



The Best of All Worlds

Globalizing the Knowledge Economy

Federal Reserve Bank of Dallas ■ 2006 Annual Report

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ON THE COVER

The Internet Explosion. The graphic, created in one day on a single computer, represents the Internet's networks and nodes as of November 2003. The colors correspond to geographic regions: orange for North America, yellow for Asia-Pacific, red for Latin America and the Caribbean, and green for Europe, the Middle East, Central Asia and Africa.

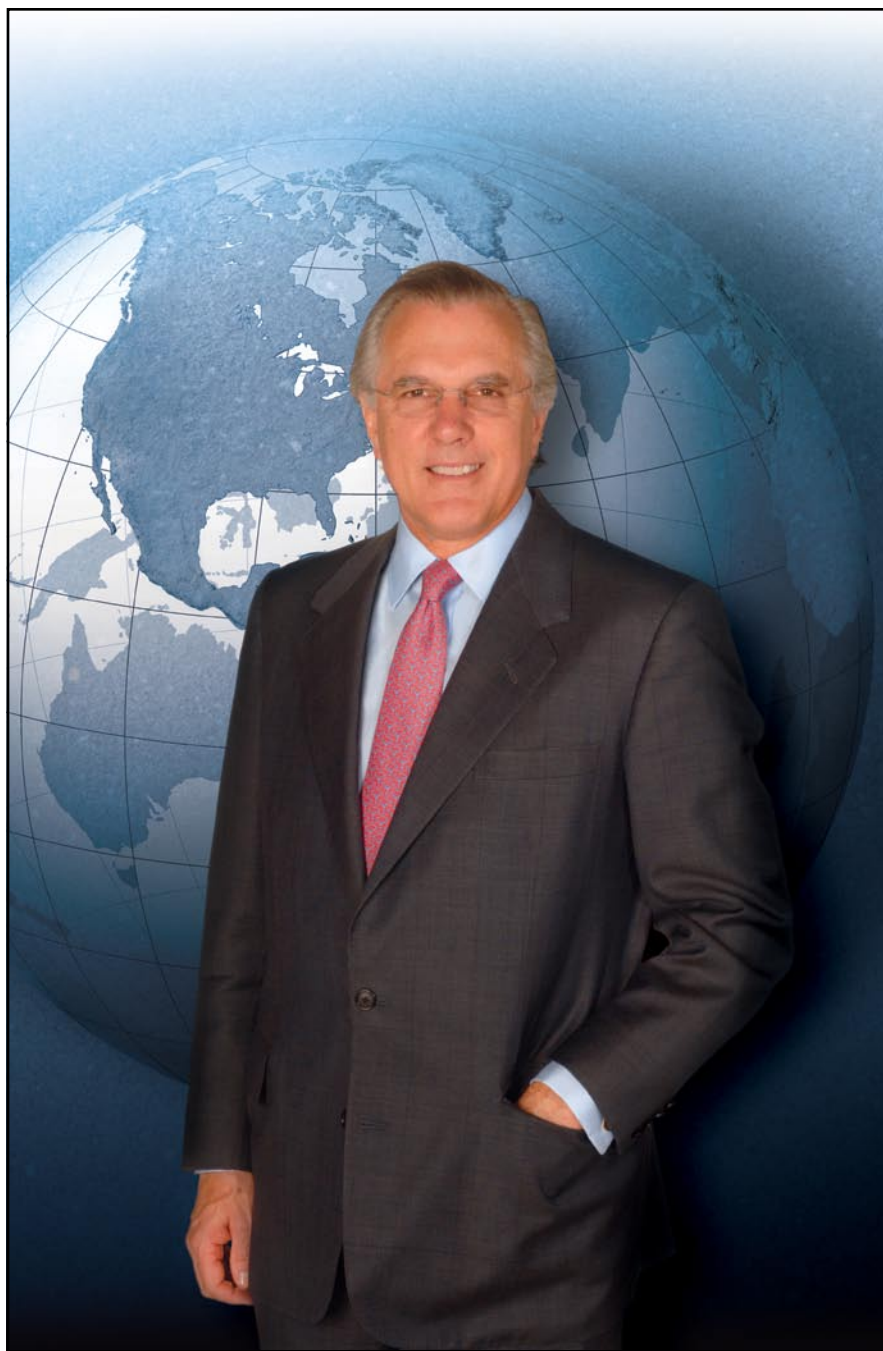
Photo courtesy of Barrett Lyon, The Opte Project.

A Letter from the President

This is the second year I have had the privilege of serving the employees of the Dallas Federal Reserve and its branches in El Paso, Houston and San Antonio. During that time, the good women and men who run our operations and conduct our business have raised the Bank's profile to new heights, as evidenced by the operating statistics at the end of this annual report. Last year they processed over \$1 trillion in the form of 940 million paper checks and more than a quarter billion electronic checks. Some 6.1 billion banknotes worth over \$100 billion passed through our vaults.

Dallas Fed staff supervised and regulated 38 state member banks, 450 bank holding companies, and 29 agencies and representative offices of foreign banking organizations in the Eleventh District. They worked hard to promote financial literacy and community development so that citizens in our district will be better equipped to manage, safeguard and improve their financial well-being. And they sent me out on the hustings to give dozens of speeches, mercilessly inflicting me on the public and the economics profession.

My favorite theme has been the need to better understand the ramifications of ongoing global economic integration for our economy and the conduct of monetary policy. The nexus of globalization and monetary policy is the Dallas Fed's top research priority. We have been chewing on this topic for two years, and I am gratified by the progress we have



made in understanding it and the interest we see in academia and business and within the Federal Reserve System. We are onto something.

"The Best of All Worlds," this year's annual report essay by our chief economist, W. Michael Cox, and senior economics writer,

Richard Alm, contemplates how globalization changes the economy's gearing. It examines 10 ways a more integrated world economy impacts productivity and costs. All these channels are real, rather than monetary, in nature. But because they affect economic growth, they have potentially

far-reaching implications for Fed policymakers.

The Fed's mandate calls for keeping inflation low while maintaining maximum sustainable economic progress, a charge we cannot fulfill without understanding and weighing the forces driving productivity. Getting more output from existing labor and capital allows the economy to grow faster without creating price pressures. We saw this vividly in the 1990s, when the IT revolution led to surging productivity, lower costs and faster growth. The Fed understood that increased supplies of goods and services—not inflationary excess demand—fueled the expansion, and it wisely let the economy seek a higher growth rate.

The technologies that shaped the 1990s are also spurring globalization, which in turn increases market size, competition, specialization, capital flows, knowledge transfers, returns to scale and the other factors this year's essay identifies. These factors all conspire to raise productivity's level or growth rate—or both.

Higher productivity lowers costs. In this fundamental way, globalization raises the economy's speed limit, so policymakers can let the economy expand at rates that might once have been considered unsustainable. In a globalized world, faster U.S. growth might not carry the same inflationary implications that it did in a more closed world. Foreign growth may also matter for productivity and cost here at home.

This year's essay underscores how the world is fast becoming one big, integrated economy.

Consider a Barbie doll that's designed in America and made in China from Taiwanese plastic pellets, Chinese cloth and Japanese nylon hair, then marketed to a child in Dallas. Is that an American product or an Asian one? When a laptop computer in Boston performs remote heart surgery on a patient in Milan, is the procedure taking place in America or in Europe? When folks in the U.S. and other countries can work together so seamlessly, how can we pull them apart with the data? Perhaps we should care as much about output gaps, capacity utilization and unemployment rates elsewhere in the world as we do about our own.

We cannot make good judgments without proper measuring sticks. Data that do not reflect the world in which we live increase the chances for errors in decisionmaking. We need to develop much better measures for the global economy, particularly since services are becoming increasingly traded. Today, our most detailed measures of economic performance pertain to goods, a shrinking segment of our economy. We can tell you about agriculture and manufacturing in excruciating detail but have relatively little data about the fast-growing services sector—now 82 percent of U.S. employment.

Globalization's lower costs make assessments of living standards more elusive. GDP, our traditional yardstick, measures the economy based on what things cost, not on what they contribute to well-being. This is particularly problematic for the growing number of goods with decreasing average production costs.

Will India's GDP adequately reflect how much more living standards rise when four families buy \$30 cell phones than when one family buys a \$120 cell phone? I doubt it. The same contribution to India's GDP generated by the \$120 phone would mean three families did without. The more globalization drives down costs, the more GDP growth understates true advances in living standards. Getting the right measure of the advance might well alter our notions of economic progress, with ramifications for how we approach the goal of price stability.

The Dallas Fed will be taking its study of all this to the next level with the establishment of the Globalization and Monetary Policy Institute. I am deeply indebted to the prominent scholars and practitioners who have agreed to serve as our founding advisory directors: Charles Bean of the Bank of England, John Taylor of Stanford University, Martin Feldstein and Ken Rogoff of Harvard University, Glenn Hubbard of Columbia University, and Otmar Issing, former chief economist and executive board member of the European Central Bank.

We have high hopes that the institute will further the understanding needed to conduct policy in a globalized world so we can meet our congressional mandate to foster price stability and maximum sustainable employment.



Richard W. Fisher



The **Best** of All Worlds

Globalizing the Knowledge Economy

In 2001, a surgeon in New York removed the gallbladder of a patient 3,870 miles away in the French city of Strasbourg, a medical miracle made possible by robotic surgical tools and high-speed communications. Doctors now perform thousands of remote surgeries a year, including heart bypasses, kidney transplants, hysterectomies and prostate procedures.

In an even more mind-boggling feat, a laptop computer in Boston last year guided instruments as they performed heart surgery—unaided by human hands—on a patient in Milan, Italy. A \$1.3 million computerized system relied on intricate software that incorporated surgeons' techniques and data from 10,000 previous robotic operations.

The conquest of physical distance to deliver medical services testifies to the benefits of globalizing the Knowledge Economy. Our greatly expanded capacity

to calculate, communicate and coordinate has toppled barriers that for centuries constrained so many economic activities. It has led to immensely increased productivity, thus lowering costs and raising living standards in ways unimaginable just a few years ago. We're only beginning to fathom the consequences.

As knowledge spreads in our globalizing economy, it unleashes powerful forces that redefine fundamental economic relationships. In one industry after another, lower transportation and communication costs have knit together far-flung companies and workers, expanding local markets into worldwide ones.

A more integrated global economy generates new competition, identified since the days of Adam Smith as a key to delivering more output at lower prices. Larger markets bolster incentives for innovation, the wellspring of economic progress. They open new

possibilities for specialization, which channels factors of production to their most efficient uses.

Globalization boosts foreign investment by freeing scarce capital to seek its highest return anywhere in the world. Companies can find and manage a broader range of inputs, the raw materials for more efficient production methods. Where fixed costs are high and marginal costs low, globalization extends economies of scale to output levels beyond the scope of national markets. The connection of competitors and capital from all parts of the world reduces entry barriers in high-fixed-cost industries, eroding the monopoly power that keeps prices high.

Knowledge and technology spread more readily, loosening the restraints that shackle progress. Production becomes more efficient and consumption less rivalrous. Indeed, a knowledge-rich economy changes the very nature

of consumption as a growing number of goods and services are distributed to new buyers without diminishing others' consumption.

Human beings have always put their brainpower to use, but today's explosion of knowledge is playing out in an era in which national borders are less of an impediment to the movement of goods, services, money, people and ideas. The combination of knowledge and globalization provides the U.S. with the best of all worlds—the benefits of not only our nation's intelligence but the entire planet's.

Gaining Knowledge on a Global Scale

Today's world teems with knowledge. Remote robotic surgery exemplifies our store of highly specialized knowledge, the vast scientific and entrepreneurial expertise behind our era's great technological leaps. More than 5 million researchers are at work around the world, literally creating knowledge. We're operating more think tanks and publishing more scholarly articles than ever. Each year, the world adds mountains of new information in

computer files and on paper, film and compact disc—enough to fill 37,000 Libraries of Congress, with its 17 million volumes. (*See Exhibit 1.*)

Over the past 35 years, literacy spread from 63 percent to 82 percent of the world's population. Average years of schooling rose from 5.1 in 1970 to 6.7 today. The global supply of college graduates has more than doubled since 1980.

Almost 900 million personal computers are in use worldwide—roughly one for every seven people. The best of them are 40 times



EXHIBIT 1 In the Know

Today's economies are knowledge-rich. The world is better educated, with far more resources dedicated to science and research than just a quarter century ago. Technology facilitates the collection and management of information, as well as its spread around the world.

World Knowledge Indicators	Now	Then	
College degree holders, total	212 million	82 million	1980
Share of population, ages 25+	9.1%	5.3%	1980
Bachelor's degree graduates	9.1 million	4.3 million	1981
Doctoral degree graduates	293,085	114,808	1983
Science and engineering doctorates	154,710	57,217	1983
Science and engineering doctorates in China	10,096	125	1985
College professors worldwide	8.5 million	3.8 million	1980
Think tanks	318	160	1980
R&D researchers	5.1 million	1.9 million	1985
R&D spending	\$667 billion	\$276 billion	1981
Scientific articles published	698,726	466,419	1988
Human genome base pairs decoded	all 3.1 billion	0	1990
Wikipedia articles	5.3 million	0	2001
Patent applications	1.1 million	701,151	1985
Licensing revenue	\$109.8 billion	\$10.8 billion	1980
Information Infrastructure and Use			
Personal computers	898 million	131 million	1990
per 1,000 people	140	19	1990
Landline phones	1.2 billion	333 million	1980
per 1,000 people	217	75	1980
Cell phones	2.7 billion	11.2 million	1990
per 1,000 people	416	2	1990
Countries connected to the Internet	209	20	1990
Secure Internet servers	401,050	0	1990
Internet web sites	110 million	9,300	1990
Host computers connected to the Internet	395 million	313,000	1990
Internet storage (terabytes)	532,897	0	1990
Semiconductor sales	\$248 billion	< \$1 billion	1980
IT capital stock (U.S.)	\$1.05 trillion	\$16.7 billion	1980
Digital video recorders	17.4 million	0	1990
Information Capacity and Speed			
Portable memory storage (megabytes)	16,384	1.44	1990
Data transfer rates (kilobytes per second)	100,000	9.6	1990
Processor speed (millions of operations per second)	21,600	16	1990
Broadband subscribers	217 million	0	1990
Annual information flow via TV, radio, Internet, e-mail, IM, phones (terabytes)	18.8 million	n/a	—
Communication Use			
International telephone traffic (minutes)	145 billion	8.7 billion	1980
Internet users	1.02 billion	2.6 million	1990
per 1,000 people	157	.5	1990
E-mail accounts	1.4 billion	0	1985
Voice over Internet protocol subscribers	24 million	0	1990
TVs per 1,000 people, worldwide	287	126	1980
TVs per 1,000 people in China; India	382; 84	9; 6	1980

more powerful than the machines of just a decade ago. Our capacity to store knowledge has become immense. A single USB memory stick can hold as much data as nearly 11,400 of the 3.5-inch diskettes that were standard issue in the early 1990s. A decade and a half into its existence, the Internet can store the equivalent of 62 stacks of 500-page books reaching to the moon.

Connectivity puts worlds of knowledge at our fingertips. Internet users can tap into more than 110 million web sites. Wikipedia delivers a vast store of information in a fifth of a second at virtually no cost. (See *Exhibit 2*.) The Internet Archive's Wayback Machine offers a digital library of 85 billion documents, images and audio files—a massive compendium of all the information ever posted on the

Internet. The free site receives 300 hits a second.

All this information would be overwhelming without the tools to find what we want. Digital technologies make it easy to scour the world for news, images, business opportunities, job openings, suppliers, and the best prices for all sorts of goods and services. In the U.S. alone, Internet users conducted an average of 213 million searches a day in April 2006. And it didn't cost them much. Like many Internet offerings, search engines deliver highly valued services at minimal cost—in fact, free at the margin.

