Competitiveness Index:
Where America Stands

Council on
Competitiveness

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Twenty Years

1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996

John Young 1986–1991

Former Chairman and CEO, Hewlett Packard. Founder, Council on Competitiveness

John Young was president of Hewlett-Packard Company from 1977 to 1992, and chief executive officer from 1978 to 1992.

He holds a bachelor's degree in electrical engineering from Oregon State University, Corvallis, and a master's degree in business administration from Stanford University.

In 1983, Young was appointed by President Reagan to be Chairman of the President's Commission on Industrial Competitiveness. Young was also a founding director and trustee of the Foundation for the Malcolm Baldrige National Quality Award. He was named co-chairman of the President's Committee of Advisors on Science and Technology in 1994.

George Fisher 1991–1994

Retired Chairman and Chief Executive Officer, Eastman Kodak Company

George Fisher held the Kodak positions of chairman, president and CEO from 1993 to 1997, and chairman and CEO from 1997 to January 2000, and chairman until January 1, 2001, when he retired.

Before joining Kodak, Fisher was chairman and chief executive officer of Motorola, Incorporated.

He has been active in U.S. international trade issues through advisory groups to the U.S. Trade Representative and the U.S. Secretary of Commerce. He served on the President's Advisory Council for Trade Policy and Negotiations (ACTPN). Formerly, he was chairman of the Industry Policy Advisory Committee (IPAC).

Paul Allaire 1994–1997

Chaiman Emeritus, Xerox Corporation

Paul Allaire is the former chairman and chief executive of Xerox Corporation.

Allaire served as the chair of the FIRST Board of Directors from 1994–2000, and has served on the boards of Sara Lee Corporation, the New York Stock Exchange, Glaxo Smithkline, the Council on Foreign Relations, the New York City Ballet, Catalyst and the National Planning Association.

Allaire graduated from Worcester Polytechnic Institute in 1960 with a Bachelor of Science degree in electrical engineering. He earned a Master of Science degree in industrial administration from Carnegie Mellon University. He is now a trustee of both Worcester Polytechnic Institute and Carnegie Mellon University.

Council Leaders

Publications

Competitiveness Index 1988

Competitiveness Index 1989

Competitiveness Index 1990

Competitiveness Index 1991

Gaining New Ground: Technology Priorities for America's Future

Competitiveness Index 1992

Capital Choices: Changing the Way America Invests in Industry

Industry as a Customer of the Federal Laboratories

Competitiveness Index 1993

Elevating the Skills of the American Workforce

Vision for a 21st Century Information Infrastructure

Roadmap for Results: Trade Policy, Technology and American Competitiveness

Competition Policy: Unlocking the National Information Infrastructure

Economic Security: The Dollar$ and Sense of U.S. Foreign Policy

Critical Technologies Update

Breaking the Barriers to the National Information Infrastructure

Competitiveness Index 1994

Building on Baldridge: American Quality for the 21st Century

Competitiveness Index 1996: A Ten-Year Strategic Assessment

Competitiveness Index 1995

Human Resources Competitiveness Profile

The World

World population = 4.9 billion

Perestroika & Glasnost

1st Supercomputer Simulation of Auto Frontal Impact

Internet hosts = less than 10,000

Black Monday

1st Transatlantic Fiber Cable

Omnibus Trade & Competitiveness Act

Internet hosts = more than 100,000

Fall of Berlin Wall

WWW created

Launch of Hubble Telescope

End of Apartheid

ARPANET Decommissioned

Single Euorpean Market

Creation of Mosaic Web Browser

Uruguay Round Passes

NAFTA Takes Effect

Internet hosts = more than 10,000,000

Nasdaq Closes Above 1,000 for First Time

1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007

Bill Hambrecht 1997–2000

Chairman, CEO and Founder, WR Hambrecht + Co

Bill Hambrecht is chairman and CEO of WR Hambrecht + Co, an online investment bank founded in January 1998.

In 1968 he co-founded Hambrecht & Quist with the late George Quist. In the early 1970s, Hambrecht became directly involved in the then fledgling venture capital business–developing this side of H&Q's business personally, he ultimately oversaw the management of over $1 billion invested in close to 700 companies.

Hambrecht has served as a director for numerous private and public companies. He currently serves on the Board of Trustees for The American University of Beirut and is on the Advisory Investment Committee to the Board of Regents of the University of California. He graduated from Princeton University.

Raymond Gilmartin 2000–2003

Special Advisor, Merck & Co. Inc.

Ray Gilmartin is Special Advisor to the Executive Committee of Merck & Co., Inc. Gilmartin served for 10 years as chairman, president and chief executive officer of Merck. He came to Merck after having served as chairman, president and CEO of Becton Dickinson.

Gilmartin serves on the boards of General Mills, Inc. and the Microsoft Corporation. He is chairman of the Board of Directors of the United Negro College Fund and serves on the Board of Dean's Advisors for the Harvard Business School.

Gilmartin received a Bachelor of Science degree in electrical engineering from Union College in 1963 and an MBA from Harvard Business School in 1968.

Duane Ackerman 2003–2006

Chairman and CEO, BellSouth Corporation

Duane Ackerman is chairman and chief executive officer of BellSouth Corporation–having started his communications career in 1964 and having served in numerous capacities in BellSouth.

Ackerman is a member of the board of The Allstate Corporation. He is also chairman of the National Security Telecommunications Advisory Committee, member of the Homeland Security Advisory Council, member of the President's Council of Advisors on Science and Technology, a trustee of Rollins College and a former member of the board of governors for the Society of Sloan Fellows of the Massachusetts Institute of Technology.

Ackerman holds a Bachelor of Science Degree in Physics and a Master's Degree from Rollins College in Winter Park, Fla. He also holds a Master's Degree in Business from the Massachusetts Institute of Technology (MIT).

Chad Holliday, Jr. 2006–

Chairman and CEO, DuPont

Chad Holliday is the chairman of the board and chief executive officer of DuPont.

Holliday has been with DuPont for more than 30 years. He started at DuPont in the summer of 1970 at DuPont's Old Hickory site after receiving a B.S. in Industrial Engineering from the University of Tennessee. He is a licensed Professional Engineer.

In 2004, he was elected a member of the National Academy of Engineering and became chairman of the Business Roundtable's Task Force for Environment, Technology and Economy. He is also past chairman of the World Business Council for Sustainable Development, The Business Council and the Society of Chemical Industry–American Section. Holliday also serves on the board of directors of HCA and is chair of the Board of Directors of Catalyst. In addition, he is a founding member of the International Business Council.

Highway to Health: Transforming U.S. Health Care in the Information Age

Endless Frontier, Limited Resources: U.S. R&D Policy for Competitiveness

A Call to Action: 1997 Regional Summits on American Innovation

The New Challenge to America's Prosperity: Findings from the Innovation Index

Winning the Skills Race

Competing Through Innovation: A Report of the National Innovation Summit

Going Global: The New Shape of American Innovation

U.S. Competitiveness 2001: Strengths, Vulnerabilities, and Long-Term Priorities

Imperatives for Innovation: The Second National Innovation Summit, 2001

Clusters of Innovation: Regional Foundations of U.S. Competitiveness–National, Atlanta-Columbus, Pittsburgh, Research Triangle, San Diego, and Wichita Reports

Creating Opportunity Out of Adversity: Proceedings of the National Symposium on Competitiveness and Security

2004 High Performance Computing Users Conference Report

Innovate America: Thriving in a World of Challenge and Change

2005 High Performance Computing Users Conference Report

CoC Study of ISVs Serving the HPC Market Part A

HPC Five Grand Challenge Case Studies

Promoting Innovation and Competitiveness–A Transatlantic Dialogue

2005 National Innovation Survey

Measuring Regional Innovation: A Guidebook for Conducting Regional Innovation Assessments

HPC Workshop Report

CoC Study of ISVs Serving the HPC Market Part B

Summit Report–Strategies for Global Prosperity: A U.S.-Japan Innovation Summit

Competitiveness Index: Where America Stands

Dolly, the World's First Cloned Mammal

Pathfinder Reaches Mars

Y2K Commission

World population = 6 billion

Tech Bubble Bursts

Entire Human Genome Sequenced

American Competitiveness in 21st Century Act

9/11

China enters WTO

Euro as single currency

S-Ox Act

SARS Spreads from Asia to the Americas and Europe

Kyoto Protocol Comes into Force

Asian Tsunami

Hurricane Katrina

National Innovation Act

World population = more than 6.5 billion

U.S. population = 300 million

American Competitiveness Initiative

Introduction of National Competitiveness Investment Act

MOU signed formalizing CoC/NGA partnership on Governors' Innovation Initiative

Council on Competitiveness 20th Anniversary Symposium
Competitiveness Index: Where America Stands **Discussion**
November 14, 2006
LEFT to RIGHT *Richard Saul Wurman; Chad Holliday, Chairman/CEO, DuPont and Chairman of the Council on Competitiveness; Deborah L. Wince-Smith, President/CEO, Council on Competitiveness; Patricia Sellers, Editor-at-Large, FORTUNE; Wayne Clough, President, Georgia Institute of Technology and Vice Chairman of the Council on Competitiveness; Peter O'Donnell, President, O'Donnell Foundation; Robert Reynolds, COO/Vice Chairman, Fidelity Investments*

LAURA SIKES

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Chairmen's Preface

Twenty years ago, when the Council was founded, America faced the first real challenge to its economic leadership since the end of World War II. Slow productivity growth, rising inflation, high unemployment and the strong high-technology challenge from Japan forced America to shed its complacency. The Council's founders took the lead in embracing the quality movement, technological leadership, and global performance while laying an agenda for public policies to support America's productivity and prosperity. The intervening two decades included the longest period of sustained economic growth in U.S. history.

