Dallas:

The management of the Federal Reserve Bank of Dallas (FRBD) 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, 2003 (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 ("Manual"), and as such, include amounts, some of which are based on judgments and estimates of management. To our knowledge, the Financial Statements are, in all material respects, fairly presented in conformity with the accounting principles, policies, and practices documented in the Manual and include all disclosures necessary for such fair presentation.

The management of the FRBD 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 FRBD 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, we believe that the FRBD maintained an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements.

  
*Robert D. McTeer, Jr.*

*President*

*Federal Reserve Bank of Dallas*

  
*Helen C. Holcomb*

*First Vice President*

*Federal Reserve Bank of Dallas*

  
*Meredith Blank*

*Chief Financial Officer*

*Federal Reserve Bank of Dallas*

## REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors of the  
Federal Reserve Bank of Dallas:

We have examined management's assertion, included in the accompanying Management assertion, that the Federal Reserve Bank of Dallas ("FRB Dallas") maintained effective internal control over financial reporting and the safeguarding of assets as they relate to the financial statements as of December 31, 2003, based on criteria established in "Internal Control-Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission. FRB Dallas' management is responsible for maintaining effective internal control over financial reporting and safeguarding of assets as they relate to the financial statements. Our responsibility is to express an opinion on management's assertion based on our examination.

Our examination was conducted in accordance with attestation 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 performing 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 FRB Dallas maintained effective internal control over financial reporting and over the safeguarding of assets as they relate to the financial statements as of December 31, 2003, is fairly stated, in all material respects, based on criteria established in "Internal Control-Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.

This report is intended solely for the information and use of management and the Board of Directors and Audit Committee of FRB Dallas, and any organization with legally defined oversight responsibilities and is not intended to be and should not be used by anyone other than these specified parties.

A handwritten signature in brown ink that reads "PricewaterhouseCoopers LLP". The signature is written in a cursive, flowing style.

March 1, 2004  
Dallas, Texas

## REPORT OF INDEPENDENT AUDITORS

To the Board of Governors of The Federal Reserve System  
and the Board of Directors of The Federal Reserve Bank of Dallas:

We have audited the accompanying statements of condition of The Federal Reserve Bank of Dallas (the "Bank") as of December 31, 2003 and 2002, and the related statements of income and changes in capital for the years then ended, which have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of The Federal Reserve System. 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, 2003 and 2002, and results of its operations for the years then ended, on the basis of accounting described in Note 3.

A handwritten signature in brown ink that reads "Price Waterhouse Coopers LLP". The signature is written in a cursive, flowing style.

March 1, 2004  
Dallas, Texas

## Statements of Condition (in millions)

### ASSETS

|                                                    | December 31, 2003 | December 31, 2002 |
|----------------------------------------------------|-------------------|-------------------|
| Gold certificates                                  | \$ 507            | \$ 485            |
| Special drawing rights certificates                | 98                | 98                |
| Coin                                               | 141               | 163               |
| Items in process of collection                     | 383               | 624               |
| U.S. government and federal agency securities, net | 26,475            | 14,184            |
| Investments denominated in foreign currencies      | 442               | 378               |
| Accrued interest receivable                        | 198               | 121               |
| Interdistrict settlement account                   | 6,997             | 14,306            |
| Bank premises and equipment, net                   | 211               | 166               |
| Other assets                                       | 32                | 50                |
| <b>Total assets</b>                                | <b>\$ 35,484</b>  | <b>\$ 30,575</b>  |

### LIABILITIES AND CAPITAL

#### Liabilities

|                                                     |               |               |
|-----------------------------------------------------|---------------|---------------|
| Federal Reserve notes outstanding, net              | \$ 32,657     | \$ 28,416     |
| Securities sold under agreements to repurchase      | 1,005         | 468           |
| Deposits:                                           |               |               |
| Depository institutions                             | 952           | 727           |
| Other deposits                                      | 2             | 4             |
| Deferred credit items                               | 487           | 505           |
| Interest on Federal Reserve notes due U.S. Treasury | 84            | 21            |
| Accrued benefit costs                               | 60            | 56            |
| Other liabilities                                   | 15            | 6             |
| <b>Total liabilities</b>                            | <b>35,262</b> | <b>30,203</b> |