We possess not only more knowledge but also better and cheaper ways of sharing it. Information once traveled at the speed of foot, hoof and sail. Telegraphs, telephones and teletype machines greatly increased

the information speed limit—but they were expensive and not widely used. Only in the past decade or so have costs fallen enough to ignite a global communications explosion.

Go back in time and consider the telegraph, an 1837 invention that succumbed to progress in 2006, when Western Union discontinued commercial service. In terms of U.S. wages, the cost of a 10-word international message dropped from 93 hours' pay in 1900 to 11 hours' in 1930 to 84 minutes' in 1960. Despite the plunge in cost, international telegrams never reached prices ordinary Americans deemed a bargain. On average, they sent just one overseas telegram every six years from 1930 to 1960. (See *Exhibit 3*.)

Real costs plummeted for U.S. international telephone service,

EXHIBIT 2 An Encyclopedia That Speaks Volumes

Measured in words, Wikipedia passed 100 million in January 2004, 1 billion in February 2006 and 1.7 billion in September 2006. Just as important, the online encyclopedia dispenses information in Swedish, Russian, Chinese, Portuguese and 245 other languages—a testament to the Internet as a truly global information source.

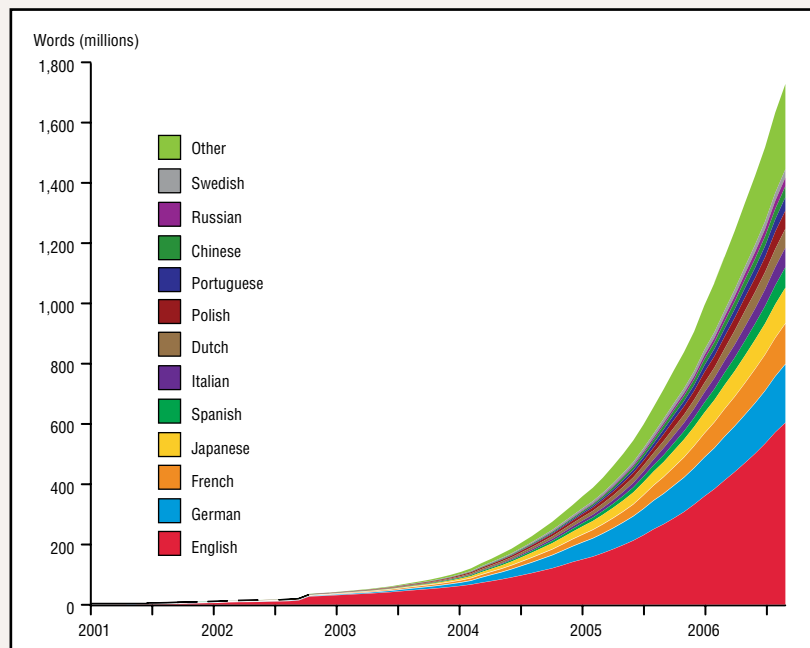
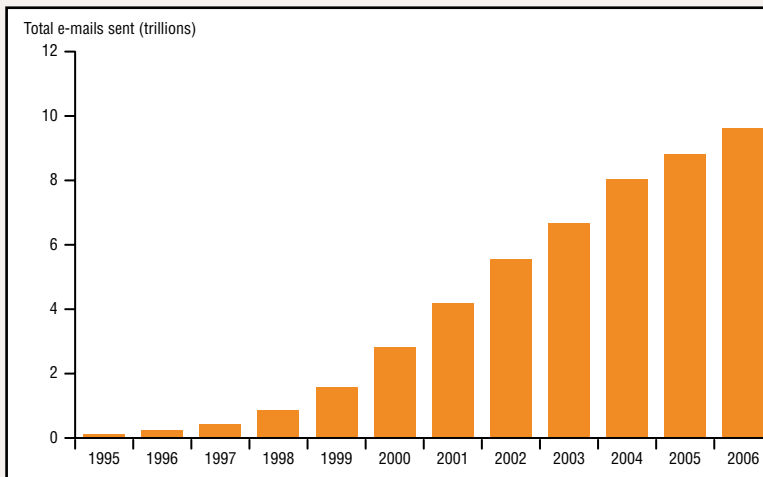
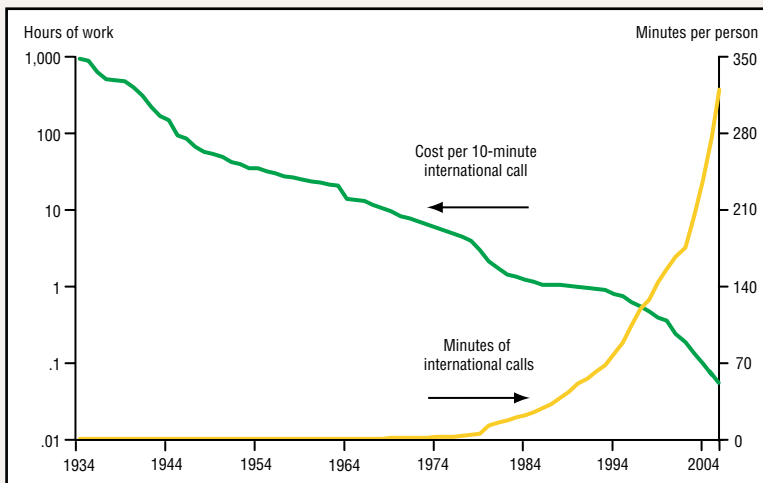
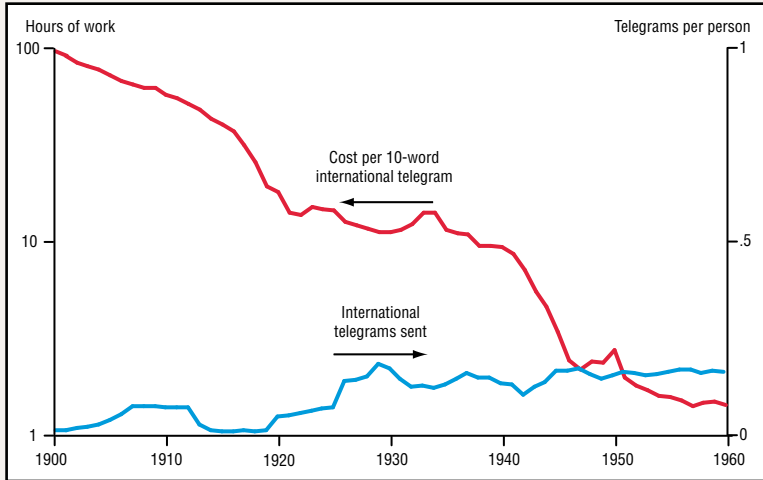


EXHIBIT 3 Ties That Bind

Communications spur globalization because they facilitate the spread of knowledge and information across borders. International connections were once prohibitively expensive, but cheaper telephone calls and the Internet have given them a powerful boost in recent years.



Cheaper Communications

The Telegraph

The work-hour cost of sending a 10-word message overseas fell 98 percent over 60 years. International telegram traffic, however, peaked in 1929 at just one message for every six people.

The Telephone

International call volume languished for decades, despite a long-term decline in the real cost of service. Growth began to take off only in the past two decades as the toll became nearly negligible.

The Internet

E-mailing is cheap—whether messaging someone in town or Timbuktu. The number of messages, even excluding spam and advertising, has surged as more people have become connected around the world.



just as they did for telegraph service. A 10-minute international call fell from the equivalent of 844 hours' pay in 1934 to 10 hours' pay in 1968 and one hour's in 1990. The steep decline didn't spur a boom in international communications. In the past decade and a half, however, U.S. rates have dropped 95 percent, reaching just three minutes' work time in 2006. Over this period, annual international call volume skyrocketed as the service finally became cheap enough for the masses. Use jumped from a half hour per person in 1987 to almost five hours today, an increase twice as large as what occurred in the 70 years after the start of transatlantic service in 1927.

Today, communication is omnipresent, fast and cheap. The world is better connected than ever, with 22 landlines and 42 cell phones for every 100 people. The Internet has emerged as a virtual

global village. A total of 209 nations are now online, up from just 20 in 1990. A sixth of the world's population has regular Internet access, and cybercafes cater to millions more.

Spiderwebs of fiber-optic cables give us the bandwidth to move massive amounts of information nearly anywhere in a heartbeat. Today, the world has 217 million broadband subscribers, with Internet connections capable of transferring the equivalent of 6,100 pages a second. It took 30 minutes to send the same pages at the standard modem speed in 1997.

The sharp decline in computer communication costs has spurred a rapid expansion in traffic. The Internet and e-mail—part of our lives for only 15 years—have spread quickly. We maintained 1.4 billion e-mail accounts in 2006. Worldwide business and

personal e-mail traffic jumped from 18 per capita in 1995 to nearly 1,500 in 2006.

Additional barriers to connectivity will crumble if countries and donors buy into MIT professor Nick Negroponte's \$100 laptop, which incorporates a hand-cranked generator and Wi-Fi transmitter. The device aims at nothing less than bringing the world's knowledge to bright minds wherever they may be—even among the most isolated students.

In just a few years, digital communications have done for information what transportation technology did for goods. In 1956, a North Carolina trucking company owner named Malcolm McLean introduced containerized shipping, featuring 40-foot steel boxes that could be lifted from ships to trucks or trains without repacking.

In the decades that followed, huge container-shipping companies from the U.S., Taiwan, Denmark, South Korea and elsewhere vied for cargo, helping cut real ad valorem global ocean freight rates by 40 percent since the early 1970s. (*See Exhibit 4.*)

Efficiency gains have been impressive in ground shipping, but they've been even greater in air cargo, especially over longer distances. In 1970, doubling airfreight distance would have increased shipping costs by 43 percent. Today, sending air cargo twice as far raises prices only 16 percent.

Brainpower and communications mark our modern economy. The more we know, the more we communicate, the more we can gain from globalization.

Tallying the Benefits of Global Markets

Declining communication and transportation costs directly reduce what consumers and businesses pay for a wide range of goods and services. Telephone calls can be had for pennies. Information has become dirt cheap. Every trip to the grocery store or mall provides evidence of the imported bargains in electronics, clothing and other goods. But the gains don't stop there.

Paying less to move information and goods sends ripples throughout the world economy, raising productivity and cutting costs in numerous other ways.

Better Production Functions

In a more integrated global economy, capital, labor and technology are freer to combine in new and more efficient ways. Companies can use the entire world to carry out their production processes, realizing significant cost savings that can be passed on to consumers.

The Industrial Age limited companies' efficiency. As long as raw materials had to be trucked in and workers had to be on site, production functions rarely extended beyond a region or crossed national borders. The decline in shipping costs—particularly airfreight, with its fast delivery—allowed producers to broaden their

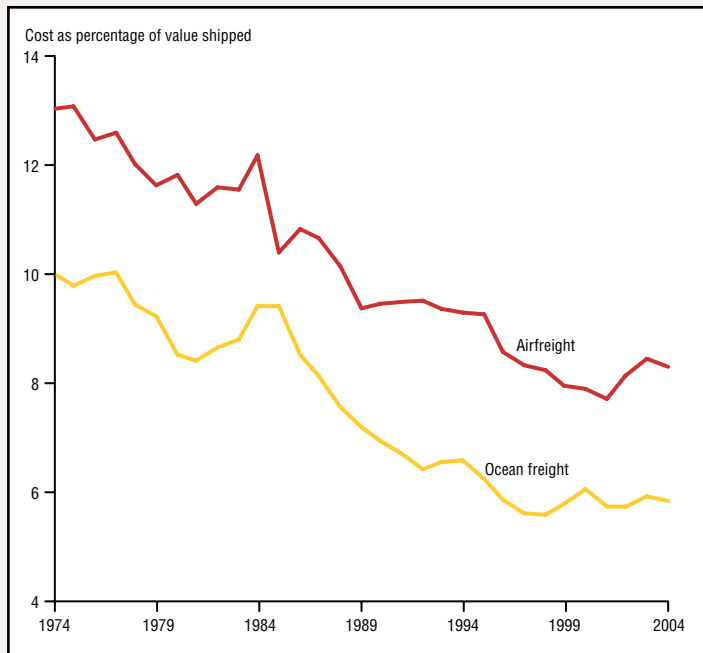
range of physical inputs. In a similar way, cheaper communications have given service companies incentives to globalize their information operations.

The advent of global supply chains, knit together by modern information technology, has stretched major retailers far beyond their home countries. J.C. Penney Co., for example, has used digital technologies to shrink its product cycles for women's fashions (*see page 10*).

U.S. and European retailers are becoming multinationals that reap enormous efficiency gains from extending production functions backward into the supply chain and forward

EXHIBIT 4 Getting the Goods More Cheaply

The cost of moving cargo has declined steadily, both for ocean shipping and airfreight, spurring global competition among producers and helping make imports cheaper for consumers.



Globalization Hits the Catwalk

J.C. Penney's global fashion operations were lean and mean—but that was just a starting point for Peter McGrath.

The Plano, Texas-based retailer's top executive for procurement, McGrath wanted to get as close as possible to zero turnaround time. Doing it meant squeezing weeks out of every step in the product cycle—from researching fashion trends all the way through the logistics pipeline.

The spur came from the industry itself. Over the past 20 years, the lag time from fashion show to store had shrunk by more than half, putting retailers on an ever faster treadmill. "You can go into a runway show and have a designer interpreting the fashion on a factory floor in China within three hours," says McGrath (*below*).

As recently as 10 years ago, retailers operated on 70-week product cycles. More efficient overseas sourcing and new technologies helped shorten this to 50 weeks. J.C. Penney was stuck there at the end of 2005, tethered to a step-by-step product

cycle that required approvals at every juncture.

"We knew we couldn't make the sewing machines, boats and trucks go any faster," McGrath says. "But we thought we might be able to make the processes run concurrently."

McGrath's first step was tearing down the walls between staffers who spot trends and those who design clothes. "Today, the trend team roots through the information it gathers and delivers it directly to design."

Trend team members continue to attend fashion shows and study store windows, but subscription web sites deliver Milan's runway shows and Bergdorf Goodman's Christmas windows in real time.

Choosing a color scheme to weave through the next few seasons had taken five months. A photospectrometer now scans colors digitally and shoots them around the world via the Internet, saving four weeks.

"We used to send the palette to the mills overseas, which would then send swatches back to the States," Mc-

Grath says. "New technology allows us to approve color swatches on site."

Today's high-resolution technology produces computer images so precise that designers in Plano can determine whether a suit jacket would fall better if the shoulder were adjusted a hair. The ability to make initial alterations without setting foot outside the office stripped two weeks from the product cycle.

As for production, nothing short of complete reengineering would do. Agreements with mills and manufacturers were rewritten, and every approval process was streamlined.

Using technology and know-how, J.C. Penney squeezed new efficiencies from a global production function. Today, the company's maximum product cycle is only 40 weeks. The pinnacle of efficiency is reserved for the juniors collections, which can go from concept to store in just 17 weeks.

Despite the big drop in cycle time, McGrath isn't satisfied. He'll continue to alter fashion ops to better fit the world's resources.



into the consumer market. They buy what's cheap in China, India, Vietnam and elsewhere, so they can sell for less in the United States. At the same time, major retailers like Wal-Mart Stores Inc., Home Depot Inc. and Starbucks Coffee Co. are crossing the Pacific, not only to source product but also to compete in China's burgeoning consumer market. They're also eyeing India, which just opened its retailing sector to foreign participation.