By most measures, America's economy is now stronger than ever — certainly much stronger than it was in the 1980s. Our standard of living is the highest in the world, and the U.S. economy has grown faster than any other major developed economy over the past decade. The United States is the largest recipient of foreign direct investment and holds 40 percent of global financial assets. With only 5 percent of the world's population, America employs nearly one-third of the world's science and engineering researchers, accounts for 40 percent of global research and development spending, and publishes 30 percent of all scientific articles. The United States remains the most popular destination for the world's best and brightest, and its financial markets and entrepreneurial culture are the envy of the world. It remains the benchmark against which all other economies measure themselves.

A 20th anniversary is an appropriate time to look back — to evaluate how well we have done — and to look forward — to see how we are positioned to address future competitive challenges. *Where America Stands* is intended to provide a fundamental understanding of the drivers of U.S. economic success over the past 20 years and a framework to evaluate competitive prospects for the next 20 years.

What is indisputable is that the world is changing in fundamental ways — and that the mix of policies and practices that worked so well historically may not assure the same outcomes in the future. In fact, it is sometimes hard to fathom just how rapidly the world we knew in the mid-1980s has transformed.

Twenty years ago, the United States was preoccupied, on the national security front, with the Soviet Union and the Cold War. The end of the superpower standoff has enabled the opening of major new markets and the entry of billions of consumers into the global economy. But it also has set the stage for an even more complicated and diffuse set of threats — global terrorism and nuclear proliferation — which will impact national security, personal safety and economic competitiveness in the 21st century.

In 1986, concerns over the mounting U.S. merchandise trade deficit dominated international trade relations. The vision of open and integrated trading systems was still unfolding — and the term "globalization" had not yet entered the common lexicon. We now operate on a truly global terrain of enormous commercial complexity, characterized by hundreds of trading nations, not dozens; tens of trillions of dollars are exchanged daily in global financial markets, not tens of billions within regional stock exchanges; and business and governments now operate across highly integrated regional economies from the European Union to ASEAN to NAFTA and the unfolding commercial integration of the Americas.

In the mid-1980s, leading companies utilized single function photocopiers, word processors and Telex machines to conduct business; transactions took days — not seconds — to conduct. The Arpanet had only just been launched, linking 5,000 university researchers together. Today, there are more than 100 million different websites, 430 million Internet hosts and over a billion Internet users around the globe. In less than

a generation's time, information technology capabilities have revolutionized the way business does business, driven tremendous productivity growth, enabled the emergence of e-commerce, and made it easier to ship work around the globe in bits and bytes, shifting comparative advantage.

Twenty years ago, there was a bright line between the developed and less developed nations. The Asian Tigers had only begun to dazzle the world with technological prowess and extraordinary growth rates, while China and India remained sleeping giants with closed markets. The combination of trade liberalization and IT diffusion has opened up growth and investment opportunities to many nations around the world. Indeed, 80 percent of middle-income consumers are predicted to reside in the developing world by 2020. And these nations are increasingly adopting a strategy of innovation-based growth — investing in the innovation infrastructure and talent that will enable them to compete in high-technology sectors and attract high-value investments.

The melting of boundaries and the seemingly inexorable forces of integration have rendered a degree of interdependence not experienced since the turn of the last century. The interests of nations are tied together in a multitude of ways today that our measurement systems simply do not capture. Since the founding of the Council two decades ago, we have witnessed this reality in many sobering ways. It is not just cultural phenomena — music, fashion and entertainment — that can swiftly sweep the globe. So too, as we learned during the 1998 crisis in Asia, can financial and other contagions.

In 1986 the world was beginning to gain consciousness around two other profound developments that continue to challenge us to this day: global pandemics such as HIV/AIDS or, potentially, avian flu, and global environmental strains from climate change to deforestation to water scarcity. These are representative of the grand and critical challenges facing our world that no one nation, no one government, no one company can solve. Whatever solutions, mitigation or resolutions that people devise to address them will require collaboration, cooperation and a multi-stakeholder approach. Interestingly, these are among the most important factors essential to driving creativity and innovation. And that should give us reason for optimism.

The reality of interdependence and shared challenges poses an opportunity to consider the nature and meaning of competitiveness — the cornerstone of the Council's mission — in a new light. As we move forward into our third decade, the leaders represented by the Council's distinguished and multi-sectoral membership resolve to ask the tough questions, objectively frame the pressing issues, and continue to advance an action agenda that will promote U.S. competitiveness in this new era.

CHARLES O. HOLLIDAY, JR.
Council Chairman
Chairman and CEO
DuPont

G. WAYNE CLOUGH
Council Vice Chairman
President
Georgia Institute of Technology

DOUGLAS J. MCCARRON
Council Vice Chairman
General President
United Brotherhood of Carpenters and Joiners of America

F. DUANE ACKERMAN
Council Chairman Emeritus
Chairman Emeritus
BellSouth Corporation

Understanding Competitiveness and Its Causes

Michael E. Porter – Bishop William Lawrence Professor, Harvard University

The competitiveness of the U.S. economy is once again the subject of public concern and political debate. This increased attention offers an opportunity for needed reforms that will boost America's prosperity. But it also runs the risk of promoting common misunderstandings about competitiveness and about America's economic position that could lead to steps that are counterproductive.

The ultimate goal of competitiveness is the prosperity of a nation's people, or per capita living standards. The fundamental source of long-term prosperity is the productivity with which a nation can utilize its human, capital, and natural resources to produce goods and services. Competitiveness is not about having the largest economy in absolute size, but the most productive one per capita. Competitiveness is not about a low-cost labor force, the largest share of exports or even the fastest economic growth. It is about creating the conditions under which companies and citizens can be the most productive so that wages and returns on investment can support an attractive standard of living.

Competitiveness is not a zero-sum game. The success of other economies is not a failure of U.S. competitiveness — a job created there does not mean a job lost here, a new R&D lab built there does not mean one lost here, a rise in another country's exports does not necessarily mean a decline in ours. As all nations improve their productivity, wages rise and markets expand, creating the potential for rising prosperity for all. There is no fixed pie of global demand to be divided, but almost unlimited human needs to be met.

The international economy has changed markedly over the past two decades. Some of the changes are now obvious. Markets outside the advanced world are expanding dramatically. Companies are outsourcing and spreading their value chains globally. The distinctions between domestically owned and foreign-owned firms are blurring. At the same time that economic activity has become global, however, it has also become more localized as regions build specialized clusters populated by both domestic and foreign firms that compete nationally and globally. The importance of tight linkages between firms, universities and governments at the regional level has greatly increased. The United States has benefited far more from its decentralization and local initiative than most realize.

Globalization and the emergence of other competitive nations has dramatically raised the bar for performance, creating pressure on those regions, industries, companies and workers who are not prepared to meet the new standards of productivity. Simply being an American does not guarantee a high-wage job anymore as

companies allocate more of their activities across locations based on productivity relative to wages. In the United States but also around the world, we see rising levels of inequality as the most educated prosper while those who lack education or skills struggle to keep pace. Global markets have increased America's prosperity, but they do so through a process which is especially challenging for those at the lower end of the skills ladder. The same process is at work today in every advanced nation.

Thankfully, the United States is one of the most dynamic and flexible of all economies. American companies have pioneered the globalization of production, outsourcing and harnessing the power of information technology in operations. U.S. policies and leadership played a large part in creating this new global environment — by promoting free trade, investing in technology, encouraging entrepreneurship, and serving as an example of the power of open, competitive markets.

As Americans, we need to redouble our efforts to meet the new standards, especially in education, skill development and technology. There is also the pressing need to tackle head on the distortions in the international economy that break the link between American productivity and prosperity, such as subsidies, theft of intellectual property and government intervention in markets.