#### Capital

|                                      |                  |                  |
|--------------------------------------|------------------|------------------|
| Capital paid-in                      | 111              | 186              |
| Surplus                              | 111              | 186              |
| <b>Total capital</b>                 | <b>222</b>       | <b>372</b>       |
| <b>Total liabilities and capital</b> | <b>\$ 35,484</b> | <b>\$ 30,575</b> |

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

## Statements of Income (in millions)

### INTEREST INCOME

Interest on U.S. government and federal agency securities

Interest on investments denominated in foreign currencies

#### Total interest income

### INTEREST EXPENSE

Interest expense on securities sold under agreements to repurchase

#### Net interest income

### OTHER OPERATING INCOME

Income from services

Reimbursable services to government agencies

Foreign currency gains, net

U.S. government securities gains, net

Other income

#### Total other operating income

### OPERATING EXPENSES

Salaries and other benefits

Occupancy expense

Equipment expense

Assessments by Board of Governors

Other expenses

#### Total operating expenses

### Net income prior to distribution

### DISTRIBUTION OF NET INCOME

Dividends paid to member banks

Transferred to (from) surplus

Payments to U.S. Treasury as interest on Federal Reserve notes

#### Total distribution

## FOR THE YEARS ENDED

December 31, 2003

December 31, 2002

\$ 768

6

**774**

7

**767**

51

11

60

—

1

**123**

102

16

12

48

39

**217**

**\$ 673**

\$ 11

(75)

737

**\$ 673**

\$ 530

6

**536**

—

**536**

63

12

45

1

2

**123**

98

15

12

14

30

**169**

**\$ 490**

\$ 10

22

458

**\$ 490**

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

**Statements of Changes in Capital  
for the Years Ended December 31, 2003,  
and December 31, 2002 (in millions)**

|                                                               | Capital Paid-In | Surplus       | Total Capital |
|---------------------------------------------------------------|-----------------|---------------|---------------|
| <b>BALANCE AT JANUARY 1, 2002</b>                             |                 |               |               |
| <b>(3.3 million shares)</b>                                   | \$ 164          | \$ 164        | \$ 328        |
| Net income transferred to surplus                             | —               | 22            | 22            |
| Net change in capital stock issued<br>(0.4 million shares)    | 22              | —             | 22            |
|                                                               | <u>22</u>       | <u>—</u>      | <u>22</u>     |
| <b>BALANCE AT DECEMBER 31, 2002</b>                           |                 |               |               |
| <b>(3.7 million shares)</b>                                   | \$ 186          | \$ 186        | \$ 372        |
| Net income transferred from surplus                           | —               | (75)          | (75)          |
| Net change in capital stock redeemed<br>(1.5) million shares) | (75)            | —             | (75)          |
|                                                               | <u>(75)</u>     | <u>—</u>      | <u>(75)</u>   |
| <b>BALANCE AT DECEMBER 31, 2003</b>                           |                 |               |               |
| <b>(2.2 million shares)</b>                                   | <u>\$ 111</u>   | <u>\$ 111</u> | <u>\$ 222</u> |

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

## Notes to Financial Statements

### 1. STRUCTURE

The Federal Reserve Bank of Dallas ("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. The Bank and its branches in El Paso, Houston, and San Antonio serve the Eleventh Federal Reserve District, which includes Texas and portions of Louisiana and New Mexico. 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. 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

In accordance with the Federal Reserve Act, supervision and control of the Bank are exercised by a 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 ("ACH") operations and check processing; distributing coin and currency; performing 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.

In performing fiscal agency functions for the U.S. Treasury, the Bank provides U.S. securities direct purchase and savings bond processing services. In December 2003, the U.S. Treasury announced plans to consolidate the provision of these services at FRB Cleveland and Minneapolis. An implementation plan is expected to be announced in March 2004. At this time, the Bank has not developed a detailed estimate of the financial effect of the consolidation.

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, the sale of securities under agreements to repurchase, and the lending of U.S. government securities. The FRBNY is also authorized by the FOMC to hold balances of, and to execute spot and forward foreign exchange ("F/X") 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 with 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 accounting principles generally accepted in the United States of America ("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 has elected not to present a Statement of Cash Flows. The Statement of Cash Flows has not been included because 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. A Statement of Cash Flows, therefore, would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

Each Reserve Bank provides services on behalf of the System for which costs are not shared. Major services provided on behalf of the System by the Bank, for which the costs were not redistributed to the other Reserve Banks, include: the Bulkdata Transmission Utility; Check Electronic Access and Delivery; Check Standardization; Centralized Loans Automated System; National Examination Data System; Desktop Standardization Initiative; Lawson Central Business Administration Function; and Accounts, Risk and Credit System.