Plenty of other companies now operate on a global scale. U.S. firms' sales through foreign affiliates exceed total U.S. exports by three to one. Offshore investments encompass all phases of business—manufacturing, IT, customer service, R&D, business processing, management and distribution. Even China, a hot spot for foreign investment, sees its companies adopting global strategies. Haier, the country's leading appliance maker, operates more than a dozen overseas factories, including a refrigerator plant in Camden, S.C.

The Knowledge Economy opens the way for more businesses to stretch beyond national borders. With greater mobility come new opportunities for companies to hone their competitive edge by looking for efficiencies in every corner of the world.

Stronger Competition

Consumers no longer have to settle for what's available in local markets—a blessing for them but a challenge for producers. Globalization means new competition can come from anywhere in the world. Imports relative to global household consumption



have been rising for decades, going from less than 18 percent in 1965 to more than 42 percent today. (See Exhibit 5.) The growth rate has accelerated in the past decade as declining communications costs have brought new industries into the global competition arena.

Competition forces us to become more and more produc-

tive—if necessary, by going back to the drawing board in search of better ways to deliver goods and services at lower prices. This simple dynamic, working on a global scale, lies behind many U.S. companies' oft-heard lament: We have no pricing power.

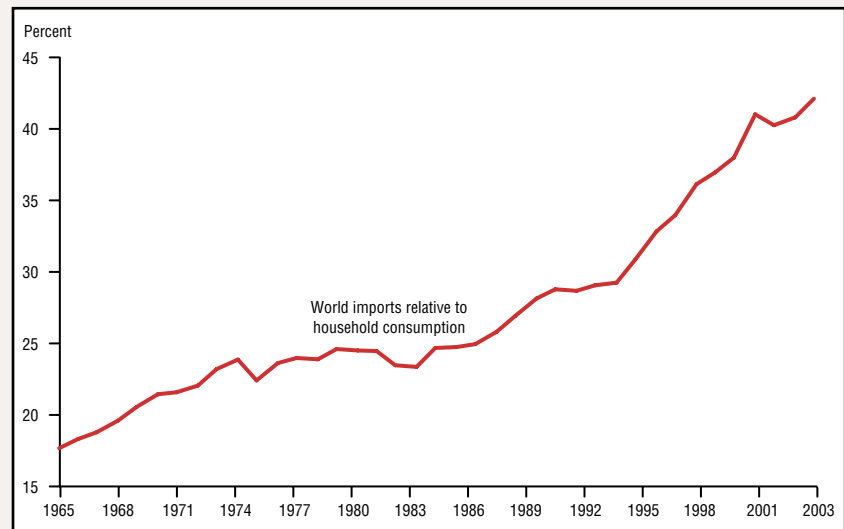
What confounds sellers often benefits buyers. In the past decade, U.S. prices fell for TV sets,

toys, dishes, clothing and many other products facing significant import competition. Prices rose for many products untouched by globalization—cable TV, hospital services, sports tickets, rent, car repair and others. From 1987 to 2003, faster-growing import-to-production ratios wrung inflationary pressures from domestic producer prices in a large range

EXHIBIT 5 Global Competition Lowers Inflation

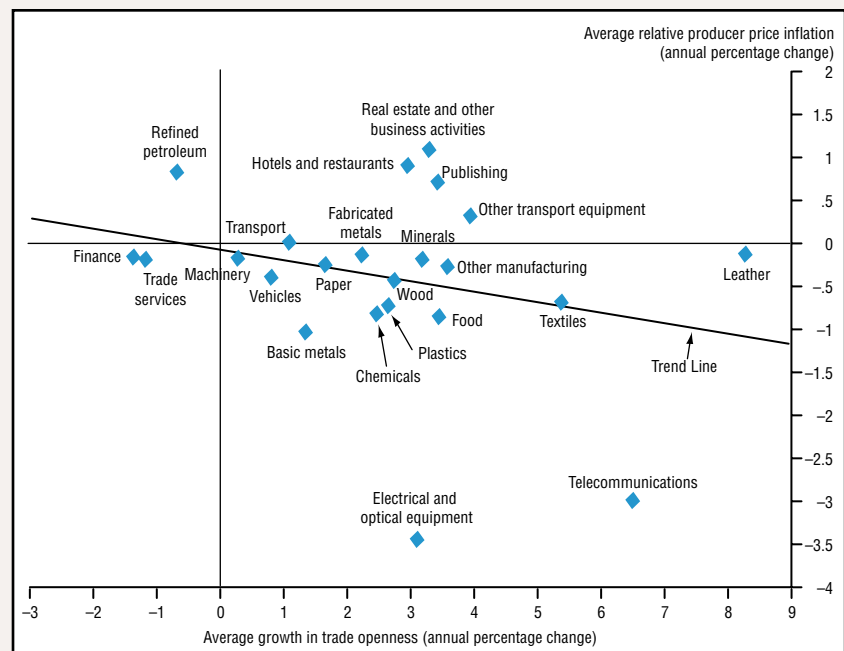
More Sellers...

World imports relative to consumption have doubled over the past four decades, making more of what consumers buy subject to the broadening competition inherent in international trade.



...Means Tamer Prices

Where markets become more open, the added competition tends to hold down the cost of goods and services.



of industries. (See Exhibit 5.) The gains from global markets aren't limited to goods traded internationally. They extend to such non-traded goods as houses, which contain carpeting, wiring and other inputs now facing greater international competition.

Industrial Age globalization largely involved goods, which were usually heavy, bulky and expensive to move from one place to another. The creation of worldwide markets for food, energy, metals, vehicles, electronics, textiles and other products raised living standards around the world by increasing output, lowering costs, boosting incomes and spurting economic progress.

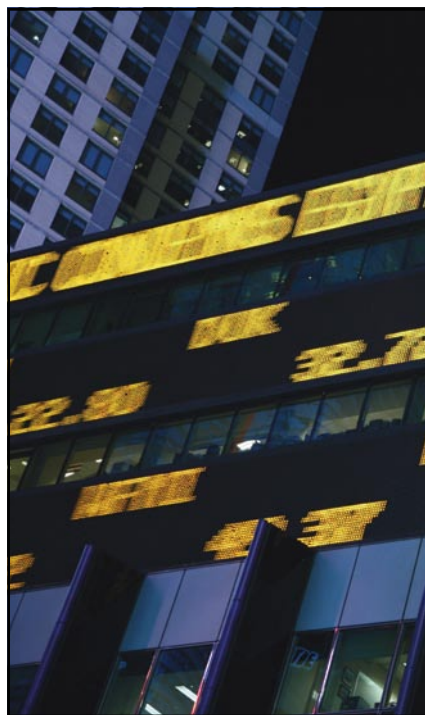
Raw materials and manufactured products still make up the bulk of today's trade, with merchandise exports at record highs.

The globalization of goods has meant more competition for U.S. manufacturers. They've been forced to close plants and trim payrolls, of course, but they've also become more productive. Since 1990, real factory output per U.S. worker has risen from \$52,000 to \$108,000.

While Industrial Age globalization increased competition among goods producers, service providers largely remained insulated in their home markets. Transportation costs fell, but Industrial Age communications remained expensive, limiting trade in services and keeping their prices high.

Services have become by far the largest part of modern economies' production—77 percent in the U.S. and 66 percent in the rest of the world. The Knowledge Economy's rapid, cheap communications have sparked a new round of globalization, this one increasing competition for services as well as goods.

The ratio of services to goods in U.S. exports now stands at 44 percent, up from about 25 percent a quarter century ago. (See Exhibit 6 on page 14.) Growth in services trade has been slower for the world as a whole, climbing from 21 percent to 25 percent of goods exports since 1975. The numbers suggest the United States is ahead of other nations in shifting output from goods-producing industries to services.



In coming years, other countries will likely follow the U.S. lead in increasing services trade.

While total U.S. services exports rose a bit faster than goods from 1992 to 2005, many individual sectors have been moving faster in penetrating overseas markets. Eleven categories posted increases of better than 10 percent a year—among them, computer and information services; film and television rentals; research and testing; accounting, auditing and bookkeeping; finance; and education. Just five import categories, however, showed gains of at least 10 percent a year—industrial engineering, finance, operational leasing, insurance, and sports and performing arts. (See Exhibit 6.)

Overall, the U.S. runs a surplus in services trade—a reflection of its prowess in many of the Knowledge Economy's high-value-added sectors.

Resource endowments and talents often lead nations to



EXHIBIT 6 At Your Service

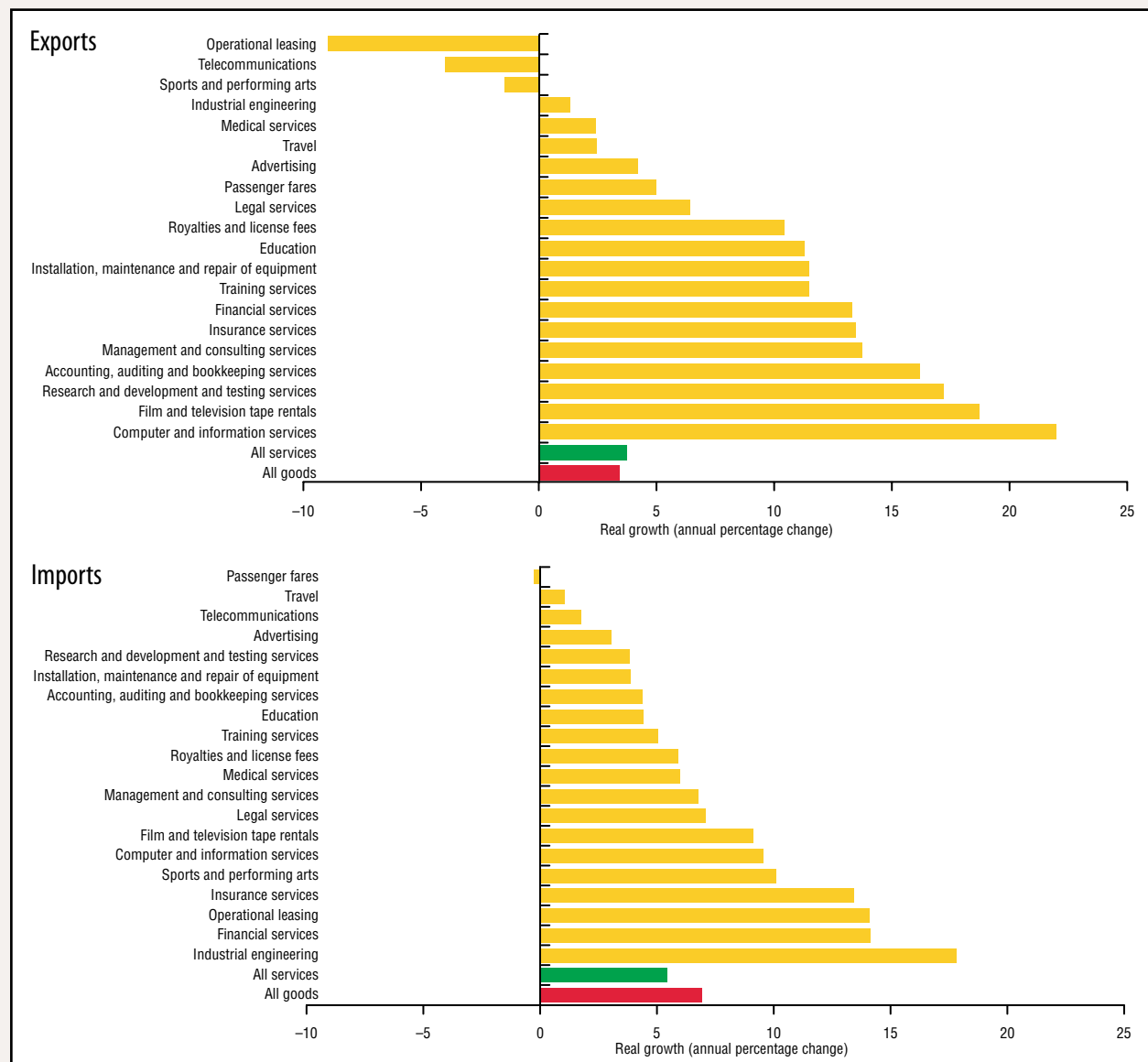
Sector Climbs as Share of Exports

The Knowledge Economy, with its freer flow of information, creates new competition as it expands international trade in services. In the past two decades, exports of services have risen faster than goods, particularly in the United States (right).



Industry Trade Patterns Shift

From 1992 to 2005, U.S. exports rose by at least 10 percent a year in 11 industries (below). Imports have increased that much in only five industries.



concentrate on one industry segment or another. Sometimes, though, countries appear to be selling each other the same things.

Computer and information services, for example, led U.S. export growth at 22 percent a year from 1992 to 2005, but the sector's import growth was strong, too, at 10 percent. Nations may indeed exchange similar services, but further analysis reveals trade patterns based on comparative advantage. In computer services, the U.S. exports the highly valued knowledge of researchers, systems architects and designers. It imports the services of basic programmers—the foot soldiers in the information economy.

In the Knowledge Economy, service companies and workers are learning what goods producers have long known: Globalization creates opportunities but also causes hardships. Some firms will prosper; others will go out of business. Inevitably, workers will lose their jobs and face the challenge of finding new ones. Global markets may make more of us vulnerable in terms of job security, but we all benefit because worldwide competition brings lower prices—for consumer goods, for producers' inputs and, now more than ever, for services.

Greater Specialization

The crosscurrents in services trade show that global markets expand the scope for specialization. We do what we do best and trade for the rest. For an economy as a whole, specialization leads to productivity gains beyond what firms can achieve at the microeconomic level through new technologies and investments in



plants and equipment. Indeed, one of globalization's greatest benefits lies in its incentives to reorganize economic activity and reallocate global resources to yield greater output.

Even when communications costs were high, globalization created opportunities for vertical integration in manufacturing, with an international division of labor based on natural resources and other inputs. A textbook example, popularized by Milton Friedman, is the ordinary wooden pencil—made with cedar from Oregon, graphite from Ceylon, brass from U.S. smelters and eraser components from Indonesia.

Today's world shifts the focus to human resources, forging a somewhat different division of labor. The U.S. and other wealthy, well-educated nations supply the world with goods and services steeped in knowledge. Highly skilled workers in these countries produce jet aircraft, pharmaceuticals, cutting-edge electronics and all sorts of high-value-added goods. At the same time, managers, lawyers, entertainers and other knowledge workers have more opportunities to apply their talents on a global scale. U.S. pro-

fessors, for example, no longer teach students only on campus. With today's advanced communications, they can gather students in Europe, Asia and the Americas into virtual classrooms.

The all-American Barbie doll illustrates how a globalized economy comes together to lower costs. A 1990s study reported that the dolls were made with plastic from Taiwan, nylon hair from Japan and cloth from China, with final assembly in Indonesia and Malaysia. Design, marketing and distribution—the high-value-added service components of the production process—took place in the United States. Including profit, 80 percent of Barbie's selling price stayed in the U.S.

In addition to manufacturing, developing nations are finding niches in service industries. India's doctors perform hip replacements and other surgical procedures at lower prices than U.S. hospitals. Outsourcing of business services has grown rapidly, with companies in wealthy nations pursuing service-sector vertical integration by shipping call centers, data processing and other routine tasks to workers in India, the Philippines and other emerging economies.

Larger Market Size

The telephone wouldn't have been worth much had Alexander Graham Bell lived on an island of a dozen people, all within shouting distance. It takes large numbers of customers separated by vast distances to make telephone services profitable.

For many goods and services, market size matters—a lot. In addition to their role in widening the search for inputs and human talents, larger markets provide added impetus for innovation, business formation and risk taking. Expanding the potential customer base also helps create viable markets for highly spe-

cialized products. Houston-based Encysive Pharmaceuticals, for example, is looking to a global market to make its new treatment for a rare lung condition pay off (*see page 17*).