Also, many of our current policies and institutions are based on assumptions that no longer hold true. Even the very data by which we measure trade, growth and investment are founded on a view of the world and the way companies operate that is sorely out of date. What does a current account deficit mean when American companies pile up hundreds of billions of dollars in overseas profits? How can we accurately measure flows of business services and intellectual property (where the United States is preeminent) to make sense of the trade deficit? How do we understand our progress based on old-style wage data that ignore pensions, health benefits and rapidly expanding household assets? Outdated measurements lie behind many of today's most vehement debates, and new approaches will be needed.

America is better positioned than perhaps any other country to benefit from the forces that are reshaping the global economy. The key will be to equip ourselves with the policies, skills and assets to ensure that we can continue to prosper. In an interdependent, global economy, moreover, our success will depend more and more on the participation and success of other nations.

The Conceptual Economy

Deborah L. Wince-Smith – President & CEO, Council on Competitiveness

At the beginning of the 21st century, America stands at the dawn of a conceptual economy in which insight, imagination and ingenuity determine competitive advantage and value creation. To succeed in this hyper-competitive, fast-paced global economy, we cannot, nor should we want to, compete on low wages, commodity products, standard services, and routine science and technology development.

As other nations build sophisticated technical capabilities, excellence in science and technology alone will not ensure success. Lower costs and improving quality will not answer the new competitive realities either. Today, competitive pricing and high quality are merely the baseline for entry into global markets.

The United States must focus on its strengths — on what it means to be American. We must innovate and embrace the opportunities of the rapidly emerging, high-value conceptual economy. It is increasingly clear that the most important competition is being fought in the arena of ideas, learning and delivering new kinds of value to the marketplace. Looking back at the tremendous growth of America's gross domestic product over the past half century, information and ideas have been equally, if not more, important than materials and manpower to sustaining America's economy.

The information age of new ideas and new technologies is no longer an exclusive club guaranteeing economic leadership and personal prosperity. Access to global information and, increasingly, technology are commodities in today's world. As a result, those who have a great deal of information and technology, or know how to manage it, do not necessarily achieve competitive advantage. Rather, rewards go to those who know what to do with knowledge, information and technology once they get it. This new system of wealth favors judgment, intuition, creativity and insight.

In the conceptual economy, our success will be measured by our ability to transform industries, reshape markets old and new, stay on the leading-edge of technology creation, and fuse diverse knowledge, information and technology. This new global economy will be much different than the industrial economy of the 20th century, or even the information economy of the past two decades. The conceptual economy will favor nations that reach globally for markets, and those who embrace different cultures and absorb their diversity of ideas into the innovation process. It will be fueled by the fusion of different technical and creative fields, and thrive on scholarship, creativity, artistry and leading-edge thinking. These concepts are America's strengths. These concepts are our competitive advantage. These concepts are uniquely American — for now.

CLOCKWISE FROM UPPER LEFT

1 *Richard Saul Wurman; Chad Holliday, Chairman/CEO, DuPont and Chairman of the Council on Competitiveness; Deborah L. Wince-Smith, President/CEO, Council on Competitiveness; Michael E. Porter, Bishop William Lawrence University Professor, Harvard Business School; Patricia Sellers, Editor-at-Large, FORTUNE*

2 *Patricia Sellers, Editor-at-Large, FORTUNE; and Wayne Clough, President, Georgia Institute of Technology and Vice Chairman of the Council on Competitiveness*

3 *Council on Competitiveness 20th Anniversary Dinner*

4 *Council on Competitiveness 20th Anniversary Symposium: Innovations and Inventions at the Ronald Reagan Building and International Trade Center*

5 *Deborah L. Wince-Smith, President/CEO, Council on Competitiveness; John Young, Founder of the Council on Competitiveness and Former President/CEO, Hewlett-Packard*

6 *Robert Reynolds, COO/Vice Chairman, Fidelity Investments; Patricia Sellers, Editor-at-Large, FORTUNE; Wayne Clough, President, Georgia Institute of Technology and Vice Chairman of the Council on Competitiveness; Deborah L. Wince-Smith, President/CEO, Council on Competitiveness; Peter O'Donnell, President, O'Donnell Foundation; Chad Holliday, Chairman/CEO, DuPont and Chairman of the Council on Competitiveness*

ALL PHOTOS LAURA SIKES

LEFT to RIGHT *Richard Saul Wurman; Chad Holliday, Chairman/CEO, DuPont and Chairman of the Council on Competitiveness; Deborah L. Wince-Smith, President/CEO, Council on Competitiveness; Michael E. Porter, Bishop William Lawrence University Professor, Harvard Business School; Patricia Sellers, Editor-at-Large, FORTUNE*

LAURA SIKES

Executive Summary

1. The Changing Global Competitiveness Environment

The context for U.S competitiveness has changed dramatically over the past two decades. The rapid entry of emerging markets into the global economy, the restructuring of global corporations to leverage those new opportunities, and the growing value of innovation, services and intangibles have transformed the competitiveness environment for the U.S. economy, American companies and American workers.

- Billions of people in emerging economies have entered the global trading system – opening consumer markets and labor pools of unprecedented size.
- The developed markets' near monopoly on advanced technology has ended as emerging economies have rapidly improved their technological capacity and now dominate exports of high technology goods.
- New opportunities to reach consumers and talented workers in the developing world are spurring rapid growth in multinational corporations – driving their evolution into truly global enterprises and enabling them to offshore a range of corporate activities, from software development to accounting to research. U.S. regions and workers now face global competition in areas that were once the exclusive domain of developed economies.
- As manufacturing capacity becomes globally available at low cost, its competitive value declines. Innovation in advanced manufacturing, services and intangibles have become the primary source of value for U.S. companies and American workers.
- The standard metrics of competitiveness that emphasize cross-border trade in goods no longer capture how and where value is created in the 21st century. America's greatest competitive strengths – creating innovative new ideas, building global networks, managing global brands, marketing new products and services – are often the most difficult to measure.

2. U.S. Prosperity — How Are Americans Doing?

Overall, Americans have benefited tremendously from these changes in the global environment — with increases in average income and wealth coupled with falling unemployment. But a rising bar for competition has increased inequality and the level of financial risk that most Americans face.

- The United States is the wealthiest large economy in the world, and average incomes and wealth for Americans have grown rapidly over the past 20 years. But the benefits of U.S. economic growth have not all been distributed equally. As in most advanced nations, the wealthiest and the best educated have seen phenomenal growth in incomes and net worth, while those at the middle and bottom of the income ladder have seen more modest gains. Only U.S. households headed by college graduates saw average incomes rise over the past two decades.
- U.S. employment has grown significantly over the past two decades, and the United States enjoys both higher rates of workforce participation and lower unemployment rates compared with its global peers. The U.S. labor market is extremely dynamic and increasingly diverse, integrating women, immigrants and minorities faster than most other economies around the world.
- The recession of 2001, however, appears to mark a change in the U.S. job market. While economic growth has rebounded quickly, employment growth has been weaker than in previous recoveries. Unemployment has remained low, but increasing numbers of workers have dropped out of the labor force. And U.S. wages and income have grown slowly since 2001, if at all.
- The challenges of global competition have increased the level of anxiety that many Americans feel. Even as income and wealth have increased over the past 20 years, many Americans struggle today to pay for health care and to manage rising levels of debt. The dynamism that is the U.S. economy's greatest strength creates vast opportunities — and risks — for all Americans.

3. U.S. Performance – How Is America Doing?

Strong economic growth and rapid gains in productivity have driven U.S. prosperity and underpin the U.S. role as the world's global growth engine. As the largest global consumer, America's growth is also part of a larger global financial imbalance.

- The United States is not only the world's largest economy; it has also grown faster between 1986 and 2005 than any other major developed economy. The United States has been responsible for one third of global growth over the past 15 years.
- American workers are among the world's most productive, and they have increased productivity dramatically since 1995 through the production and use of information technology – increasing America's productivity lead over Europe and Japan.
- High levels of productivity allow Americans to compete against low-cost producers around the world. The United States remains the world's largest manufacturer and one of the world's top exporters.
- But U.S. imports have risen faster than exports, driving growth in export-focused economies around the world while increasing America's trade deficit.
- Unprecedented flows of goods and capital into America's growing market have created global imbalances, leading to record U.S. current account deficits and a tripling of U.S. foreign debt since 1999. Emerging markets are financing U.S. deficits so that American consumers will continue to buy their exports – to the tune of $6 billion every working day.

4. Foundations of U.S. Competitiveness and Sources of Future Prosperity

Underpinning America's strong performance over the past two decades has been a culture and environment that optimizes U.S. innovative performance and entrepreneurship. And yet, there are long-term challenges the nation must face in order to avoid undermining the competitive position in the United States.

Innovation – Can the United States Sustain Its Advantage?