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, 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 on average Federal Reserve notes outstanding in each District.

#### 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 estab-

lished for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDR certificates, at the direction of the U.S. Treasury, for the purpose of financing SDR acquisitions or for financing exchange stabilization operations. At the time SDR transactions occur, the Board of Governors allocates SDR certificate transactions among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year. There were no SDR transactions in 2003 or 2002.

#### **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. If loans were ever deemed to be uncollectible, an appropriate reserve would be established. Interest is accrued using the applicable discount rate established at least every fourteen days by the Boards of Directors of the Reserve Banks, subject to review by the Board of Governors. There were no outstanding loans to depository institutions at December 31, 2003 or 2002, respectively.

#### **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 to meet other needs specified by the FOMC in carrying out the System's central bank responsibilities. Such authorizations are reviewed and approved annually by the FOMC.

In December 2002, the FRBNY replaced matched sale-purchase ("MSP") transactions with securities sold under agreements to repurchase. MSP transactions, accounted for as separate sale and 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. Securities sold under agreements to repurchase are treated as secured borrowing transactions with the associated interest expense recognized over the life of the transaction.

The FRBNY has 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 on behalf of the System, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions are fully collateralized by other U.S. government securities. FOMC policy requires the 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 the FRBNY on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in the SOMA.

F/X 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 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 that 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 currencies 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 may result in gains or losses when holdings are sold prior to maturity. Decisions regarding the securities and foreign currencies transactions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, market values, 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, net." Foreign-currency-denominated assets are revalued daily at current foreign currency 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, net." Foreign currencies held through F/X swaps, when initiated by the counter-party, and warehousing arrangements are revalued daily 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, securities sold under agreements to repurchase, securities loaned, investments denominated in foreign currency, interest income and expense, securities lending fee 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. 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.

In 2003, additional interest income of \$61 million representing one day's interest on the SOMA portfolio, was accrued to reflect a change in interest accrual methods, of which \$2 million was allocated to the Bank. Interest accruals and the amortization of premiums and discounts are now recognized beginning the day that a security is purchased and ending the day before the security matures or is sold. Previously, accruals and amortization began the day after the security was purchased and ended on the day that the security matured or was sold. The effect of this change was not material; therefore, it was included in the 2003 interest income.

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

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 two to fifty years. 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. Costs incurred for software, either developed internally or acquired for internal use, during the application development stage are capitalized based on the cost of direct services and materials associated with designing, coding, installing, or testing software. Capitalized software costs are amortized on a straight-line basis over the estimated useful lives of the software applications, which range from two to five years.

#### **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 ACH 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 (the Chairman of the Board of Directors of each Reserve Bank) 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 2003, the Federal Reserve Act was amended to expand the assets eligible to be pledged as collateral security to include all Federal Reserve Bank assets. Prior to the amendment, only gold certificates, special drawing rights certificates, U.S. government and federal agency securities, securities purchased under agreements to resell, loans to depository institutions, and investments denominated in foreign currencies could be pledged as collateral. 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 par value of securities pledged for securities sold under agreements to repurchase is similarly deducted. 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 that 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 the Bank's Federal Reserve notes outstanding reduced by its currency holdings of \$7,129 million, and \$8,424 million at December 31, 2003 and 2002, 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. Pursuant to Section 16 of the Federal Reserve Act, Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury as interest on Federal Reserve notes 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.

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

**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.

**k. Taxes**

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property. The Bank's real property taxes were \$3 million for each of the years ended December 31, 2003 and 2002, and are reported as a component of "Occupancy expense."

**l. Recent Accounting Developments**

In May 2003, the Financial Accounting Standards Board issued SFAS No. 150, "Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity." SFAS No. 150, which will become applicable for the Bank in 2004, establishes standards for how an issuer classifies and measures certain financial instruments with characteristics of both liabilities and equity and imposes certain additional disclosure requirements. When adopted, there may be situations in which the Bank has not yet processed a member bank's application to redeem its Reserve Bank stock. In those situations, this standard requires that the portion of the capital paid-in that is mandatorily redeemable be reclassified as debt.