Industrial Age tycoons built their fortunes largely from domestic sales. Among the 30 richest Americans in 1918: John D. Rockefeller in oil, Henry Ford in automobiles, J. P. Morgan in banking, Andrew Carnegie in steel, W. K. Vanderbilt and E. H. Harriman in railroads, and J. Ogden Armour and Louis F. Swift in meatpacking. Industrialists in Britain, Germany and other nations rose to supply oil,

cars, banking, steel, transport and meat to their national markets.

Knowledge Age moguls are global entrepreneurs. *Forbes'* roster of the superrich is dominated by business leaders who amassed their fortunes with little regard for borders. America's Bill Gates built the world's largest software company. Sweden's Ingvar Kamprad sells Ikea furniture worldwide. India's Lakshmi Mittal produces steel in 16 countries on four continents. France's Bernard Arnault markets luxury goods all over the world under the Louis Vuitton, Fendi and Christian Dior labels.

Bigger markets may even make for better movies. More than half the 15 biggest-budget films in history failed to break even in the U.S. Hollywood supplements the domestic market with foreign sales, accounting for more than half of some movies' revenue. On a worldwide basis, the top 15 made it into the black, with the foreign take exceeding domestic box office for all but three films. (*See Exhibit 7.*)

If the business weren't globalized, filmmakers might have had to curtail spending, perhaps by scaling down sets, doing less research, settling for cruder animation, or getting by with not-so-special effects. The bottom-line contribution from fans around the world allows filmmakers to make bigger-budget movies.

The U.S. economy is huge, accounting for a quarter of world output. But simple math suggests globalization quadruples the size of American entrepreneurs' playing field. The global market gives them—and their competitors around the world—history's largest customer base.

EXHIBIT 7 Roll It—All Around the World

U.S. sales for eight (in red) of the 15 biggest-budget movies weren't enough to cover the tab, yet all made handsome profits once the global till finished ringing.

15 Biggest-Budget Movies	Millions of U.S. Dollars		
	Budget	U.S. Sales	World Sales
King Kong (2005)	\$207	\$218	\$549
Superman Returns (2006)	204	200	391
Spider-Man 2 (2004)	200	374	784
Titanic (1997)	200	601	1,835
Chronicles of Narnia (2005)	180	292	749
Waterworld (1995)	175	88	255
Wild Wild West (1999)	175	114	218
Van Helsing (2004)	170	120	300
Terminator 3 (2003)	170	150	433
The Polar Express (2004)	170	173	297
Poseidon (2006)	160	61	182
Alexander (2004)	155	34	167
Pearl Harbor (2001)	152	199	451
Troy (2004)	150	133	497
Pirates of the Caribbean 2 (2006)	150	423	1,065

New Hope for Fighting Disease

Pulmonary arterial hypertension, a rare disorder involving extremely high blood pressure in the lungs' smallest arteries, afflicts an estimated 100,000 people in the U.S.—a number too large to ignore but too small to entice most drug companies.

Going global proved the way around this dilemma for Encysive Pharmaceuticals. By expanding the number of potential patients, the international market gave the Houston-based firm the critical mass it needed for Thelin, its brand name for sitaxentan sodium.

"If you are going to put in all the effort to build out an infrastructure, you really have to have enough patients to make it worth your while," says Encysive president and CEO Bruce Given (*below*).

Pulmonary arterial hypertension is one of 5,000 so-called orphan diseases, those afflicting fewer than 200,000 people in the U.S. The larger market size inherent in globalization makes it far more likely that companies will embark upon the risky business of finding new

treatments. "There are some orphan indications so small that to attain enough patients for regulatory filings, there is no other choice than to go global," Given says.

Developing drugs is extremely expensive. For every 1,000 that are synthesized, 100 go to animal testing, 10 to clinical trials and only one makes it to the marketplace. Without enough patients, pharmaceutical companies can't justify the time and expense needed for research and the approval process.

Encysive is currently selling Thelin in Europe and awaiting Food and Drug Administration approval in the U.S. Approval is also pending in Canada and Australia, and the company is casting its eyes toward Latin America and perhaps beyond.

Going into Europe doubled the potential market to 200,000 patients, big enough to make Thelin a viable drug. Encysive markets Thelin directly in Europe and plans to do the same in the United States and Canada. Else-

where, it will probably partner with a big pharmaceutical company, which will handle distribution and pay Encysive royalties.

"I don't care who you are," Given says. "If you are in the business of developing a drug, you are doing so for a worldwide market. Increasingly, this includes looking for patients in places like India and China, which was not often done in the past."

Global markets will ease the way for future generations of orphan drugs. An increasingly integrated world economy may even become crucial to mainstream treatments.

"As regulatory authorities continue to seek greater assurances that drugs are safe and effective prior to approving them, patient numbers in dossiers are generally increasing," Given says. "As such, even in larger indications, companies often find it necessary or advisable to go global to enroll enough patients in their trials to meet regulatory expectations in a reasonable period of time."



Extended Economies of Scale

Industrial Age factories usually operated with high fixed and high variable costs. Production became cheaper as companies ramped up output—but only to a point. After that, churning out each unit became more expensive, and serving additional demand increased costs. Decreasing returns to scale eventually led to higher prices.

An information-based world differs from a material one in that more products have high fixed and low marginal costs—that is, they exhibit increasing returns to scale. Knowledge Age products often entail steep development

costs because they incorporate large amounts of highly paid brainpower. Once production is up and running, though, the marginal cost of selling to additional consumers is relatively low over a long horizon.

Such products become cheaper when markets are large and global. Developing the typical drug, for example, requires years of research and testing by scientists, doctors and other expensive talent. Pharmaceutical companies then pay lawyers and lobbyists to navigate an arduous approval process. Add it all up and the average cost of bringing a new drug to market is \$1 billion. Once in production,

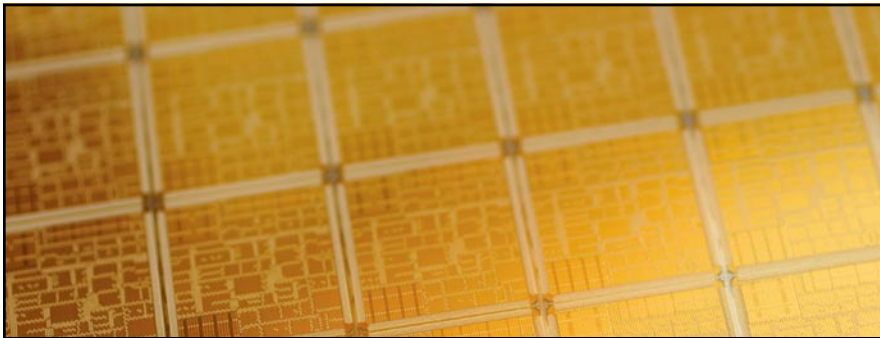
though, each pill costs mere pennies to make.

The economics explains why pharmaceuticals have become a highly globalized business. Overseas sales account for more than 40 percent of top U.S. drug firms' revenues, even though they have a huge home market. Companies in smaller countries derive an even higher portion of their sales from beyond their borders.

Installing cellular telephone infrastructure, like developing new drugs, is costly. Over the past two decades, wireless investment topped \$200 billion in the U.S. alone—high fixed costs, to be sure. Increasing demand lowers cell phone prices because networks add customers at minimal expense, spreading the fixed costs over a vast number of consumers. Once a luxury only the rich could afford, service is now within reach of the masses. More than 2.7 billion cell phones are in use worldwide, far surpassing the number of wired connections.

Cell phones have become the dominant form of communication in many developing countries, allowing even Guatemalan shoeshine boys to get connected. Indeed, at every level of economic development, the cell phone industry's increasing returns make it easier for more people to afford phone service. (*See Exhibit 8.*)

Landline phone service grew into a mammoth industry long before the microprocessor ushered in the era of cell phones. Electricity, wires and a modicum of electronics were enough to make “Mr. Watson, come here ...!”—with all that ensued. Even the earliest cell phones,



however, embodied far greater knowledge content—microchips to control the signal, filter out static, move callers from tower to tower and store numbers.

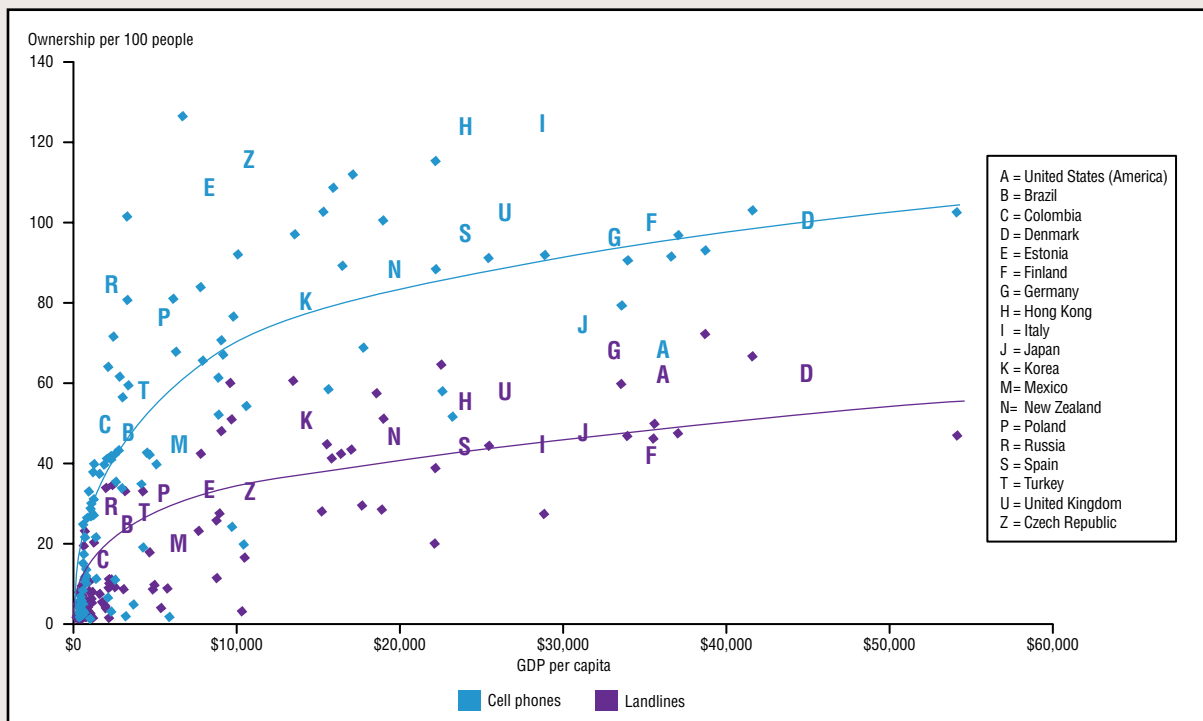
Despite all the technology, cell phones are cheaper than landlines because their chief component is the microchip, an input produced with very high fixed and very low marginal costs. Plunging prices for computer chips have made handsets more affordable. Texas Instruments Inc., for example, has developed a single microchip that performs all the necessary functions at a great savings in production costs, allowing newer models to sell for as little as \$30 (see page 20).



(c) 2007 The Hunger Project, www.thp.org

EXHIBIT 8 A Cellular World

Wireless service has spread more rapidly than landline phones. Increasing returns to scale have rapidly reduced cell phone costs, allowing more users at all income levels to get connected.



Cell Phones for the Masses

The name says a lot: LoCosto. Texas Instruments Inc. picked that moniker for the industry's first single-microchip cell phone modem, designed for low-cost handsets aimed at customers in emerging economies.

The LoCosto chip (actual size) handles the cell phone functions that once required three or four microprocessors. Yet it's powerful enough to enable mobile phones to play music and videos.

"You need to have a performance-to-price ratio that people can afford," says Remi El-Ouazzane, a French citizen who's general manager of the TI business unit that markets LoCosto.

Cell phones' cost barriers have been tumbling for decades. In the 1980s, the first models sold for more than \$4,000, well beyond the means of all but the most affluent consumers. The LoCosto chip will be a critical component in phones selling in developing countries for \$30 or less.

Cheaper cell phones have emerged from a relentless drive to reduce the number and cost of components. The

single-chip technology, developed in 2002 and used in Bluetooth, GPS devices, Wi-Fi and portable digital TVs, allows TI to reap higher effective yields from silicon wafers, the raw material for microprocessors. By cutting the number of microprocessors, the LoCosto chip reduces power consumption and the circuit board's size and cost.

Despite being key to low-priced phones, the LoCosto chip is anything but low tech. "We are using the most complex and advanced technology to address the needs of the less advanced parts of the world," El-Ouazzane says.

TI won't divulge its costs, but El-Ouazzane acknowledges that developing new technologies requires a lot of research and development money, which can only be recouped over long production runs.

"Economies of scale are required to sustain the R&D needed to develop revolutionary architecture," he says.

Because it targets emerging markets, the LoCosto chip is by its very nature a global product, intended for mass production. TI sold 15 million

units in the six months after LoCosto's launch in September 2006—the fastest start ever for a wireless product at TI, the No. 1 producer of chips for cell phones.

Motorola, Nokia and China's original equipment manufacturers are among the dozen handset makers already buying LoCosto chips. "The emerging countries are becoming the fastest-growing markets in the world for all global companies," El-Ouazzane says. "The market for cell phones is untapped, whether it's in India, China or South America."

Cell phones are pivotal for bridging the digital divide that separates rich and poor countries. In many emerging economies, a handset in the pocket or purse may be many citizens' primary means of accessing information, including the Internet. None of it would be possible without increasingly cheap microprocessors, made possible by the economies of scale wrought from global markets.



Software, computers and the Internet also exhibit increasing returns to scale. So do many products whose principal components are microchips and software—digital cameras, DVD players, computer games, GPS devices and MP3 players. Increasing returns find their way into traditional industries, too. Agricultural research involves long and expensive scientific work on ways to increase crop yields and prevent plant diseases. The variable costs of new seeds are usually low.

Broader Capital Markets

Goods and services aren't alone in moving more readily across borders. As barriers to capital flows have fallen, investment money—the driving force for economic growth—has been freed to seek the highest returns anywhere around the globe.

It has done so with a vengeance. Since 1980, accumulated foreign investment in stocks and bonds has risen from 1.5 percent to 59 percent of world output. Direct investment in overseas companies has risen from 5.2 percent to 24 percent.

The money helps businesses start or expand operations, invest in new equipment, acquire state-of-the-art technology, and undertake research and development projects. The result: Output goes up; costs go down.

Rich countries still receive the bulk of cross-border investment, but new players are emerging. China has been among the leaders in receiving foreign plant and equipment investment in recent years. What's more, the country trailed only the United States in initial public offerings



in 2005, with 15 percent of the world total.

Financial integration has given budding entrepreneurs in many countries access to cheaper capital. In effect, financial markets have been democratized, spreading the available investment money to an ever-widening population.

More-Contestable Markets

Monopolies bedeviled Industrial Age economies. Many of them owed their existence to the limits inherent in national markets—a single producer able to meet all demand, high costs that

imposed barriers to entry or few alternative products. Without competitors to contest for consumers, producers had more power to reap extra profits by keeping prices high.

Globalization erodes market power. Natural monopolies that might rise in national economies—airlines, electricity or telephone service, for example—don't exist on a global scale.

The integration of world capital markets makes it more likely competitors will enter highly profitable markets. No financial hurdle is too high. A world awash in money can supply any

amount of up-front investment needed to start new businesses and challenge monopolists.

While economies of scale in knowledge-based industries may encourage large producers, globalization has made markets more contestable by promoting freedom of entry and rival products. Simply put, there is no monopoly on ideas. Software developers can create alternative batches of code to program computers. Microchip designers can find new ways to increase the product's power.