- America still leads the world in science and technology, but that relative lead is narrowing and will continue to narrow as other countries increase their investments in research and education.
- Countries around the world are striving to become world-class innovators. While most research still takes place in the developed world, emerging markets are making gains. China now ranks as the most attractive destination for new offshore R&D facilities.
- America's strength in innovation is based on strong foundations — the most innovative companies in the world, a major lead in R&D investment, and world-class research universities and national laboratories that leverage their lead in basic research to stimulate greater commercialization and regional innovation.
- The United States has more researchers than any other country and larger numbers of qualified engineers despite greater absolute numbers in emerging economies.
- The strength of America's regional innovation hotspots continues to attract R&D investment. American companies continue to increase their R&D in the United States even as they expand globally, and foreign companies do more R&D in the United States than American companies do overseas.

Entrepreneurship – Does the U.S. Economic Engine Face Threats Or Is It Primed for Continued Success?

- Closely linked to innovation is entrepreneurship — turning new ideas into viable businesses.
- America leads the world in entrepreneurship, particularly in the creation of high-growth companies that have the potential to transform entire industries.
- The sources of America's entrepreneurial advantage come from unparalleled access to capital, a culture that encourages experimentation and risk, and a regulatory structure that enables firms to start-up and enter new markets while enabling less productive firms to exit.

- The churn of business creation and destruction is a major driver of employment, productivity growth and innovation. Small- and medium-sized businesses are responsible for more job growth than larger companies, and the entry of new firms often drives productivity growth more than improvements within existing firms.
- But while the United States leads the world in entrepreneurship, a handful of regions across the country dominate the picture. Expanding access to risk capital and other support for entrepreneurship to regions across the United States represents an important opportunity for stimulating regional growth and innovation.

Education – Are Americans Equipped to Prosper in the 21st Century?

- The United States led the world in educational attainment in the decades after World War II, rapidly expanding access to high school and college. High school and college graduation rates have continued to improve for all racial and ethnic groups.
- But after more than two decades of massive investment, little progress has been made in improving the test performance of American high school students and wide gaps remain between racial and ethnic groups.
- While the United States is one of the world leaders in education investment, American students perform poorly on a range of international tests.
- And though the United States continues to improve access to high school and college, a number of other countries have pulled ahead — leaving the United States 17th in high school graduation rates and 14th in college graduation rates.
- While U.S. performance lags, the demand for education has never been greater. A technologically sophisticated and globally competitive economy demands increasingly higher level skills from all workers, and requires that workers continuously upgrade skills.

Energy – How Will We Fuel Future Growth?

- Energy is literally the fuel of the U.S. economy, and two decades of relatively low energy prices have contributed to unprecedented economic growth and prosperity.
- Traditional consumption habits, globalization and the rise of emerging economies are driving the increased demand for energy, as pressures of cost and availability increase, creating a tipping point for action.
- U.S. demand continues to outstrip domestic supplies, increasing dependence on imports from sometimes volatile energy exporters. While the United States has made gains in efficiency, other countries are outpacing U.S. progress.
- These converging trends present a challenge for the United States to move forward in addressing longstanding patterns of energy sourcing and supply, creating a stable, diversified and sustainable energy portfolio, and thereby maintaining its growth, prosperity and competitiveness.

1. The Changing Global Competitiveness Landscape

To understand U.S. competitiveness, we have to understand how the global competitiveness environment has changed over the past two decades. New technologies, new business strategies and new economic policies in many countries have transformed the global marketplace. More cities and regions participate in the global economy, the linkages between these locations have strengthened dramatically, the specialization among these locations has increased, and the availability of capital, labor and skills across all locations has changed.

The Emergence of the Emerging Economies One of the most visible reflections of these changes is the growth of the emerging economies. China in particular has opened up to the world economy by removing barriers to business activity, upgrading infrastructure and inviting foreign companies to invest. In the old context, China, India and other emerging economies would have been relegated to compete solely on low-skill goods, slowly working their way up towards products of higher skill-intensity. But in the new competitive environment, these nations can quickly enter markets by integrating themselves in global value chains — combining investments from around the world with low-cost labor and an increasingly efficient infrastructure at home.

With large and fast-growing populations and a more business-friendly policy environment than in the past, emerging economies offer significant new markets for global enterprises and launch pads for globally competitive and innovative products, processes and services.

The Emergence of the Global Enterprise and the Globalization of Value Chains Activities along the global value chain have become increasingly disintegrated and allocated to those companies and locations best suited for each individual activity. Multinational corporations — and now, truly global enterprises — have played a critical role in this process, by investing abroad, by engaging new foreign suppliers, and by specializing in activities in which they have specific competitive advantages. They have created vast networks in which many small and medium-sized companies providing specialized inputs and services are directly integrated with global value chains.

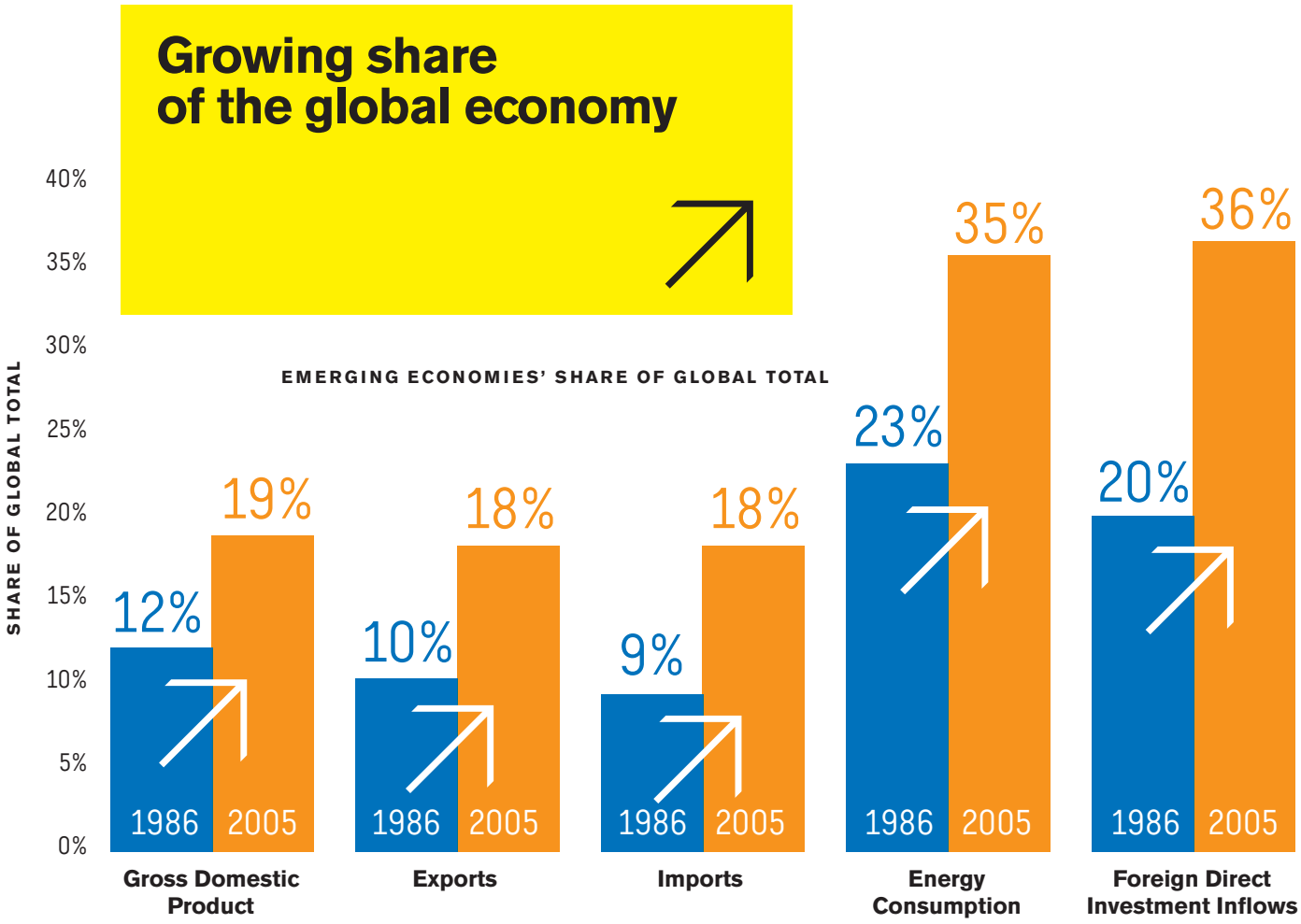
Services and Intangibles as New Drivers of Value Creation In these disintegrated value chains, innovation is increasingly the source of value and competitive advantage, and managing processes and partners represents a growing part of value creation. Manufacturing still drives global trade, but value increasingly comes from the "service wrap" and the ideas bound up in products. Critical investments are not only those made into new fixed assets, like machinery and real estate, but increasingly those in knowledge, branding and other intangible assets.