**m. 2003 Restructuring Charges**

In 2003, the System restructured several operations, primarily in the check and cash services. The restructuring included streamlining the management and support structures, reducing staff, decreasing the number of processing locations, and increasing processing capacity in the remaining locations.

Footnote 10 describes the restructuring and provides information about the Bank's costs and liabilities associated with employee separations and contract terminations. The costs associated with the write-down of certain Bank assets are discussed in footnote 6. Costs and liabilities associated with enhanced pension benefits for all Reserve Banks are recorded on the books of the FRBNY as discussed in footnote 8 and those associated with the Bank's enhanced postretirement benefits are disclosed in footnote 9.

**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 and the related premiums, discounts, and income, with the exception of securities purchased under agreements to resell, 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 approximately 3.919 percent and 2.219 percent at December 31, 2003 and 2002, respectively.

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

|                                | 2003            | 2002            |
|--------------------------------|-----------------|-----------------|
| Par value:                     |                 |                 |
| U.S. government                |                 |                 |
| Bills                          | \$ 9,595        | 5,031           |
| Notes                          | 12,672          | 6,611           |
| Bonds                          | 3,859           | 2,326           |
| Total par value                | 26,126          | 13,968          |
| Unamortized premiums           | 384             | 239             |
| Unaccreted discounts           | (35)            | (23)            |
| <b>Total allocated to Bank</b> | <b>\$26,475</b> | <b>\$14,184</b> |

The total of SOMA securities bought outright was \$675,569 million and \$639,125 million at December 31, 2003 and 2002, respectively.

As noted in footnote 3, the FRBNY replaced MSP transactions with securities sold under agreements to repurchase in December 2002. At December 31, 2003 and 2002, securities sold under agreements to repurchase with a contract amount of \$25,652 million and \$21,091 million, respectively, were outstanding, of which \$1,005 million and \$468 million were allocated to the Bank. At December 31, 2003 and 2002, securities sold under agreements to repurchase with a par value of \$25,658 million and \$21,098 million, respectively, were outstanding, of which \$1,006 million and \$468 million were allocated to the Bank.

The maturity distribution of U.S. government securities bought outright and securities sold under agreements to repurchase, that were allocated to the Bank at December 31, 2003, was as follows (in millions):

| Maturities of Securities Held | U.S. Government Securities<br>(Par value) | Securities Sold Under<br>Agreements to Repurchase<br>(Contract amount) |
|-------------------------------|-------------------------------------------|------------------------------------------------------------------------|
| Within 15 days                | \$ 1,870                                  | \$ 1,005                                                               |
| 16 days to 90 days            | 5,461                                     | —                                                                      |
| 91 days to 1 year             | 6,430                                     | —                                                                      |
| Over 1 year to 5 years        | 7,331                                     | —                                                                      |
| Over 5 years to 10 years      | 2,011                                     | —                                                                      |
| Over 10 years                 | 3,023                                     | —                                                                      |
| <b>Total</b>                  | <b>\$ 26,126</b>                          | <b>\$ 1,005</b>                                                        |

At December 31, 2003 and 2002, U.S. government securities with par values of \$4,426 million and \$1,841 million, respectively, were loaned from the SOMA, of which \$173 million and \$41 million were allocated to the Bank.

## 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 purchased 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 2.223 percent and 2.234 percent at December 31, 2003 and 2002, respectively.

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

|                                                            | 2003         | 2002         |
|------------------------------------------------------------|--------------|--------------|
| European Union euro:                                       |              |              |
| Foreign currency deposits                                  | \$ 153       | \$ 124       |
| Government debt instruments including agreements to resell | 91           | 74           |
| Japanese yen:                                              |              |              |
| Foreign currency deposits                                  | 33           | 40           |
| Government debt instruments including agreements to resell | 163          | 138          |
| Accrued interest                                           | 2            | 2            |
| <b>Total</b>                                               | <b>\$442</b> | <b>\$378</b> |

Total investments denominated in foreign currencies were \$19,868 million and \$16,913 million at December 31, 2003 and 2002, respectively.