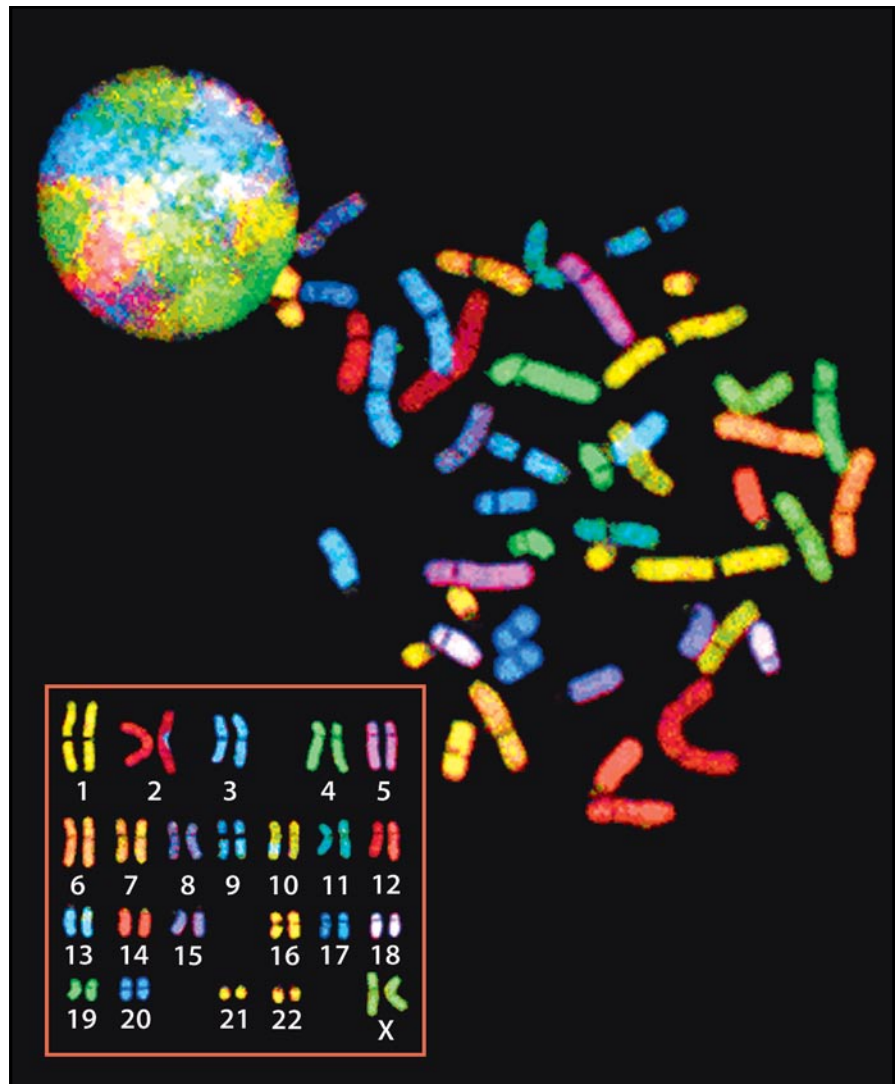
The threat of new competition keeps prices low. Today's world economy, saturated with knowledge more readily shared across borders, will be quicker to bring alternative products to market, replacing monopolies with competition.

Greater Knowledge Spillovers

Knowledge can be found in all corners of the world—but it's not distributed equally. In the U.S., for example, more than 30 percent of those age 25 and over are college graduates—tops in the world by far. In an increasingly globalized world, knowledge produced in one country rarely stays there long. It readily flows to where it has value. (*See Exhibit 9.*)

Intellectual property deserves strong legal protection, but knowledge spillovers generate significant benefits. They come in two broad categories—those embodied in goods, services and capital moving from one country to another, and those that exist apart from trade and investment.

Often not industry-specific, disembodied knowledge can greatly expand countries' capac-



ity to produce goods and services for world markets. U.S. professors W. Edwards Deming and J. M. Juran developed techniques for quality control that vastly improved manufacturing processes. After embracing their approach in the 1950s, Japan transformed its war-ravaged economy into a high-quality, low-cost manufacturing powerhouse. With Japan's success, the ideas gained currency in the United States and many other parts of the world.

A modern-day application of disembodied knowledge can be found in the Human Genome Project. Scientists unlocked the secrets of DNA in 2001, and al-

ready it has led to new treatments for disease. The genetic code has been posted on the Internet, making this deep reservoir of medical knowledge available to researchers around the world.

Disembodied knowledge goes well beyond scholarly and scientific work. It includes financial news, print and electronic media, analytical reports, databases and even gossip. This kind of knowledge moves between countries when people migrate or travel and when far-flung colleagues interact via the Internet, e-mail and cell phone. Students studying abroad are particularly important in diffusing knowledge. Today, they're

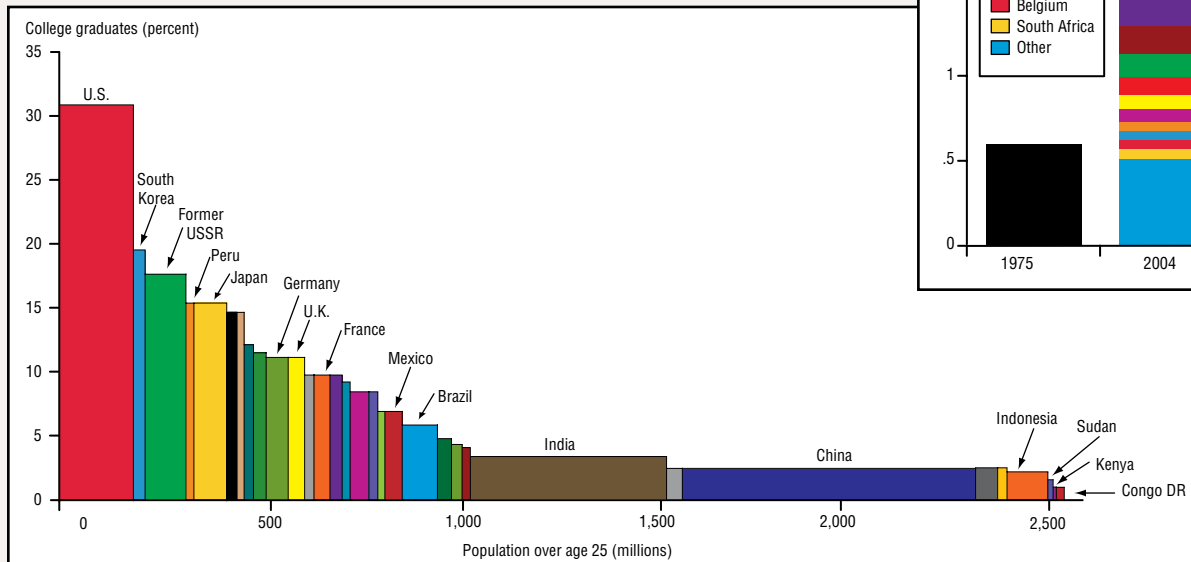
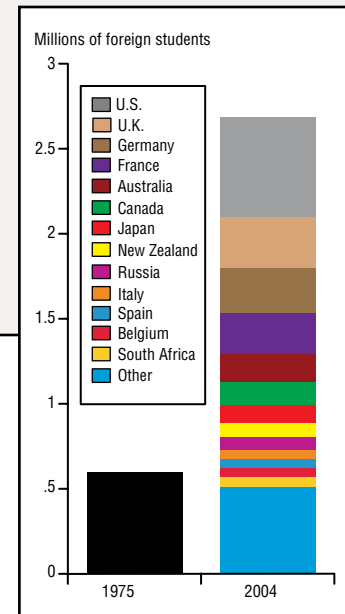
EXHIBIT 9 Brain Gain, Not Brain Drain

More Seek Knowledge Abroad...

The number of students studying overseas more than quadrupled in the past four decades (*right*). The U.S. led, with 22 percent of the foreign students in 2004.

...but Educational Gaps Still Large

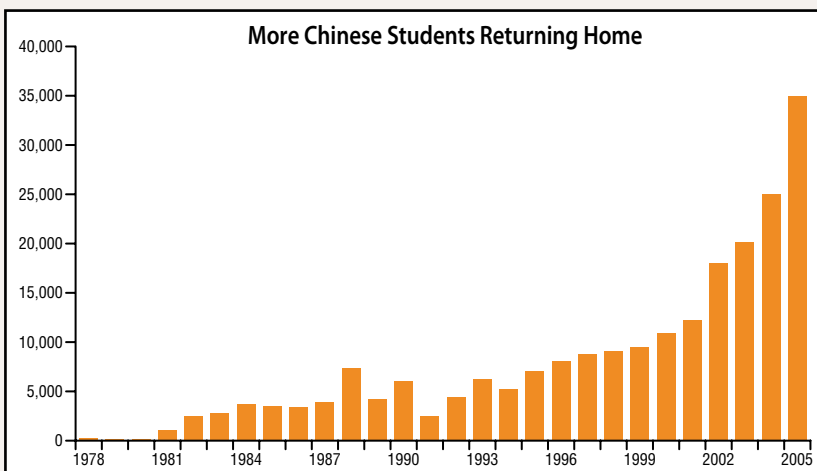
While the U.S. educates more foreigners than any other country, it still leads the world by a large margin in college graduates as a share of its own adult population (*below*).



Percentage of the Highly Skilled Population That's Foreign Born		
	1995	2001
Austria	15.0	14.3
Belgium	9.7	10.1
Canada	19.8	25.8
Denmark	5.2	7.6
France	12.3	12.4
Greece	6.1	12.1
Ireland	11.3	18.1
Italy	.9	6.1
Luxembourg	40.1	49.0
Netherlands	8.8	8.8
Portugal	2.8	15.3
Spain	3.8	6.5
Sweden	8.2	14.2
United Kingdom	8.8	16.0
United States	11.5	14.5

On the Move

In the past decade, more educated workers have crossed borders in search of opportunities (*left*). Not long ago, many Chinese who studied overseas stayed there. But now a fast-growing economy is luring them home (*below*).



doing so in record numbers, with the U.S. the top destination.

An interconnected world facilitates the transfer of disembodied knowledge across national boundaries. For example, an Internet search led BrassCraft, a valve manufacturer, to a company in a small European village, the only source of the specialized knowledge needed to automate its operations (*see page 25*).

Knowledge workers have more mobility today than they did even a decade ago. (*See Exhibit 9.*) A headlong rush toward a market economy has made knowledge worth more in China. As a result, a growing number of Chinese students educated in the U.S. and elsewhere are returning home, taking with them knowledge they can use in their country's fast-moving economic development.

Embodied knowledge spills over proliferated in the Industrial Age. Physical goods dominated world trade and long-distance communication was expensive. We still see a lot of these spillovers, but today's information-rich globalization creates far greater opportunities for transferring know-how not internalized in goods and services.

Spread of Nonrivalrous Consumption

Most material goods are rivalrous. A shirt can be worn by only one person at a time. A meal can be eaten only once. However, billions of people log on to the Internet at the same time. One person's use doesn't inhibit use by someone else down the street or, for that matter, in the deserts of Mongolia. The Internet is nonrivalrous in consumption.

Newly added TV viewers don't reduce the consumption of those already tuned in. Oprah Winfrey's talk show broadcasts to 126 countries. She's not alone. A large and growing number of TV channels are reaching global audiences. MTV, for example, was seen in 496 million households in 2006. (*See Exhibit 10.*) As broadband Internet connections spread, all forms of audio and video will become truly global extensions of nonrivalrous consumption.

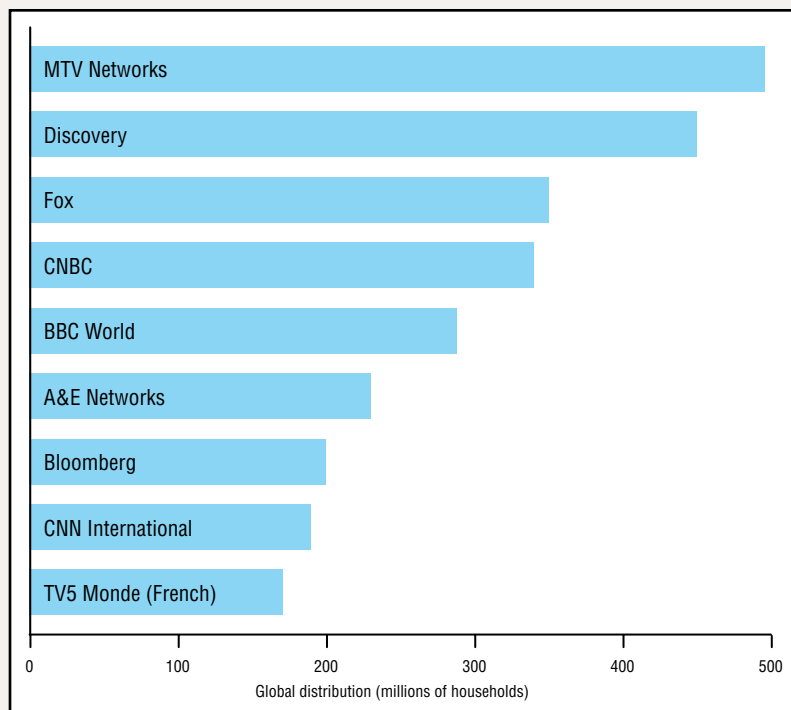
Many people consuming simultaneously can even make for a better product. The more households with phones, the greater value in owning one. A bonus from popular movies and TV

shows lies in the added enjoyment of talking about them with other viewers. From e-mail to package delivery, networked services illustrate how nonrivalrous consumption adds value.

The Industrial Age was one of rivalrous goods. Supply was limited, and increases in demand tended to bid up prices. More of today's consumption is nonrivalrous, made possible by the technologies that disseminate information quickly and cheaply to large audiences. When it comes to knowledge products, supply isn't limited in the traditional sense. An increase in demand doesn't necessarily raise prices. In fact, it often lowers them.

EXHIBIT 10 On the Air, Everywhere

Television provides nonrivalrous consumption and faces few technological barriers to reaching a global audience.



Finding Technology in Faraway Places

Behind every sink and toilet, you'll find a water ball stop—a valve to turn the water on and off. Traditional stops, dating to the 1940s, require eight or nine wrist-wrenching rotations.

BrassCraft made this kind of stop but figured a nice market could be built for one that accomplished the task in a quick quarter turn.

The company's Lancaster, Texas, plant produced traditional stops in two 10-hour shifts. A semiautomated process limited output per operator to 6,500 valves per shift.

"It was all about manual dexterity, and the operator would go on autopilot pretty quickly," says director of operations Jim Bevan (*below*).

Using the same technology to produce quarter-turn valves would require too much handling to make operations

profitable. So BrassCraft faced the same challenge as Henry Ford: How to mass produce in the U.S. with lower labor input. The obvious solution was a higher degree of automation, but the technology simply didn't exist.

Or did it?

Don Glover, engineering vice president at BrassCraft's Novi, Mich., headquarters, had heard of a European company that made equipment to produce quarter-turn gas valves. Gregg Koehn, director of manufacturing engineering, scoured the Internet, finding his mark in a small town he'd never even heard of.

In January 2002, Bevan and Koehn took off on a quest key to their company's future.

"What's impressive about the equipment we found is that they've forgotten more than anyone's ever

known about this type of assembly," Bevan says.

BrassCraft's goal was technology that could produce a ball stop valve every three seconds, with operators limited to troubleshooting. In the first meeting, working through translators, the equipment maker concluded that it could build machines to make one every 3.25 seconds. The European company vowed to find a way to squeeze out that quarter-second.