The Emergence of the Emerging Economies

Emerging Economies Are Making Their Mark on the Global Trading System…

1.1 Emerging Markets Are Rapidly Growing Their Economies, Exports and Share of Global Investment Flows

Source: World Bank, UNCTAD, U.S. Department of Energy, EIA



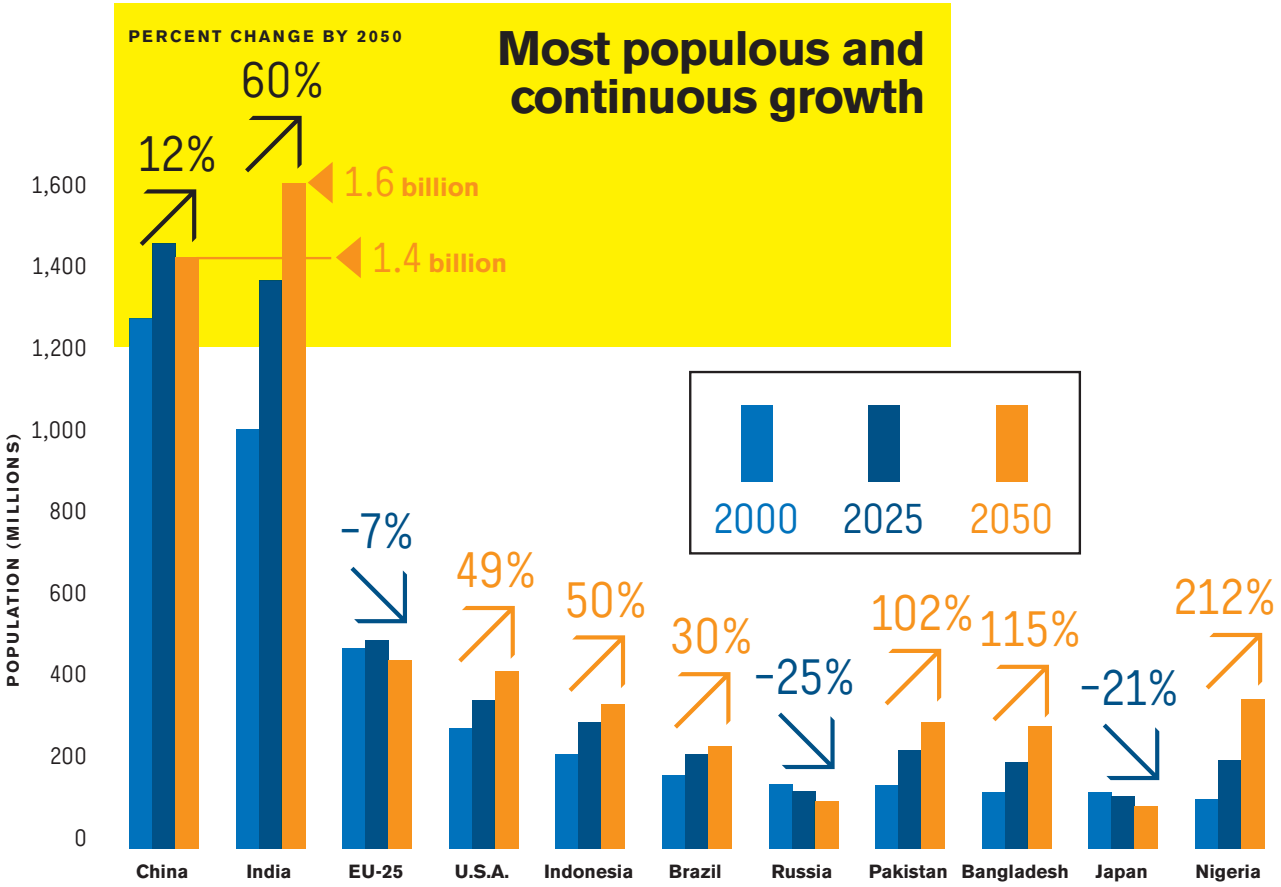
Over the past two decades, the global economy has opened up dramatically. In the mid-1980s, China, India and the Soviet Union were all state-run economies closed off to most international commerce. Today they are major exporters and recipients of foreign direct investment. These three economies, together with other fast-growing emerging economies primarily in Asia and Latin America, have rapidly come to play a critical role in the global economy. In the past five years these countries have averaged almost 7 percent growth compared with 2.3 percent growth in rich economies.[1] And their role is expected to grow. According to Goldman Sachs, **Brazil, Russia, India and China together could be larger than the combined economies of the United States, Japan, the United Kingdom, Germany, France and Italy by 2039.** China alone could be the world's second-largest economy by 2016 and could surpass the United States by 2041.[2]

Government policy changes have played a key role in this evolution. Many nations have reformed laws regulating trade, domestic market access, and foreign investment; reduced tariffs and subsidies; privatized state-owned enterprises; and removed other barriers that frustrated trade and investment. In addition, many developing countries are creating the conditions that attract global business, and making substantial investments in the infrastructure needed to support modern commerce such as high-speed telecommunications, banking and financial systems and workforce development.

…Emerging Economies Have Large and Growing Consumer Markets…

1.2 Emerging Markets Already Have the Largest, Fastest Growing Population

Source: U.S. Census



Emerging economies are already among the most populous in the world. While the U.S. population just passed 300 million, China now has 1.3 billion and India 1.1 billion citizens. And most emerging economies are projected to grow rapidly while all of the largest developed economies (apart from the United States) are projected to see their populations shrink due to aging and low birth rates. China and Russia are the two exceptions. China's population will actually peak in 2032 before declining.

Fast-growing populations mean that per capita income will grow slowly, despite rapid growth in output. Even with 50 years of 7.5 percent growth, China's per capita GDP would still be less than that of the United States today.[3] But the sheer size of many emerging economies means that many are already important consumer markets, and their growth potential is significantly larger than that of the developed economies. In 2005, there were just over 1.3 billion middle income consumers worldwide. According to projections by A.T. Kearney, by 2020 the number will rise to 2.3 billion. The industrialized world will add about 100 million new consumers, while the developing world will add over 900 million new consumers. China alone will add 572 million consumers. By 2020, 80 percent of the middle consumers will live outside of the industrialized world.[4]

Emerging markets already lead in certain consumer markets. China already has the world's largest market for mobile phones. In 2004, China had 335 million mobile phones in use (compared to 171 million in the United States). And that number is projected to rise to 807 million by 2010. By that date China is projected to have 336 million Internet users, the United States 306 million and India 585 million.[5]

…And the Rise of Emerging Economies Has Doubled the Global Labor Supply

1.3 Emerging Markets Have Large Supplies of Young Professionals

Source: McKinsey Global Institute, The Emerging Global Labor Market: Part II-- The Supply of Offshore Talent in Services (June 2005)

Large professional workforce in emerging markets

YOUNG PROFESSIONALS, 2003, THOUSANDS

	Engineers	Finance/ Accounting	Life sciences researchers	Analysts
China	1,589	945	543	202
United States	667	1615	852	175
India	528	2273	674	537
Russia	486	1082	108	107
Japan	317	702	180	55
Phillippines	290	423	14	16
Brazil	158	355	75	16
U.K.	150	165	100	27
Germany	128	137	31	26
Mexico	115	319	23	8
Poland	82	231	25	22
Canada	81	150	89	18
Malaysia	49	83	19	11
Hungary	27	59	2	1
Ireland	22	32	4	3
Czech Republic	15	33	2	5

Emerging Markets

Developed Economies

The entry of China, India and the former Soviet Union into the global trading system has effectively doubled the global labor supply. While skilled workers make up a relatively small percentage of the workforce in many emerging economies, the size of their populations means that they potentially have huge supplies of educated workers. The McKinsey Global Institute has estimated the global supply of "young professionals" (university graduates with up to seven years of experience), finding approximately 33 million in a sample of 28 low-wage countries, compared to 18 million in their sample of eight higher-wage nations (including 7.7 million in the United States).[6] China has more than twice as many young professional engineers as the United States, while India leads in finance/accounting and analysts. India alone accounts for 30 percent of the total global supply of young professionals.

The study found, however, that only 13 percent of potential emerging market job candidates could successfully work at a multinational corporation. Key barriers include limited suitability (lack of language skills, low quality of education, lack of cultural fit), geographical dispersion of the labor force and domestic competition for talent. Ultimately, they estimate that only 2.8 to 3.9 million (out of 33 million) are available for hire by export-oriented firms, compared to 8.8 million in high wage countries.

But emerging economies will see much faster workforce growth while developed economies will see their workforces grow more slowly or even shrink. The U.S. population aged 20-44 will only grow by 4 percent over the next 20 years (compared to 24 percent growth over the past two decades). Other countries — Japan, Germany, France, Italy and Russia — will see their workforces shrink.[7]

The High Technology Club Has Expanded

1.4 Emerging Markets Now Number Among the World's Leading Technology Exporters

Source: Global Insight, Inc.