The maturity distribution of investments denominated in foreign currencies that were allocated to the Bank at December 31, 2003, was as follows (in millions):

| Maturities of Investments Denominated in Foreign Currencies |               |
|-------------------------------------------------------------|---------------|
| Within 1 year                                               | \$ 406        |
| Over 1 year to 5 years                                      | 29            |
| Over 5 years to 10 years                                    | 7             |
| Over 10 years                                               | —             |
| <b>Total</b>                                                | <b>\$ 442</b> |

At December 31, 2003 and 2002, there were no outstanding F/X swaps or material open foreign exchange contracts.

At December 31, 2003 and 2002, the warehousing facility was \$5,000 million, with no balance outstanding.

## 6. BANK PREMISES, EQUIPMENT, AND SOFTWARE

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

|                                                  | 2003          | 2002          |
|--------------------------------------------------|---------------|---------------|
| Bank premises and equipment:                     |               |               |
| Land                                             | \$ 50         | \$ 30         |
| Buildings                                        | 117           | 115           |
| Building machinery and equipment                 | 25            | 24            |
| Construction in progress                         | 37            | 11            |
| Furniture and equipment                          | 67            | 68            |
| <b>Subtotal</b>                                  | <b>\$ 296</b> | <b>\$ 248</b> |
| Accumulated depreciation                         | (85)          | (82)          |
| <b>Bank premises and equipment, net</b>          | <b>\$ 211</b> | <b>\$ 166</b> |
| <b>Depreciation expense, for the years ended</b> | <b>\$ 9</b>   | <b>\$ 10</b>  |

The Bank has capitalized software assets, net of amortization, of \$3 million for each of the years ended December 31, 2003 and 2002. Amortization expense was \$2 million and \$1 million for the years ended December 31, 2003 and 2002, respectively.

Approximately \$20 million of costs associated with the acquisition of land for a new building in Houston are included in Land and approximately \$34 million of costs associated with the construction of the building are included in Construction in progress.

Assets impaired as a result of the Bank's restructuring plan, as discussed in footnote 10, include building and equipment. Asset impairment losses of \$597 thousand for the period ending December 31, 2003, were determined using fair values based on quoted market values or other valuation techniques and are reported as a component of "Other expenses."

## 7. COMMITMENTS AND CONTINGENCIES

At December 31, 2003, the Bank was obligated under noncancelable leases for premises and equipment with terms ranging from one to approximately 5 years. These leases provide for increased rental payments 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 \$2 million for each of the years ended December 31, 2003 and 2002. Certain of the Bank's leases have options to renew.

Future minimum rental payments under noncancelable operating leases, net of sublease rentals, with terms of one year or more, at December 31, 2003, were (in thousands):

|              | Operating     |
|--------------|---------------|
| 2004         | \$ 135        |
| 2005         | 89            |
| 2006         | 57            |
| 2007         | 35            |
| 2008         | —             |
| Thereafter   | —             |
| <b>Total</b> | <b>\$ 316</b> |

The Bank entered into \$109 million of long-term contracts for services related to the building of a new facility for the Houston branch, of which approximately \$25 million had been paid by December 31, 2003. The remaining commitment of \$84 million has not been recognized as a liability in the financial statements. The Bank also entered into an agreement with the City of Houston in 2003 in which it assumed sole responsibility for environmental remediation of the property at the new Houston building site. Total estimated cost of the remediation is \$1 million, of which \$673 thousand of costs were incurred and included in "Occupancy expense" in 2003, with the remaining \$468 thousand included in "Other liabilities." The remediation is expected to be completed in 2006. Future costs for environmental remediation are not discounted to their present value.

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 one 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, 2003 or 2002.

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"). In addition, certain Bank officers participate in the Supplemental Employee Retirement Plan ("SERP").

The System Plan is a multi-employer plan with contributions fully funded by participating employers. Participating employers are the Federal Reserve Banks, the Board of Governors of the Federal Reserve System, and the Office of Employee Benefits of the Federal Reserve Employee Benefits System. No separate accounting is maintained of assets contributed by the participating employers. The FRBNY acts as a sponsor of the Plan for the System and the costs associated with the Plan are not redistributed to the Bank. The Bank's projected benefit obligation and net pension costs for the BEP and the SERP at December 31, 2003 and 2002, 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 \$4 million for the years ended December 31, 2003 and 2002, respectively, and are reported as a component of "Salaries and other benefits."