Seeing similar equipment in motion sealed the deal. Bevan and Koehn observed a machine that turned out valves with grand efficiency, controlled by a single operator who only had to touch every 100th piece.

Bevan had his nirvana moment. "It was just beautiful to someone with an engineering background," he says. "Every single principle I had learned was there in glorified form. The process was quiet and precise."

A custom-made machine arrived at the Lancaster factory right on schedule, in November 2002. Three European technicians spent three weeks installing it, sipping espresso on their breaks, thanks to a machine BrassCraft bought to help them feel at home.

In its first four years, the machine has produced millions of valves. Productivity is up almost 700 percent—and not one valve has been returned as defective.

Globalization facilitates the kind of knowledge spillovers that gave BrassCraft a big productivity boost. As ball stop valves keep coming off the machine, BrassCraft continues to reap the dividends of an integrated world economy.



EXHIBIT 11 A Guide to Globalization, Productivity and Cost

Globalization raises productivity and reduces cost in 10 ways.

Factor	How It Works
Lower Communication and Transportation Costs	Consumers benefit directly when moving information and goods across international borders becomes cheaper. Communication and transportation drive the other factors in this guide, offering even greater potential for higher productivity and lower costs.
Better Production Functions	When communication and transportation are cheap and easy, firms have access to productive inputs anytime, anywhere. Firms can develop and manage production functions less constrained by skills, work hours, cost and availability of local labor. They're also less reliant on local resources and capital.
Stronger Competition	Increased competition makes it harder for firms to raise prices when costs rise, forcing managers to find better ways to produce. Those who do, survive; those who don't are eliminated. In this way, production is constantly transferred to the most efficient, adaptable and innovative firms.
Greater Specialization	People and nations become more efficient when they concentrate on what they do best and meet other needs through trade. Output increases with equal or less labor input—a pure productivity gain. Even better, specialization focuses attention on specific tasks, leading us to think more deeply about how to improve production processes. What stimulates innovation raises productivity growth.
Larger Market Size	The bigger the market, the greater the potential sales and profits. Market size stimulates innovation and business formation by offering inventors, entrepreneurs and capitalists greater return for their ideas, effort and risk.
Extended Economies of Scale	Most knowledge-intensive goods are produced under conditions of high fixed and low marginal costs, which create substantial economies of scale. Larger markets expand producers' reach, allowing them to spread the fixed costs over even more customers. The results are lower unit costs of production and lower prices for consumers.
Broader Capital Markets	Access to global capital enables entrepreneurs to shift productive assets to uses with the highest returns, wherever they may be.
More-Contestable Markets	In a world of isolated nations, a supplier in a small country may have substantial monopoly power. Integrating economies puts producers everywhere in competition, with access to a virtually limitless supply of capital. The threat of new entrants discourages suppliers from charging too much.
Greater Knowledge Spillovers	The transfer of productive knowledge makes economies more efficient. Knowledge has long moved across borders through trade (embodied knowledge). Now, more of the spillovers are general information and research (disembodied knowledge), creating larger economic ripples.
Spread of Nonrivalrous Consumption	Products are nonrivalrous when one person's consumption doesn't diminish another's. TV, movies and the Internet are examples of nonrivalrous goods that can serve additional customers without significant additional costs, thereby contributing to lower costs as they speed around the globe.

Living Standards on the Rise

The world's reservoir of knowledge has risen steadily in recent decades. What's more remarkable about our times, though, is our instant access to knowledge acquired anywhere on the planet. The technologies that make it cheaper to create, store, process and move information bring far-flung economies closer together—in a very real sense, making the world a smaller place.

Declining costs for moving goods and information drive globalization itself and propel the private sector to produce more at lower costs. The economic forces globalization unleashes are basic: international production functions, competition, specialization, larger markets, economies of scale, capital flows, more-contestable

markets, knowledge spillovers and nonrivalrous consumption. (See *Exhibit 11*.)

While conceptually distinct, these forces feed into each other in the real world, boosting their power. Specialization, for example, creates opportunities to further extend economies of scale. Knowledge spillovers hasten improvements in production functions.

All told, the greater productivity from globalization reduces costs and price pressures in the Knowledge Economy, much as it did in the Industrial Age. What's changed isn't the nature of the productivity push but its scope, reaching more countries and affecting more industries.

The planet has been becoming richer as a result. Global productivity growth has nearly doubled, going from 1.2 percent a year in

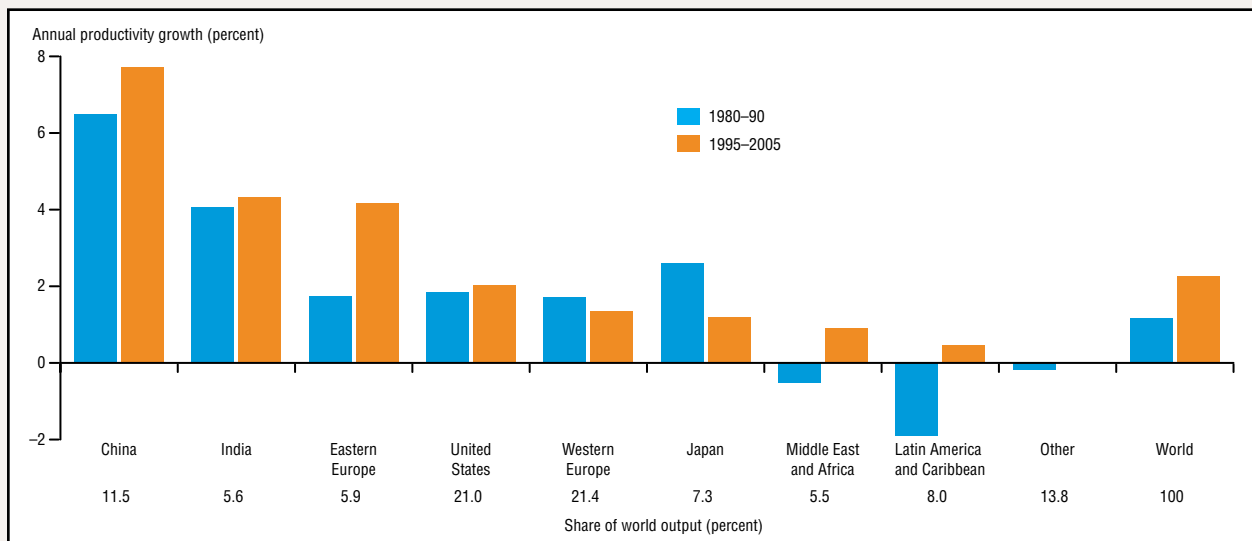
the 1980s to 2.3 percent a year in the past decade. Just as important, gains have been widespread. All regions except Western Europe and Japan did better in the past decade than they did in the 1980s. (See *Exhibit 12*.) The faster rise in productivity bodes well for both living standards and the real cost of living.

The Industrial Age delivered huge gains in productivity, allowing more people to live better. The Knowledge Economy promises even greater progress. A technological revolution that makes access to information cheaper and more democratic has sped up globalization, spread its benefits deeper into societies and touched nearly every part of the world. Knowledge is the ultimate source of wealth. Through globalization, we can spread its bounty.

— *W. Michael Cox and Richard Alm*

EXHIBIT 12 World Productivity Growth on the Rise

Fundamental economic forces have sped up productivity gains in nearly all parts of the world. Becoming more efficient reduces costs. Just as important, it leads to higher living standards—the real gain from globalizing the Knowledge Economy.



NOTES AND CREDITS

Acknowledgments

"The Best of All Worlds" 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 a senior economics writer in the Bank's Research Department. Julia K. Carter, a senior economic analyst at the Bank, provided important research assistance on the project. Danielle DiMartino, economics writer at the Bank, wrote the stories on pages 10, 17 and 25.

Exhibit Notes and Data Sources

EXHIBIT 1

Robert J. Barro and Jong-Wha Lee (2000), "International Data on Educational Attainment: Updates and Implications," Working Paper no. 42, Center for International Development, Harvard University, April.

Organization for Economic Cooperation and Development (OECD), *Education at a Glance: OECD Indicators 2006*.

OECD, *Science, Technology and Industry Outlook 2006*.

National Science Foundation, *Science and Engineering Indicators 2006*.

United Nations Educational, Scientific and Cultural Organization, *UNESCO Statistical Yearbook 1998 and Global Education Digest 2006*.

National Institute for Research Advancement, *NIRA's World Directory of Think Tanks 2002*, www.nira.go.jp/ice/nwdtt/2005/intro/intro2002.html.

World Intellectual Property Organization, statistics on patents.

National Human Genome Research Institute, <http://genome.gov>.

International Telecommunication Union (ITU), *World Telecommunication Development Report 2003* and World Telecommunication Indicators database.

World Bank, World Development Indicators database.

Thomas M. Lenard and Daniel B. Britton (2006), *The Progress & Freedom Founda-*

tion, The Digital Economy Fact Book, 8th edition.

Peter Lyman and Hal R. Varian (2003), "How Much Information?" School of Information Management and Systems, University of California at Berkeley.

Semiconductor Industry Association, *Global Billings Report History*.

Bureau of Economic Analysis (BEA), national economic accounts, fixed assets.

Wikipedia, www.wikipedia.org.

EXHIBIT 2

Wikipedia.

EXHIBIT 3

Historical Statistics of the United States: Millennial Edition Online, Cambridge University Press.

Federal Communications Commission, *Trends in the International Telecommunications Industry 1998 and 2005*.

International Data Corp. (unpublished data).

EXHIBIT 4

David L. Hummels (forthcoming), "Transportation Costs and International Trade in the Second Era of Globalization," *Journal of Economic Perspectives*.

EXHIBIT 5

Inflation and trade openness data are for 1987–2003. The horizontal axis measures the growth in a sector's import-to-production ratio. The vertical axis measures the inflation in a sector's producer prices relative to the economywide average.

World Bank, World Development Indicators database.

International Monetary Fund, *World Economic Outlook*, April 2006.

EXHIBIT 6

World Bank, World Development Indicators database.

BEA, national and international economic accounts.

EXHIBIT 7

Nash Information Services, www.the-numbers.com, movie budget records.

EXHIBIT 8

ITU, Information and Communication Technology statistics database (ICT Eye).

EXHIBIT 9

The chart illustrating educational gaps covers only countries with populations that exceed 30 million.

OECD, *Education at a Glance*, 2006.

Robert Barro and Jong-Wha Lee (2000).

OECD, *Science, Technology and Industry Outlook 2006*.

Chinese Ministry of Education.

EXHIBIT 10

Viacom, www.viacom.com.

Discovery Networks International, <http://corporate.discovery.com>.

News Corp., Fox International Channels, www.newscorp.com.

CNBC, www.cnn.com.

BBC World, www.bbcworldwide.com.

A&E Television Networks, www.aetninternational.com.

Bloomberg, <http://about.bloomberg.com>.

London Business School Media Club, www.londonmediacub.org/summit/sponsors.html.

TV5 Monde, <http://tv5.org>.

EXHIBIT 12

World Bank, World Development Indicators database.

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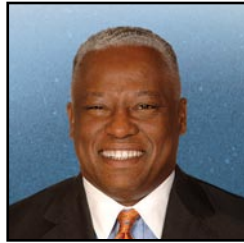
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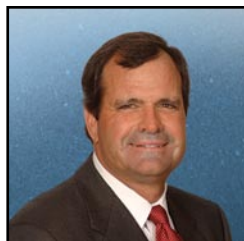


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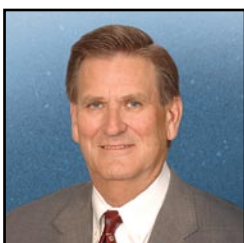
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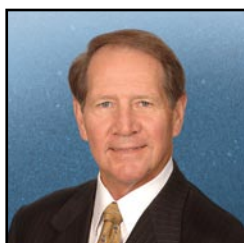
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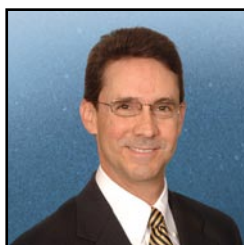
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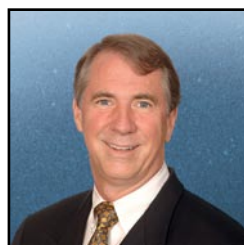
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As of December 31, 2006

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MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

March 5, 2007

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, 2006 (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 Federal Reserve Banks* ("Manual"), and as such, include amounts, some of which are based on management judgments and estimates. 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 establishing and maintaining effective internal control over financial reporting as it relates to the Financial Statements. Such internal control is designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of the Financial Statements in accordance with the Manual. Internal control contains self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in internal control are reported to management and appropriate corrective measures are implemented.

Even effective internal control, 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. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The management of the FRBD assessed its internal control over financial reporting 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. Based on this assessment, we believe that the FRBD maintained effective internal control over financial reporting as it relates to the Financial Statements.

Management's assessment of the effectiveness of the FRBD's internal control over financial reporting as of December 31, 2006, is being audited by PricewaterhouseCoopers LLP, the independent registered public accounting firm which also is auditing the FRBD's Financial Statements.

Federal Reserve Bank of Dallas



President



First Vice President



Principal Financial Officer

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 completed an integrated audit of the Federal Reserve Bank of Dallas' 2006 financial statements, and of its internal control over financial reporting as of December 31, 2006, and an audit of its 2005 financial statements in accordance with the generally accepted auditing standards as established by the Auditing Standards Board (United States) and in accordance with the auditing standards of the Public Company Accounting Oversight Board (United States). Our opinions, based on our audits, are presented below.

Financial statements

We have audited the accompanying statements of condition of the Federal Reserve Bank of Dallas (the "Bank") as of December 31, 2006 and 2005, 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 these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards as established by the Auditing Standards Board (United States) and in accordance with the auditing standards of the Public Company Accounting Oversight Board (United States). 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, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As described in Note 3, these 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*, which is 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, 2006 and 2005, and results of its operations for the years then ended, on the basis of accounting described in Note 3.