Emerging economies now lead

Top Ten High Tech Exporters (1986)
Billions of 1997 U.S. Dollars

1. United States $65
2. Japan $53
3. Germany $31
4. United Kingdom $24
5. France $14
6. Netherlands $9
7. Italy $8
8. Switzerland $8
9. Taiwan $7
10. South Korea $7

Top Ten High Tech Exporters (2005)
Billions of 1997 U.S. Dollars

1. China $406 — Emerging economies
2. United States $284
3. Japan $212 — Developed economies
4. Germany $183
5. South Korea $167
6. Hong Kong $157
7. Taiwan $145
8. Singapore $126
9. Malaysia $99
10. United Kingdom $95

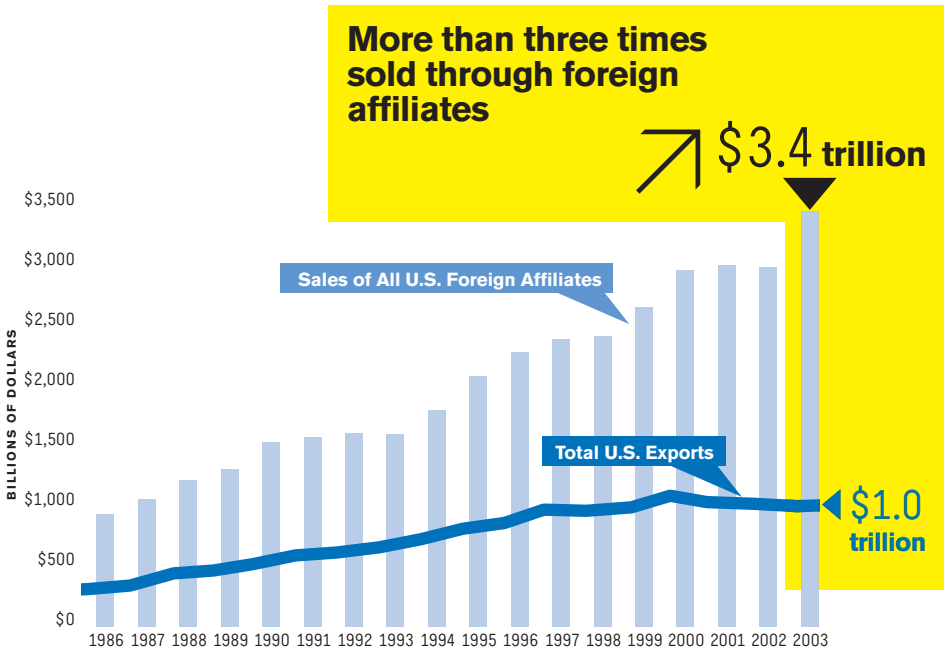
At one time, emerging markets were seen as sources for natural resources or low-cost, low-quality manufactured goods. Now many have become leading exporters of high technology products. In 2004, China became the world's largest exporter of information and communication technology products. The time between frontier research and global production has shrunk as emerging economies have become integrated into global supply chains.

The United States — still the world's largest overall producer of advanced technology products — now has a trade deficit in this area, in part because U.S. technology firms have expanded production globally to meet both foreign and domestic demand. Foreign multinationals have played a critical role in the development of advanced technology capabilities in emerging economies. For example, 90 percent of China's IT exports come from foreign-owned factories.[8]

Multinational Enterprises Are Extending to Tap New Consumer Markets and Find Top Talent

1.5 U.S. Multinationals Sell Three Times More Through Foreign Operations Than Through Exports

Source: U.S. Bureau of Economic Analysis



The Emergence of the Global Enterprise and the Globalization of Value Chains

The combination of large and rapidly growing consumer markets, ample supplies of lower-wage workers and government incentives for investment have spurred the expansion of the foreign operations of multinationals from the United States and other developed economies. In 2005, multinational corporations invested $779 billion in foreign direct investment (up from just $28 billion in 1982) and generated more than $22 trillion in sales from foreign affiliates (almost 10 times more than in 1982).[9]

U.S. multinationals operate and serve customers in dozens of countries, with a significant portion of their customers and employees residing, and revenues generated, outside of the United States. Foreign sales by U.S. companies increased 264 percent (in nominal terms) from 1986 to 2003, and represented 28 percent of their total sales in 2003 (up from 20 percent in 1986).[10] As the chart shows, sales from foreign affiliates of U.S. companies are 3.2 times greater than all U.S. exports of goods and services, indicating the importance of foreign affiliates. U.S. multinationals' profit from foreign operations add roughly $2.7 trillion to their market value.[11]

And yet, despite global expansion, the activities of U.S. multinationals are still overwhelmingly based in the United States. The U.S. share of their total employment, investment and production has changed relatively little even as globalization has accelerated. For example, the U.S. share of U.S. multinationals' capital expenditures has only declined from 79.2 percent in 1988 to 71.0 percent in 2004, and the U.S. share of their total employment has only fallen from 78.8 percent in 1988 to 71.9 percent in 2004.[12]

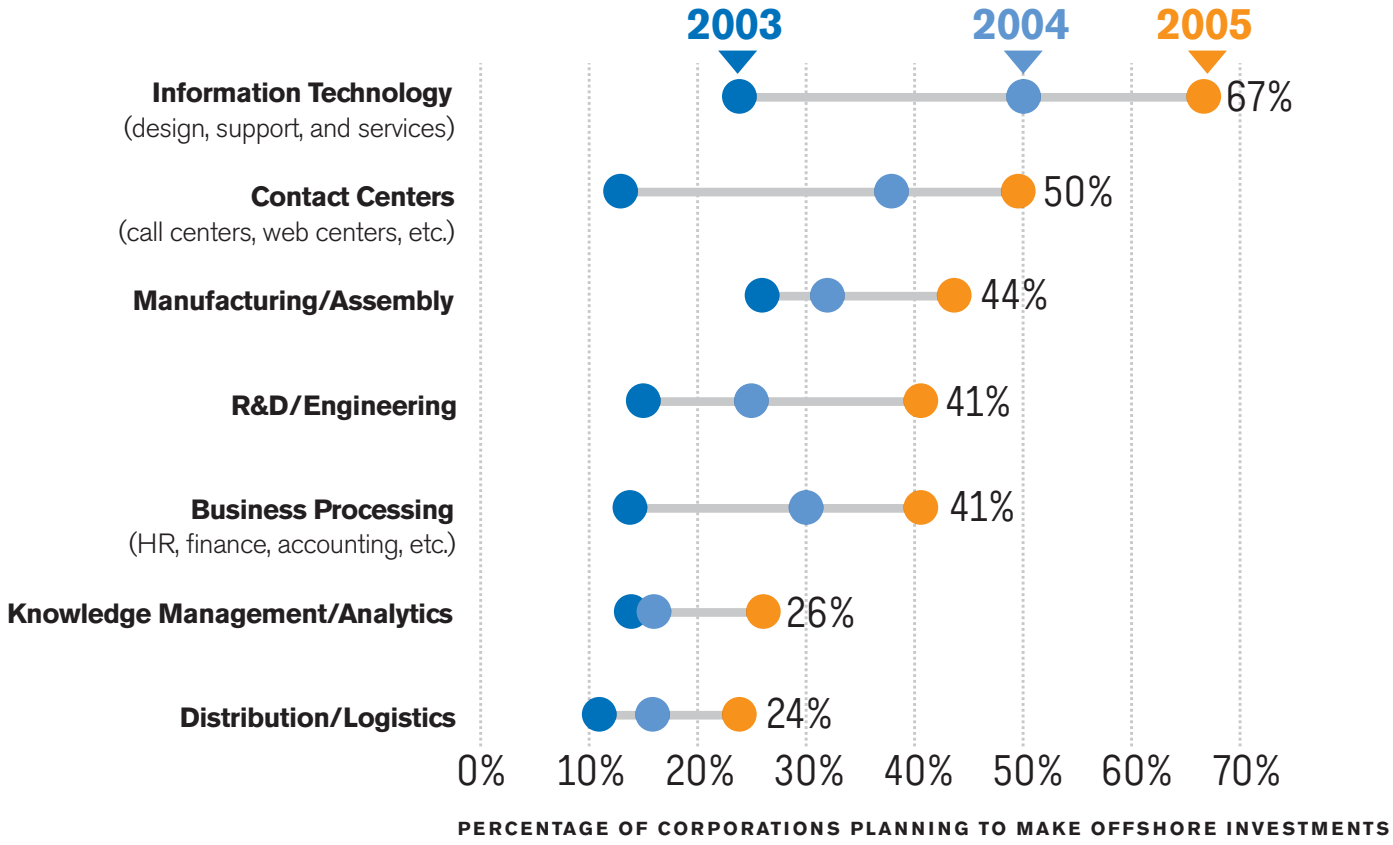
While U.S. multinationals have moved production offshore to serve the U.S. market at lower costs, the global expansion of U.S. multinationals historically has been largely for the purpose of reaching new customers. Overall, 65 percent of U.S. foreign affiliate sales are to the local market, 24 percent to other countries, and 11 percent are exported back to the United States.[13] Moreover, most of the offshore activity of U.S. multinationals takes place in advanced economies and high-wage markets. In 2003, the United Kingdom, Canada, Germany, France and Japan accounted for 42 percent of all employees of U.S. multinationals. China, India and other emerging economies account for a very small part of U.S. multinational firm employment, but their shares are growing rapidly. The number of U.S. foreign affiliate employees in China and India each more than doubled between 1997 and 2003, while European employees increased by 28 percent and Canadians by 20 percent. But China and Brazil each accounted for 4 percent and India less than 2 percent.[14]