## 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):

|                                                                     | 2003           | 2002           |
|---------------------------------------------------------------------|----------------|----------------|
| Accumulated postretirement benefit obligation at January 1          | \$ 43.0        | \$ 41.5        |
| Service cost-benefits earned during the period                      | 1.2            | 1.0            |
| Interest cost of accumulated benefit obligation                     | 3.0            | 2.7            |
| Actuarial loss (gain)                                               | 7.3            | (1.2)          |
| Curtailment loss                                                    | 3.2            | —              |
| Special termination loss                                            | 0.4            | —              |
| Contributions by plan participants                                  | 0.5            | 0.4            |
| Benefits paid                                                       | (2.3)          | (1.9)          |
| Plan amendments                                                     | —              | 0.5            |
| <b>Accumulated postretirement benefit obligation at December 31</b> | <b>\$ 56.3</b> | <b>\$ 43.0</b> |

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):

|                                                 | 2003           | 2002           |
|-------------------------------------------------|----------------|----------------|
| Fair value of plan assets at January 1          | \$ —           | \$ —           |
| Actual return on plan assets                    | —              | —              |
| Contributions by the employer                   | 1.8            | 1.5            |
| Contributions by plan participants              | 0.5            | 0.4            |
| Benefits paid                                   | (2.3)          | (1.9)          |
| <b>Fair value of plan assets at December 31</b> | <b>\$ —</b>    | <b>\$ —</b>    |
| Unfunded postretirement benefit obligation      | \$ 56.2        | \$ 43.0        |
| Unrecognized prior service cost                 | 11.2           | 13.6           |
| Unrecognized net actuarial loss                 | (14.8)         | (7.9)          |
| <b>Accrued postretirement benefit costs</b>     | <b>\$ 52.6</b> | <b>\$ 48.7</b> |

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

At December 31, 2003 and 2002, the weighted average discount rate assumptions used in developing the benefit obligation were 6.25 percent and 6.75 percent, respectively.

For measurement purposes, a 10.00 percent annual rate of increase in the cost of covered health care benefits was assumed for 2004. Ultimately, the health care cost trend rate is expected to decrease gradually to 5.0 percent by 2011 and remain at that level thereafter.

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, 2003 (in millions):

|                                                             | One Percentage<br>Point Increase | One Percentage<br>Point Decrease |
|-------------------------------------------------------------|----------------------------------|----------------------------------|
| Effect on aggregate of service and interest cost components |                                  |                                  |
| of net periodic postretirement benefit costs                | \$ 0.1                           | \$ (0.1)                         |
| Effect on accumulated postretirement benefit obligation     | 1.5                              | (1.6)                            |

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

|                                                  | 2003          | 2002          |
|--------------------------------------------------|---------------|---------------|
| Service cost-benefits earned during the period   | \$ 1.2        | \$ 1.0        |
| Interest cost of accumulated benefit obligation  | 3.0           | 2.7           |
| Amortization of prior service cost               | (1.2)         | (1.2)         |
| Recognized net actuarial loss                    | 0.3           | 0.1           |
| Total periodic expense                           | \$ 3.3        | \$ 2.6        |
| Curtailment loss                                 | 2.0           | —             |
| Special termination loss                         | 0.4           | —             |
| <b>Net periodic postretirement benefit costs</b> | <b>\$ 5.7</b> | <b>\$ 2.6</b> |

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

The recognition of special termination benefits and curtailment losses is the result of enhanced retirement benefits provided to employees during the restructuring described in footnote 10.

Following the guidance of the Financial Accounting Standards Board, the Bank elected to defer recognition of the financial effects of the Medicare Prescription Drug Improvement and Modernization Act of 2003 until further guidance is issued. Neither the accumulated postretirement benefit obligation at December 31, 2003, nor the net periodic postretirement benefit cost for the year then ended reflect the effect of the Act on the plan.

### 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, 2003 and 2002, were \$7 million. This cost is included as a component of “Accrued benefit costs.” Net periodic postemployment benefit costs included in both 2003 and 2002 operating expenses were \$2 million.