Internal control over financial reporting

Also, in our opinion, management's assessment, included in the accompanying Management's report on Internal Control Over Financial Reporting, that the Bank maintained effective internal

REPORT OF INDEPENDENT AUDITORS (continued)

control over financial reporting as of December 31, 2006, based on criteria established in *Internal Control – Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), is fairly stated, in all material respects, based on those criteria. Furthermore, in our opinion, the Bank maintained, in all material respects, effective internal control over financial reporting as of December 31, 2006, based on criteria established in *Internal Control – Integrated Framework* issued by the COSO. The Bank's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express opinions on management's assessment and on the effectiveness of the Bank's internal control over financial reporting based on our audit. We conducted our audit of internal control over financial reporting in accordance with generally accepted auditing standards as established by the Auditing Standards Board (United States) and in accordance with the auditing standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. An audit of internal control over financial reporting includes obtaining an understanding of internal control over financial reporting, evaluating management's assessment, testing and evaluating the design and operating effectiveness of internal control, and performing such other procedures as we consider necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

PricewaterhouseCoopers LLP

March 12, 2007

Statements of Condition (in millions)

	December 31, 2006	December 31, 2005
ASSETS		
Gold certificates	\$ 575	\$ 549
Special drawing rights certificates	98	98
Coin	81	67
Items in process of collection	348	535
Loans to depository institutions	—	3
U.S. government securities, net	35,168	36,949
Investments denominated in foreign currencies	236	217
Accrued interest receivable	302	287
Interdistrict settlement account	3,537	—
Bank premises and equipment, net	294	297
Other assets	25	29
	<u>\$ 40,664</u>	<u>\$ 39,031</u>
LIABILITIES AND CAPITAL		
Liabilities		
Federal Reserve notes outstanding, net	\$ 37,759	\$ 33,311
Securities sold under agreements to repurchase	1,329	1,502
Deposits:		
Depository institutions	704	811
Other deposits	1	1
Deferred credit items	306	303
Interest on Federal Reserve notes due U.S. Treasury	37	31
Interdistrict settlement account	—	2,693
Accrued benefit costs	91	58
Other liabilities	13	15
	<u>40,240</u>	<u>38,725</u>
Capital		
Capital paid-in	212	153
Surplus (including accumulated other comprehensive loss of \$28 million at December 31, 2006)	212	153
	<u>424</u>	<u>306</u>
	<u>\$ 40,664</u>	<u>\$ 39,031</u>

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

Statements of Income (in millions)

INTEREST INCOME

Interest on U.S. government 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

Compensation received for services provided
Reimbursable services to government agencies
Foreign currency gains (losses), net
Other income

Total other operating income

OPERATING EXPENSES

Salaries and other benefits
Occupancy expense
Equipment expense
Assessments by the Board of Governors
Other expenses

Total operating expenses

Net income prior to distribution

DISTRIBUTION OF NET INCOME

Dividends paid to member banks
Transferred to surplus
Payments to U.S. Treasury as interest on Federal Reserve notes

Total distribution

FOR THE YEARS ENDED

December 31, 2006

December 31, 2005

\$ 1,621	\$ 1,360
4	3
<u>1,625</u>	<u>1,363</u>
61	39
<u>1,564</u>	<u>1,324</u>
60	49
14	11
14	(32)
3	4
<u>91</u>	<u>32</u>
112	101
20	20
12	11
29	33
59	51
<u>232</u>	<u>216</u>
<u>\$ 1,423</u>	<u>\$ 1,140</u>
\$ 12	\$ 9
87	18
1,324	1,113
<u>\$ 1,423</u>	<u>\$ 1,140</u>

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

**Statements of Changes in Capital
for the Years Ended December 31, 2006,
and December 31, 2005
(in millions)**

	Capital Paid-In	Surplus			Total Capital
		Net Income Retained	Accumulated Other Comprehensive Loss	Total Surplus	
BALANCE AT JANUARY 1, 2005 (2.7 million shares)	\$ 135	\$ 135	\$ —	\$ 135	\$ 270
Net change in capital stock issued (0.4 million shares)	18			—	18
Transferred to surplus	—	18		18	18
BALANCE AT DECEMBER 31, 2005 (3.1 million shares)	\$ 153	\$ 153	\$ —	\$ 153	\$ 306
Net change in capital stock issued (1.1 million shares)	59			—	59
Transferred to surplus	—	87		87	87
Adjustment to initially apply FASB Statement No. 158	—		(28)	(28)	(28)
BALANCE AT DECEMBER 31, 2006 (4.2 million shares)	<u>\$ 212</u>	<u>\$ 240</u>	<u>\$ (28)</u>	<u>\$ 212</u>	<u>\$ 424</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”) and one of the twelve Reserve Banks (“Reserve Banks”) created by Congress under the Federal Reserve Act of 1913 (“Federal Reserve Act”), which established the central bank of the United States. 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.

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 of the Federal Reserve System (“Board of Governors”) to represent the public, and six directors are elected by member banks. Banks that are members of the System include all national banks and any state-chartered banks that apply and are approved for membership in the System. 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.

The System also consists, in part, of the Board of Governors and the Federal Open Market Committee (“FOMC”). The Board of Governors, an independent federal agency, is charged by the Federal Reserve Act with a number of specific duties, including general supervision over the Reserve Banks. 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.

2. OPERATIONS AND SERVICES

The Reserve Banks perform a variety of services and operations. Functions include participation in formulating and conducting monetary policy; participation in the payments system, including large-dollar transfers of funds, automated clearinghouse (“ACH”) operations, and check collection; distribution of coin and currency; performance of fiscal agency functions for the U.S. Treasury, certain federal agencies, and other entities; serving as the federal government’s bank; provision of short-term loans to depository institutions; service to the consumer and the community by providing educational materials and information regarding consumer laws; and supervision of bank holding companies, state member banks, and U.S. offices of foreign banking organizations. The Reserve Banks also provide certain services to foreign central banks, governments, and international official institutions.

The FOMC, in the conduct of monetary policy, establishes policy regarding domestic open market operations, oversees these operations, and annually issues authorizations and directives to the FRBNY for its execution of transactions. The FRBNY is authorized and directed by the FOMC to conduct operations in domestic markets, including the direct purchase and sale of U.S. government securities, 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 executes these open market transactions at the direction of the FOMC and holds the resulting securities, with the exception of securities purchased under agreements to resell, 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. The FRBNY is authorized by the FOMC to hold balances of, and to execute spot and forward foreign exchange ("FX") and securities contracts for, nine foreign currencies and to invest such foreign currency holdings ensuring adequate liquidity is maintained. The FRBNY is authorized and directed by the FOMC to maintain reciprocal currency arrangements ("FX swaps") with two central banks and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks. In connection with its foreign currency activities, the FRBNY may enter into transactions that contain varying degrees of off-balance-sheet market risk that results from their future settlement and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

Although the Reserve Banks are separate legal entities, in the interests of greater efficiency and effectiveness they collaborate in the delivery of certain operations and services. The collaboration takes the form of centralized operations and product or service offices that have responsibility for the delivery of certain services on behalf of the Reserve Banks. Various operational and management models are used and are supported by service agreements between the Reserve Bank providing the service and the other eleven Reserve Banks. In some cases, costs incurred by a Reserve Bank for services provided to other Reserve Banks are not shared; in other cases, the Reserve Banks are billed for services provided to them by another Reserve Bank.

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 Automation Services; National Examination Data System; Desktop Standardization Initiative; Lawson Central Business Administration Function; Accounts, Risk and Credit System; and *Go Direct*SM.

During 2005, the Federal Reserve Bank of Atlanta ("FRBA") was assigned the overall responsibility for managing the Reserve Banks' provision of check services to depository institutions, and, as a result, recognizes total System check revenue on its Statements of Income. Because the other eleven Reserve Banks incur costs to provide check services, a policy was adopted by the Reserve Banks in 2005 that required that the FRBA compensate the other Reserve Banks for costs incurred to provide check services. In 2006 this policy was extended to the ACH services, which are managed by the FRBA, as well as to Fedwire funds transfer and securities transfer services, which are managed by the FRBNY. The FRBA and the FRBNY compensate the other Reserve Banks for the costs incurred to provide these services. This compensation is reported as a component of "Compensation received for services provided," and the Bank would have reported \$51 million as compensation received for services provided had this policy been in place in 2005 for ACH, Fedwire funds transfer, and securities transfer services.

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 accounting standard-setting bodies. The Board of Governors has developed specialized accounting principles and practices that it considers to be appropriate for the nature and function of a central bank, which differ significantly from those of 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 of the Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual, and the financial statements have been prepared in accordance with the Financial Accounting Manual.

Differences exist between the accounting principles and practices in the Financial Accounting Manual and generally accepted accounting principles in the United States (“GAAP”), primarily due to the unique nature of the Bank’s powers and responsibilities as part of the nation’s central bank. The primary difference is the presentation of all securities holdings at amortized cost, rather than using the fair value presentation required by GAAP. Amortized cost more appropriately reflects the Bank’s securities holdings given its unique responsibility to conduct monetary policy. While the application of current market prices to the securities holdings 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 Bank earnings or capital. Both the domestic and foreign components of the SOMA portfolio may involve transactions that result in gains or losses when holdings are sold prior to maturity. Decisions regarding securities and foreign currency 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 securities and currencies are incidental to the open market operations and do not motivate decisions related to policy or open market activities.

In addition, the Bank has elected not to present a Statement of Cash Flows because the liquidity and cash position of the Bank are not a primary concern given the Bank’s unique powers and responsibilities. A Statement of Cash Flows, therefore, would not provide any additional meaningful information. Other information regarding the Bank’s activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities, the 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. Certain amounts relating to the prior year have been reclassified to conform to the current-year presentation. Unique accounts and significant accounting policies are explained below.

a. Gold and Special Drawing Rights Certificates

The Secretary of the U.S. Treasury is authorized to issue gold and special drawing rights (“SDR”) certificates to the Reserve Banks.

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. The 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 reduced. 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 the average Federal Reserve notes outstanding in each Reserve Bank.

SDR certificates 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. SDR certificates 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. When SDR certificates are issued to the Reserve Banks, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks’ SDR certificate accounts are increased. The Reserve Banks are required to purchase 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 each Reserve Bank's Federal Reserve notes outstanding at the end of the preceding year. There were no SDR transactions in 2006 or 2005.

b. Loans to Depository Institutions

Depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in regulations issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Bank. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Outstanding loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. 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 board of directors of the Reserve Bank, subject to review and determination by the Board of Governors.

c. U.S. Government Securities and Investments Denominated in Foreign Currencies

U.S. government 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. Gains and losses resulting from sales of securities are determined by specific issues based on average cost. 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 (losses), net" in the Statements of Income.

Activity related to U.S. government securities, including the premiums, discounts, and realized and unrealized gains and losses, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings that occurs in April of each year. The settlement also equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding in each District. Activity related to investments denominated in foreign currencies is allocated to each Reserve Bank based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31.

d. Securities Sold Under Agreements to Repurchase and Securities Lending

Securities sold under agreements to repurchase are accounted for as financing transactions, and the associated interest expense is recognized over the life of the transaction. These transactions are reported in the Statements of Condition at their contractual amounts, and the related accrued interest payable is reported as a component of "Other liabilities."

U.S. government securities held in the SOMA are lent to U.S. government securities dealers in order to facilitate the effective functioning of the domestic securities market. Securities-lending transactions are fully collateralized by other U.S. government securities, and the collateral taken is in excess of the market value of the securities loaned. The FRBNY charges the dealer a fee for borrowing securities, and the fees are reported as a component of "Other income."

Activity related to securities sold under agreements to repurchase and securities lending is allocated to each of the Reserve Banks on a percentage basis derived from the annual settlement of interdistrict clearings. Securities purchased under agreements to resell are allocated to FRBNY and not allocated to the other Reserve Banks.

e. FX Swap Arrangements and Warehousing Agreements

FX swap arrangements are contractual agreements between two parties, the FRBNY and an authorized foreign central bank, to exchange specified currencies, at a specified price, on a specified date. The parties agree to exchange their currencies up to a prearranged

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 the foreign currencies it may need to intervene to support the dollar and give the authorized foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the FX swap arrangements can be initiated by either party acting as drawer, and must be agreed to by the drawee party. The FX swap arrangements are structured so that the party initiating the transaction bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an FX swap arrangement in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the U.S. Treasury, U.S. dollars for foreign currencies held by the U.S. 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 U.S. Treasury and ESF for financing purchases of foreign currencies and related international operations.

FX swap arrangements and warehousing agreements are revalued daily at current market exchange rates. Activity related to these agreements, with the exception of the unrealized gains and losses resulting from the daily revaluation, is allocated to each Reserve Bank based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31. Unrealized gains and losses resulting from the daily revaluation are allocated to FRBNY and not allocated to the other Reserve Banks.

f. 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 the estimated useful lives of the assets, which range from two to fifty years. Major alterations, renovations, and improvements are capitalized at cost as additions to the asset accounts and are depreciated over the remaining useful life of the asset or, if appropriate, over the unique useful life of the alteration, renovation, or improvement. Maintenance, repairs, and minor replacements are charged to operating expense in the year incurred.

Costs incurred for software during the application development stage, either developed internally or acquired for internal use, 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. Maintenance costs related to software are charged to expense in the year incurred.

Capitalized assets including software, buildings, leasehold improvements, furniture, and equipment are impaired when events or changes in circumstances indicate that the carrying amount of assets or asset groups is not recoverable and significantly exceeds their fair value.

g. Interdistrict Settlement Account

At the close of business each day, each Reserve Bank assembles the payments due to or from other Reserve Banks. These payments result from transactions between Reserve Banks and transactions that involve depository institution accounts held by other Reserve Banks, such as Fedwire funds transfer, check collection, security transfer, and ACH operations. The cumulative net amount due to or from the other Reserve Banks is reflected in the "Interdistrict settlement account" in the Statements of Condition.

h. 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 and their designees) to the Reserve Banks upon deposit with such agents of specified 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 at least equal to the sum of the notes applied for by such Reserve Bank.

Assets eligible to be pledged as collateral security include all of the Bank's assets. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, for which the 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 deducted.

The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. To satisfy the obligation to provide sufficient collateral for outstanding 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 issued to all Reserve Banks. 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, Federal Reserve notes are obligations of the United States and are backed by the full faith and credit of the United States government.

"Federal Reserve notes outstanding, net" in the Statements of Condition represents the Bank's Federal Reserve notes outstanding, reduced by the currency issued to the Bank but not in circulation, of \$19,391 million and \$17,163 million at December 31, 2006 and 2005, respectively.

i. Items in Process of Collection and Deferred Credit Items

"Items in process of collection" in the Statements of Condition primarily represents amounts attributable to checks that have been deposited for collection and that, as of the balance sheet date, have not yet been presented to the paying bank. "Deferred credit items" are the counterpart liability to items in process of collection, and the amounts in this account arise from deferring credit for deposited items until the amounts are collected. The balances in both accounts can vary significantly.

j. 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. These shares are nonvoting with a par value of \$100 and may not be transferred or hypothecated. As a member bank's capital and surplus change, its holdings of Reserve Bank stock must be adjusted. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. By law, each Reserve Bank is required to pay each member bank 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.

k. Surplus

The Board of Governors requires the Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31 of each year. 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.

Accumulated other comprehensive income is reported as a component of surplus in the Statements of Condition and the Statements of Changes in Capital. The balance of accumulated other comprehensive income is comprised of expenses, gains, and losses related to defined benefit pension plans and other postretirement benefit plans that, under accounting principles, are included in comprehensive income but excluded from net income. Additional information regarding the classifications of accumulated other comprehensive income is provided in Notes 9 and 10.

i. Interest on Federal Reserve Notes

The Board of Governors requires the Reserve Banks to transfer excess earnings to the U.S. Treasury as interest on Federal Reserve notes, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in. This amount is reported as a component of “Payments to U.S. Treasury as interest on Federal Reserve notes” in the Statements of Income and is reported as a liability in the Statements of Condition. Weekly payments to the U.S. Treasury may vary significantly.

In the event of losses or an increase in capital paid-in at a Reserve Bank, payments to the U.S. Treasury are suspended and earnings are retained until the surplus is equal to the capital paid-in.

In the event of a decrease in capital paid-in, the excess surplus, after equating capital paid-in and surplus at December 31, is distributed to the U.S. Treasury in the following year.

m. Income and Costs Related to U.S. 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.

n. Assessments by the Board of Governors

The Board of Governors assesses the Reserve Banks to fund its operations based on each Reserve Bank’s capital and surplus balances as of December 31 of the previous year. The Board of Governors also assesses each Reserve Bank for the expenses incurred for the U.S. Treasury to issue and retire Federal Reserve notes based on each Reserve Bank’s share of the number of notes comprising the System’s net liability for Federal Reserve notes on December 31 of the previous year.

o. 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 and \$4 million for the years ended December 31, 2006 and 2005, respectively, and are reported as a component of “Occupancy expense.”

p. Restructuring Charges

In 2003, the Reserve Banks began the restructuring of several operations, primarily check, cash, and U.S. Treasury services. The restructuring included streamlining the management and support structures, reducing staff, decreasing the number of processing locations, and increasing processing capacity in some locations. These restructuring activities continued in 2004 through 2006.