Multinationals Are Evolving into Globally Integrated Enterprises

1.6 Global Firms Are Offshoring a Range of Corporate Functions

Source: A.T. Kearney, Foreign Direct Investment Confidence Index (2005)

Steady increase in offshore investments →



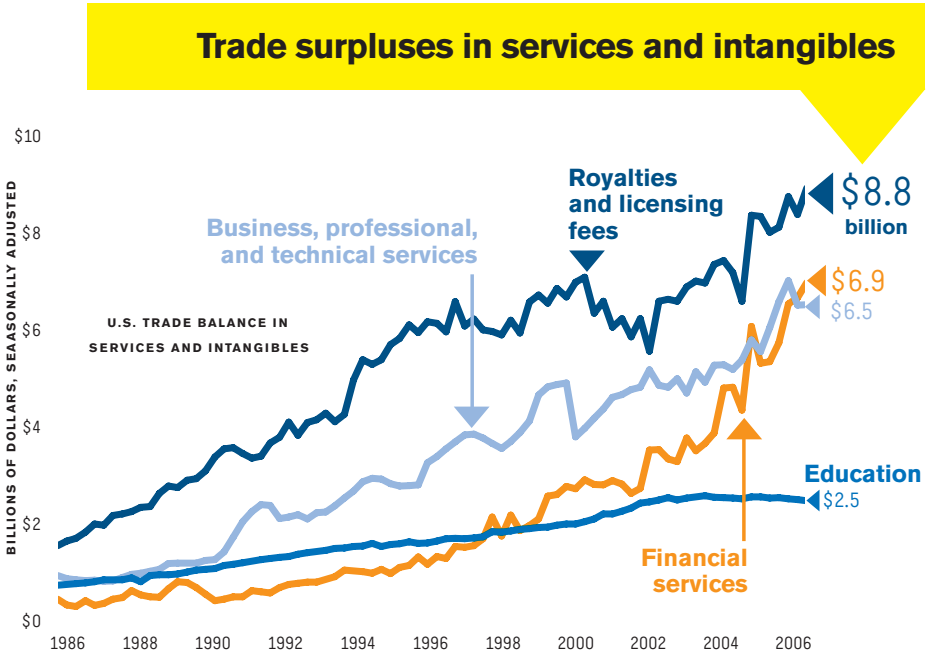
For decades, multinational corporations have set up foreign subsidiaries to serve overseas markets. In recent years, this vertically integrated model has evolved. Enabled by digital commerce and the slicing of product and service processes, U.S. multinational corporations are adopting global sourcing and delivery strategies, creating product and service value chains that span the globe. With standard business processes and methodologies supported by a global infrastructure, U.S. multinationals serve markets, deploy capabilities and employ resources in an ever-widening geographic arc. From R&D and production, to computer programming and customer services, global enterprises can locate business processes nearly anywhere in the world.

Depending on the markets or the capabilities required to serve them cost-effectively, these companies may outsource work to domestic or foreign contractors; establish new overseas operations; or acquire foreign-based operations and companies. They operate their collection of establishments, divisions, subsidiaries and partnerships as single, integrated global enterprises.

Services Are Growing in Importance for Advanced Economies Like the United States

1.7 The United States Has Trade Surpluses in Services and Intangibles

Source: U.S. Bureau of Economic Analysis



Services and Intangibles as New Drivers of Value Creation

As global enterprises are able to leverage capabilities both inside and outside the firm on a global scale, competitive advantage has shifted away from the production of commodity components towards a range of innovative manufacturing and services activities. For example, many of the world's most innovative manufacturers outsource most or all of the production, focusing instead on design, marketing and managing the global supply chain.

The contribution of manufacturing to GDP and employment is declining in many advanced nations. Low-value, commodity-based manufacturing is disappearing from the United States, moving to developing nations where routine manufacturing can be performed at low cost. As a result, most advanced nations are moving toward a service-based economy. The services sector accounted for 83 percent of U.S. private-sector GDP and 85 percent of private-sector employment in 2004.[15]

The United States is the world's largest exporter of services and carries the world's largest services trade surplus. Services trade accounted for 22 percent of total U.S. cross-border trade volume in 2004. U.S. cross-border trade in services generated a $47.8-billion surplus in 2004, in contrast to a merchandise trade deficit of $665.4 billion. The United States was by far the largest services exporter, accounting for 15 percent of world services exports, compared to 8 percent for the United Kingdom, 6 percent for Germany and 5 percent for France.[16] The United States even has a trade surplus in business, professional and technical services, the category most closely associated with the offshoring of service work. In other words, more service work is "offshored" from other countries to the United States than vice versa.

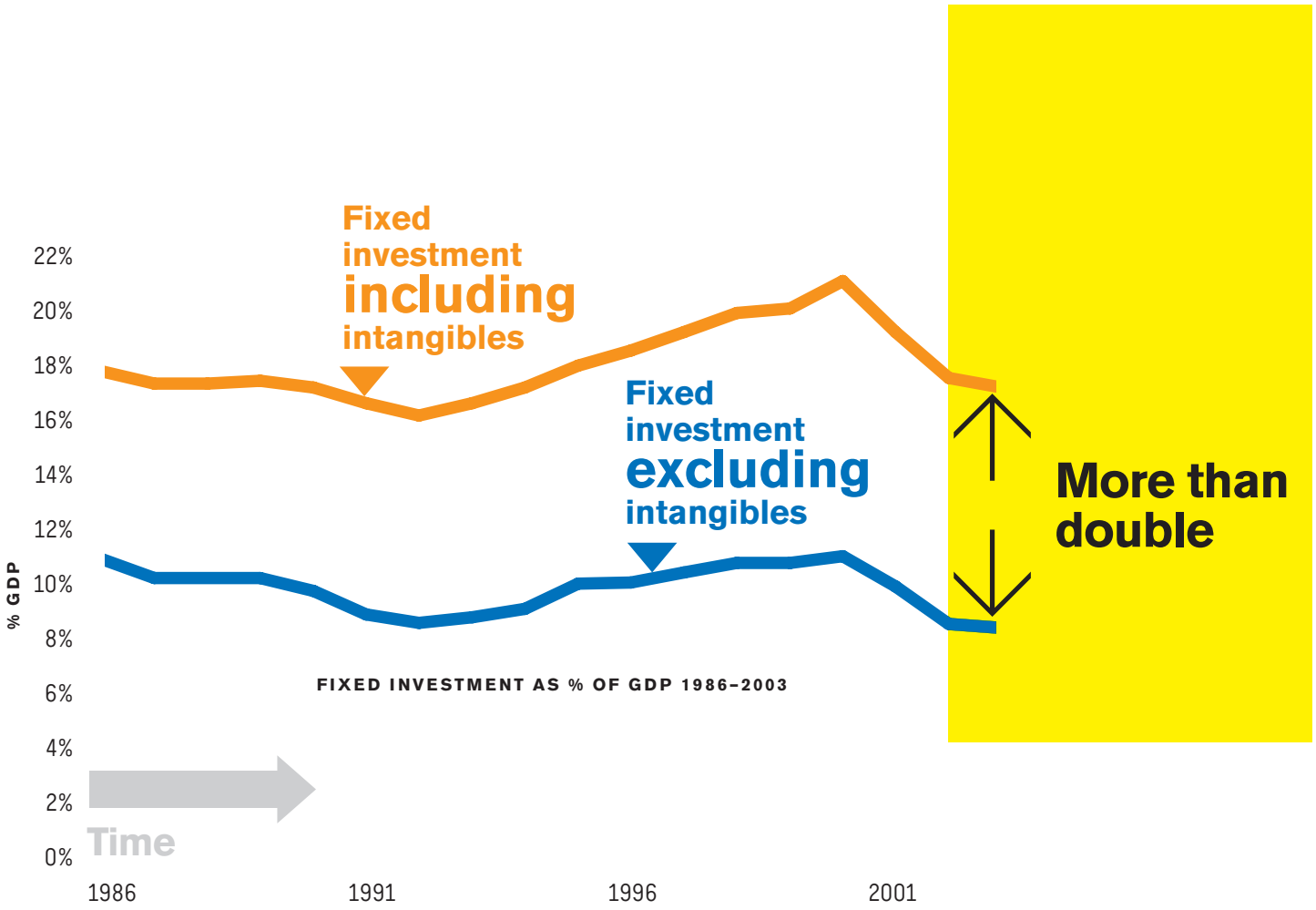
Services also make up an increasing share of global trade and the majority of foreign direct investment. The services share of global inward FDI stock rose from 49 percent in 1990 to 63 percent in 2004. The biggest areas were "business activities," finance and trade services.[17]

The line between manufacturing and services is blurring. Delivering "packages" that incorporate both goods and services is creating high value for the customer and handsome rewards for the producer. Services today are increasingly knowledge-intensive, and providers rely on sophisticated science and technology in their business. As a result, the knowledge and skill intensity of competition is increasing.