## 10. RESTRUCTURING CHARGES

In 2003, the Bank announced plans for restructuring to streamline operations and reduce costs, including consolidation of some El Paso and San Antonio operations and staff reductions in various functions of the Bank. These actions resulted in the following business restructuring charges:

Major categories of expense (in millions):

|                      | Total<br>Estimated<br>Costs | Accrued<br>Liability<br>12/31/02 | Total<br>Charges | Total<br>Paid   | Accrued<br>Liability<br>12/31/03 |
|----------------------|-----------------------------|----------------------------------|------------------|-----------------|----------------------------------|
| Employee separation  | \$ 3.0                      | \$ —                             | \$ 3.0           | \$ (0.4)        | \$ 2.6                           |
| Contract termination | 0.1                         | —                                | —                | —               | —                                |
| Other                | —                           | —                                | —                | —               | —                                |
| <b>Total</b>         | <b>\$ 3.1</b>               | <b>\$ —</b>                      | <b>\$ 3.0</b>    | <b>\$ (0.4)</b> | <b>\$ 2.6</b>                    |

Employee separation costs are primarily severance costs related to reductions of approximately 233 staff and are reported as a component of "Salaries and other benefits." Contract termination costs include the charges resulting from terminating existing lease and other contracts and are shown as a component of "Other expenses."

Costs associated with the write-downs of certain Bank assets, including software, buildings, leasehold improvements, furniture, and equipment are discussed in footnote 6. Costs associated with enhanced pension benefits for all Reserve Banks are recorded on the books of the FRBNY as discussed in footnote 8. Costs associated with enhanced postretirement benefits are disclosed in footnote 9.

Future costs associated with the announced restructuring plans, which will be incurred in 2004, are not material.

The Bank anticipates substantially completing its announced plans by July 2004.

## Volume of Operations (UNAUDITED)

|                                                                  | Number of Items Handled<br>(Thousands) |           | Dollar Amount<br>(Millions) |         |
|------------------------------------------------------------------|----------------------------------------|-----------|-----------------------------|---------|
|                                                                  | 2003                                   | 2002      | 2003                        | 2002    |
| <b>SERVICES TO DEPOSITORY INSTITUTIONS</b>                       |                                        |           |                             |         |
| <b>CASH SERVICES</b>                                             |                                        |           |                             |         |
| Federal Reserve notes processed                                  | 2,652,972                              | 2,575,034 | 41,581                      | 41,295  |
| Currency received from circulation                               | 2,542,296                              | 2,569,936 | 41,374                      | 41,108  |
| Coin received from circulation                                   | 809,450                                | 812,381   | 105                         | 113     |
| <b>CHECK PROCESSING</b>                                          |                                        |           |                             |         |
| Commercial—processed                                             | 1,207,923                              | 1,312,897 | 829,661                     | 845,267 |
| Commercial—fine sorted                                           | 45,221                                 | 66,444    | 87,667                      | 133,982 |
| <b>LOANS</b>                                                     |                                        |           |                             |         |
| Advances made                                                    | 38*                                    | 280*      | 93                          | 785     |
| <b>SERVICES TO THE U.S. TREASURY<br/>AND GOVERNMENT AGENCIES</b> |                                        |           |                             |         |
| Issues and reinvestments<br>of Treasury securities               | 54                                     | 67        | 2,257                       | 2,635   |

\* Individual loans, not in thousands.

The firm engaged by the Board of Governors for the audits of the individual and combined financial statements of the Reserve Banks for 2003 was PricewaterhouseCoopers LLP (PwC). Fees for these services totaled \$1.4 million. To ensure auditor independence, the Board of Governors requires that PwC be independent in all matters relating to the audit. Specifically, PwC may not perform services for the Reserve Banks or others that would place it in a position of auditing its own work, making management decisions on behalf of the Reserve Banks, or in any other way impairing its audit independence. In 2003, the Bank did not engage PwC for advisory services.



## About the Dallas Fed

The Federal Reserve Bank of Dallas is one of 12 regional Federal Reserve Banks in the United States. Together with the Board of Governors in Washington, D.C., these organizations form the Federal Reserve System and function as the nation's central bank. The System's basic purpose is to provide a flow of money and credit that will foster orderly economic growth and a stable dollar. In addition, Federal Reserve Banks supervise banks and bank holding companies and provide certain financial services to the banking industry, the federal government and the public.

The Federal Reserve Bank of Dallas has served the financial institutions in the Eleventh District since 1914. The district encompasses 350,000 square miles and comprises the state of Texas, northern Louisiana and southern New Mexico. The three branch offices of the Dallas Fed are in El Paso, Houston and San Antonio.

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