Note 11 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 impairment of certain of the Bank’s assets are discussed in Note 6. Costs and liabilities associated with enhanced pension benefits in connection with the restructuring activities for all of the Reserve Banks are recorded on the books of the FRBNY. Costs and liabilities associated with enhanced postretirement benefits are discussed in Note 9.

q. Implementation of FASB Statement No. 158, Employers’ Accounting for Defined Benefit Pension and Other Postretirement Plans

The Bank initially applied the provisions of FASB Statement No. 158, Employers’ Accounting for Defined Benefit Pension and Other Postretirement Plans, at December 31, 2006. This accounting standard requires recognition of the overfunded or underfunded status of a defined benefit postretirement plan in the Statements of Condition, and recognition of changes in the funded status in the years in which the changes occur through comprehensive income. The transition rules for implementing the standard

require applying the provisions as of the end of the year of initial implementation with no retrospective application. The incremental effects on the line items in the Statements of Condition at December 31, 2006, were as follows (in millions):

	Before Application of Statement 158	Adjustments	After Application of Statement 158
Accrued benefit costs	63	28	91
Total liabilities	\$ 40,212	\$ 28	\$ 40,240
Surplus	240	(28)	212
Total capital	\$ 452	\$ (28)	\$ 424

4. U.S. GOVERNMENT SECURITIES, SECURITIES SOLD UNDER AGREEMENTS TO REPURCHASE, AND SECURITIES LENDING

The FRBNY, on behalf of the Reserve Banks, holds securities bought outright in the SOMA. The Bank's allocated share of SOMA balances was approximately 4.488 percent and 4.925 percent at December 31, 2006 and 2005, respectively.

The Bank's allocated share of U.S. Government securities, net, held in the SOMA at December 31, was as follows (in millions):

	2006	2005
Par value:		
U.S. government		
Bills	\$ 12,432	\$ 13,361
Notes	18,058	18,721
Bonds	4,467	4,572
Total par value	34,957	36,654
Unamortized premiums	391	434
Unaccreted discounts	(180)	(139)
Total allocated to the Bank	\$35,168	\$36,949

At December 31, 2006 and 2005, the fair value of the U.S. government securities allocated to the Bank, excluding accrued interest, was \$35,719 million and \$37,799 million, respectively, as determined by reference to quoted prices for identical securities.

The total of the U.S. government securities, net, held in the SOMA was \$783,619 million and \$750,202 million at December 31, 2006 and 2005, respectively. At December 31, 2006 and 2005, the fair value of the U.S. government securities held in the SOMA, excluding accrued interest, was \$795,900 million and \$767,472 million, respectively, as determined by reference to quoted prices for identical securities.

Although the fair value of security holdings can be substantially greater or less than the carrying value at any point in time, these unrealized gains or losses have no effect on the ability of a Reserve Bank, as a central bank, to meet its financial obligations and responsibilities, and should not be misunderstood as representing a risk to the Reserve Banks, their shareholders, or the public. The fair value is presented solely for informational purposes.

At December 31, 2006 and 2005, the total contract amount of securities sold under agreements to repurchase was \$29,615 million and \$30,505 million, respectively, of which \$1,329 million and \$1,502 million were allocated to the Bank. The total par value of the SOMA securities that were pledged for securities sold under agreements to repurchase at December 31, 2006 and 2005, was \$29,676 million and \$30,559 million, respectively, of which \$1,332 million and \$1,505 million was allocated to the Bank. The contract amount for securities sold under agreements to repurchase approximates fair value.

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, 2006, was as follows (in millions):

	U.S. Government Securities (Par value)	Securities Sold Under Agreements to Repurchase (Contract amount)
Within 15 days	\$ 1,822	\$ 1,329
16 days to 90 days	8,118	—
91 days to 1 year	8,308	—
Over 1 year to 5 years	10,061	—
Over 5 years to 10 years	3,036	—
Over 10 years	3,612	—
Total allocated to the Bank	\$ 34,957	\$ 1,329

At December 31, 2006 and 2005, U.S. government securities with par values of \$6,855 million and \$3,776 million, respectively, were loaned from the SOMA, of which \$308 million and \$186 million, respectively, 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 with 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 issuing foreign governments.

The Bank's allocated share of investments denominated in foreign currencies was approximately 1.154 percent and 1.146 percent at December 31, 2006 and 2005, respectively.

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

	2006	2005
European Union Euro:		
Foreign currency deposits	\$ 72	\$ 62
Securities purchased under agreements to resell	25	22
Government debt instruments	47	41
Japanese Yen:		
Foreign currency deposits	30	30
Government debt instruments	62	62
Total allocated to the Bank	\$236	\$217

At December 31, 2006 and 2005, the fair value of investments denominated in foreign currencies, including accrued interest, allocated to the Bank was \$236 million and \$217 million, respectively. The fair value of government debt instruments was determined by reference to quoted prices for identical securities. The cost basis of foreign currency deposits and securities purchased under agreements to resell, adjusted for accrued interest, approximates fair value. Similar to the U.S. government securities discussed in Note 4, unrealized gains or losses have no effect on the ability of a Reserve Bank, as a central bank, to meet its financial obligations and responsibilities.

Total System investments denominated in foreign currencies were \$20,482 million and \$18,928 million at December 31, 2006 and 2005, respectively. At December 31, 2006 and 2005, the fair value of the total System investments denominated in foreign currencies, including accrued interest, was \$20,434 million and \$18,965 million, respectively.

The maturity distribution of investments denominated in foreign currencies that were allocated to the Bank at December 31, 2006, was as follows (in millions):

	European Euro	Japanese Yen	Total
Within 15 days	\$ 50	\$ 30	\$ 80
16 days to 90 days	27	14	41
91 days to 1 year	28	26	54
Over 1 year to 5 years	39	22	61
Over 5 years to 10 years	—	—	—
Over 10 years	—	—	—
Total allocated to the Bank	\$ 144	\$ 92	\$ 236

At December 31, 2006 and 2005, there were no material open foreign exchange contracts.

At December 31, 2006 and 2005, 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):

	2006	2005
Bank premises and equipment:		
Land	\$ 60	\$56
Buildings	222	220
Building machinery and equipment	36	36
Construction in progress	2	2
Furniture and equipment	75	75
Subtotal	395	389
Accumulated depreciation	(101)	(92)
Bank premises and equipment, net	\$294	\$297
Depreciation expense, for the year ended December 31	\$ 13	\$ 11

The Bank leases space to outside tenants with remaining lease terms ranging from one to nine years. Rental income from such leases was \$174 thousand and \$101 thousand for the years ended December 31, 2006 and 2005, respectively, and is reported as a component of "Other income." Future minimum lease payments that the Bank will receive under noncancelable lease agreements in existence at December 31, 2006, are as follows (in thousands):

2007	\$ 183
2008	182
2009	182
2010	186
2011	189
Thereafter	649
Total	\$ 1,571

The Bank has capitalized software assets, net of amortization, of \$6 million and \$5 million at December 31, 2006 and 2005, respectively. Amortization expense was \$2 million for each of the years ended December 31, 2006 and 2005. Capitalized software assets are reported as a component of "Other assets," and the related amortization is reported as a component of "Other expenses."

The Bank had no impairment losses in 2006 and 2005.

7. COMMITMENTS AND CONTINGENCIES

At December 31, 2006, the Bank was obligated under noncancelable leases for premises and equipment with remaining terms ranging from two to approximately four 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 \$212 thousand and \$1 million for the years ended December 31, 2006 and 2005, respectively. Certain of the Bank's leases have options to renew.

Future minimum rental payments under noncancelable operating leases and capital leases, net of sublease rentals, with terms of one year or more, at December 31, 2006, were not material.

At December 31, 2006, there were no other material commitments or long-term obligations in excess of one year.

Under the Insurance Agreement of the Federal Reserve Banks, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1 percent of the capital paid-in of the claiming Reserve Bank, up to 50 percent of the total capital paid-in of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank's capital paid-in bears to the total capital paid-in of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under the agreement at December 31, 2006 or 2005.

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 three 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"). Employees at certain compensation levels participate in the Benefit Equalization Retirement Plan ("BEP"), and certain Reserve Bank officers participate in the Supplemental Employee Retirement Plan ("SERP").

The System Plan is a multi-employer plan with contributions funded by the participating employers. Participating employers are the Federal Reserve Banks, the Board of Governors, 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 System Plan, and the costs associated with the Plan are not redistributed to other participating employers.

The Bank's projected benefit obligation, funded status, and net pension expenses for the BEP and the SERP at December 31, 2006 and 2005, and for the years then ended, were 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 and \$3 million for the years ended December 31, 2006 and 2005, respectively, and are reported as a component of "Salaries and other benefits" in the Statements of Income. The Bank matches employee contributions based on a specified formula. For the years ended December 31, 2006 and 2005, the Bank matched 80 percent on the first 6 percent of employee contributions for employees with less than five years of service and 100 percent on the first 6 percent of employee contributions for employees with five or more years of service.

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.

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

	2006	2005
Accumulated postretirement benefit obligation at January 1	\$ 67.5	\$ 59.4
Service cost-benefits earned during the period	2.1	1.6
Interest cost on accumulated benefit obligation	4.0	3.5
Actuarial loss	12.1	5.7
Contributions by plan participants	1.0	0.9
Benefits paid	(3.8)	(3.6)
Accumulated postretirement benefit obligation at December 31	\$ 82.9	\$ 67.5

At December 31, 2006 and 2005, the weighted-average discount rate assumptions used in developing the postretirement benefit obligation were 5.75 percent and 5.50 percent, respectively.

Discount rates reflect yields available on high-quality corporate bonds that would generate the cash flows necessary to pay the plan's benefits when due.

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):

	2006	2005
Fair value of plan assets at January 1	\$ —	\$ —
Contributions by the employer	2.8	2.7
Contributions by plan participants	1.0	0.9
Benefits paid	(3.8)	(3.6)
Fair value of plan assets at December 31	\$ —	\$ —
Unfunded postretirement benefit obligation	\$ 82.9	\$ 67.5
Unrecognized prior service cost		3.2
Unrecognized net actuarial loss		(20.7)
Accrued postretirement benefit cost		\$ 50.0
Amounts included in accumulated other comprehensive loss are shown below (in millions):		
Prior service cost	\$ 2.7	
Net actuarial loss	(31.0)	
Total accumulated other comprehensive loss	\$ (28.3)	

Accrued postretirement benefit costs are reported as a component of “Accrued benefit costs” in the Statements of Condition.

For measurement purposes, the assumed health care cost trend rates at December 31 are as follows:

	2006	2005
Health care cost trend rate assumed for next year	9.00%	9.00%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	5.00%	5.00%
Year that the rate reaches the ultimate trend rate	2012	2011

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, 2006 (in millions):

	One Percentage Point Increase	One Percentage Point Decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit costs	\$ 1.1	\$ (0.9)
Effect on accumulated postretirement benefit obligation	11.0	(9.1)

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

	2006	2005
Service cost-benefits earned during the period	\$ 2.1	\$ 1.6
Interest cost on accumulated benefit obligation	4.0	3.5
Amortization of prior service cost	(0.4)	(0.4)
Recognized net actuarial loss	1.8	1.2
Net periodic postretirement benefit expense	\$ 7.5	\$ 5.9
Estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic postretirement benefit expense in 2007 are shown below (in millions):		
Prior service cost	\$ (0.4)	
Actuarial loss	3.1	
Total	\$ 2.7	

Net postretirement benefit costs are actuarially determined using a January 1 measurement date. At January 1, 2006 and 2005, the weighted-average discount rate assumptions used to determine net periodic postretirement benefit costs were 5.50 percent and 5.75 percent, respectively

Net periodic postretirement benefit expense is reported as a component of “Salaries and other benefits” in the Statements of Income.

The Medicare Prescription Drug, Improvement and Modernization Act of 2003 established a prescription drug benefit under Medicare (“Medicare Part D”) and a federal subsidy to sponsors of retiree health care benefit plans that provide benefits that are at least actuarially equivalent to Medicare Part D. The benefits provided under the Bank’s plan to certain participants are at least actuarially equivalent to the Medicare Part D prescription drug benefit. The estimated effects of the subsidy, retroactive to January 1, 2004, are reflected in actuarial loss in the accumulated postretirement benefit obligation.

There were no receipts of federal Medicare subsidies in the year ended December 31, 2006. Expected receipts in the year ending December 31, 2007, related to payments made in the year ended December 31, 2006, are \$0.2 million.

Following is a summary of expected postretirement benefit payments (in millions):

	Without Subsidy	With Subsidy
2007	\$ 4.0	\$ 3.7
2008	4.3	4.0
2009	4.8	4.4
2010	5.2	4.8
2011	5.6	5.1
2012–2016	32.5	29.3
Total	\$ 56.4	\$ 51.3

Postemployment Benefits

The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined using a December 31 measurement date and include the cost of medical and dental insurance, survivor income, and disability benefits. The accrued postemployment benefit costs recognized by the Bank were \$7 million for each of the years ended December 31, 2006 and 2005. This cost is included as a component of “Accrued benefit costs” in the Statements of Condition. Net periodic postemployment benefit expenses included in operating expenses were \$1 million for each of the years ended December 31, 2006 and 2005, and are recorded as a component of “Salaries and other benefits” in the Statements of Income.

10. ACCUMULATED OTHER COMPREHENSIVE INCOME

Following is a reconciliation of beginning and ending balances of accumulated other comprehensive loss (in millions):

	Amount Related to Postretirement Benefits Other Than Pensions
Balance at December 31, 2005	\$ —
Adjustment to initially apply FASB Statement No. 158	(28)
Balance at December 31, 2006	\$ (28)

Additional detail regarding the classification of accumulated other comprehensive loss is included in Note 9.

11. BUSINESS RESTRUCTURING CHARGES

In 2006, the Bank announced plans for restructuring to streamline its Houston operations and reduce costs. These actions resulted in the following business restructuring charges (in millions):

	Year ended December 31, 2006				
	Total Estimated Costs	Accrued Liability 12/31/05	Total Charges	Total Paid	Accrued Liability 12/31/06
Employee separation	\$ 1	\$ —	\$ 1	\$ —	\$ 1
Total	\$ 1	\$ —	\$ 1	\$ —	\$ 1

Employee separation costs are primarily severance costs related to identified staff reductions of approximately 33 related to restructuring announced in 2006. Costs related to staff reductions for the year ended December 31, 2006, are reported as a component of “Salaries and other benefits” in the Statements of Income.

Costs associated with enhanced pension benefits for all Reserve Banks are recorded on the books of the FRBNY as discussed in Note 8. Costs associated with enhanced postretirement benefits are disclosed in Note 9.

The Bank anticipates substantially completing its announced plans by July 2007.

The firm engaged by the Board of Governors for the audits of the individual and combined financial statements of the Reserve Banks for 2006 was PricewaterhouseCoopers LLP (PwC). Fees for these services totaled \$4.2 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 2006, the Bank did not engage PwC for any material advisory services.

Volume of Operations
(UNAUDITED)

	Number of Items Handled (Thousands)		Dollar Amount (Millions)	
	2006	2005	2006	2005
SERVICES TO DEPOSITORY INSTITUTIONS				
CASH SERVICES				
Federal Reserve notes processed	2,970,987	2,730,220	53,050	44,499
Currency received from circulation	3,074,837	2,691,171	53,304	45,490
Coin received from circulation	738,927	430,458	81	46
CHECK PROCESSING				
Commercial—processed	942,688	882,076	1,052,639	880,988
Commercial—fine sorted	9,563	11,991	8,206	6,299
LOANS				
Advances made	79*	67*	259	147
SERVICES TO THE U.S. TREASURY AND GOVERNMENT AGENCIES				
Issues and reinvestments of Treasury securities	0	10	0	356

* Individual loans, not in thousands.

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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