Intangible Assets Have Also Become a Critical — Though Hard to Measure — Contributor to GDP

1.8 U.S. Investment in Intangible Assets Now Rivals Traditional Tangible Investments

Source: Carol Corrado, Charles Hulten, and Daniel Sichel, "Intangible Capital and Economic Growth," Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C. (April 2006)



In the global innovation economy, the most valuable assets — a strong global brand, talented employees, a deep base of scientific research — are often intangible. Accounting systems both at the national and at the firm level have been designed to measure tangible assets — "bricks and mortar" that can be easily counted and valued. But as knowledge and innovation have increased in importance, so has the value of intangible assets. Current accounting systems treat these as expenses rather than investments and therefore undercount these critical drivers of growth and productivity.

The amount of intangible investment in the U.S. economy is estimated to be as high as $1 trillion, roughly the same as investment in tangible capital.[18] Intangible investment has grown in recent years much more rapidly than tangible business investment. In fact, intangibles have accounted for virtually all of the increase in total investment as a share of GDP over the last five decades.

Intangible assets include computer software, scientific research and development, "non-scientific" research and development (such as the costs of developing new motion pictures or spending by financial services and insurance firms on new product development), investments to retain or gain market share, investments in brand names and investment in firm-specific human resources. All of these are investments designed to create an advantage (and future revenue stream) for a firm — but they do not

appear on the balance sheet. The United States is one of the leaders in creating and leveraging intangible assets. American companies, for example, own 13 of the 20 most valuable global brands.[19]

The Bottom Line for the United States

The data presented in this section provide key facts about the changing global economic environment. That aim is to provide a clearer sense of the challenges the U.S. economy is facing as a consequence of changes in other countries, in company operations, and in patterns of value creation.

The global economic environment is changing, confirming the need to revisit whether the United States can sustain its past position under these new circumstances. The growth of emerging economies will reduce the U.S. share of the global economy. But it is unclear whether this will have a negative effect on U.S. prosperity.

Multinationals are evolving into complex global enterprises, spreading their activities across value chains over different locations to take advantage of specific locational conditions. This process creates more competition as locations now must prove their competitiveness for every individual activity or link in the value chain in order to attract and retain companies and investments.

Knowledge is becoming an increasingly important driver of value in the global economy. A larger share of trade is also captured by services, and a larger share of assets and investments is intangible. This shift to services, high-value manufacturing and intangibles creates more opportunities for the United States with its traditionally strong position in knowledge-driven activities and an already high stock of tangible as well as intangible assets.

The United States will almost inevitably be a smaller part of a growing world economy due to the structural changes under way across the globe. But there is no reason why the United States cannot retain its position as the most prosperous country in the world.

20th Century Trade Metrics Fail To Capture 21st Century Competitiveness

When the Council on Competitiveness was founded in the 1980s, many interpreted the trade deficit as a sign that American companies were no longer able to compete successfully in the global economy. A nation's ability to export goods was seen as a critical measure of national competitiveness.

Over the past two decades, however, the nature of global trade has changed in important ways, where goods crossing borders is no longer the only – or even a useful – measure of where value is created. Twenty-first century value creation is linked less to production, exports and employment – the traditional metrics of industrial competitiveness. A number of factors complicate the picture:

Foreign affiliate sales American companies have the highest share of global sales across a range of industries. But for many firms, exports are not their primary means for entering foreign markets. Over the past two decades U.S. multinationals and global enterprises have established thousands of foreign affiliates in other markets to produce and sell directly to consumers. In fact, U.S. companies sell three times more through their foreign affiliates than they do through direct exports. These foreign affiliate sales do not count against the trade deficit.

Intrafirm trade A growing percentage of global trade now takes place between the branches of multinational and global enterprises, the largest of which are bigger than many national economies. In 2004, related party trade (trade by U.S. companies with their subsidiaries abroad as well as trade by U.S. subsidiaries of foreign companies with their parent companies) accounted for 42 percent of total U.S. goods trade – 48 percent of imports and 31 percent of exports.[20] The foreign affiliate trade deficit accounted for 32 percent of the entire trade deficit in 2002. In other words, a significant portion of the trade deficit is due to trade within American companies.[21]

When trade takes place between the branches of a single company there is also the potential for transfer pricing – selling a good or service at an artificially low or high price so that profits can be booked in low-tax regions. This can greatly distort attempts to understand where value is really created.

Fragmentation of global supply chains In many industries, vertically integrated networks (where a single company is responsible for all steps of the production process) have dissolved as companies focus strategically on those parts of the process where they can add the most value while outsourcing the rest to partners in the United States and around the world. An increasing amount of trade is in intermediate goods, which may be processed in a number of countries before being sold to a customer. Ultimately it becomes nearly impossible to determine how much of the value was generated in each country.[22] These constantly shifting global networks consist of more than just trade and foreign direct investment relationships (those that are best captured by existing metrics) – alliances, joint ventures, and other forms of collaboration are often the key to global success. What takes place "inside" and "outside" the firm is increasingly blurry and changing – making it difficult to measure certain aspects of competitiveness.

Importance of services and intangibles Trade statistics were originally designed to track the flow of goods across borders. The U.S. Department of Commerce did not measure trade in services until 1986. And yet services are by far the most important sector in the domestic economy and increasingly important to trade. Services also make up the majority of U.S. foreign direct investment. But trade in

services is still difficult to measure and likely undercounted in the official statistics.

The global spread of manufacturing capacity and the rapid diffusion of technology have greatly increased the pace at which products become commodities. Knowledge, intellectual property and other intangible assets are the primary means by which the United States and other advanced nations justify their higher wages and create competitive advantages. Yet intangible assets – brands, management expertise, technological know-how, and R&D – are not captured in standard trade statistics. Not only are these intangible assets difficult to measure, but they are easy for others to appropriate.

Trade deficits Our existing trade statistics were created for a world where domestic companies competed with foreign companies by exporting manufactured products and commodities. In today's global economy, where value is created through intangible assets flowing through constantly shifting global networks of multinational firms, trade surpluses or deficits often fail to capture the most important aspects of competitiveness.

All of this is not to say that trade deficits do not matter. The fact that the United States imports more than it exports means that its foreign debt continues to increase. At a certain level, this debt could slow U.S. growth or even lead to a financial crisis (see section 3). But these threats stem from global financial imbalances rather than from the inability of American companies or American workers to compete in global markets.

2. U.S. Prosperity – How Are Americans Doing?

The prosperity of all Americans is the ultimate yardstick of the nation's competitiveness. Other indicators of economic performance are important road signs that provide insight into the sources of prosperity, but none of them truly matter unless they contribute to a higher standard of living.

Measuring prosperity is not as easy as it once was. In the past, it was largely sufficient to look at wage income to understand the prosperity level of the vast majority of the population. Today, it is crucial also to look at the benefits derived from assets like pension

funds and real estate, as well as the value of health care benefits and the purchasing power of income. These other factors have gained increasing importance for Americans' living standards.

In addition, a metric of the absolute level of prosperity that individuals currently enjoy is not sufficient in painting a true picture of prosperity. One must also assess the inequality of prosperity levels across different segments of society and the degree to which individuals have the opportunity to improve their standard of living. Also, almost as important as the absolute level of income or wealth is its volatility and the degree to which people face the risk of losing a job, losing income or health insurance or going bankrupt.

Rising Levels of Income, Wealth and Inequality Americans remain the most prosperous people in the world. Their assets and disposable incomes have grown significantly over time, despite slow growth in wage income. Prices are lower than in other countries of similar income levels, increasing the standard of living U.S. citizens can enjoy.

Education and Mobility – Keys to Prosperity Americans continue to have more opportunities than their global peers in terms of entering the economy and advancing in society. Social mobility continues to be high, but America — like other economies around the world — is facing the structural challenges of technological change and globalization. These changes drive higher returns to skills and increase the potential for capital to achieve high returns. As a consequence, differences in prosperity are rising between rich and poor, and between the educated and uneducated.

A Dynamic Job Market Unemployment is low among America's young compared with its peers around the world; and, immigrants and minorities in the United States are better integrated and have more employment opportunities than in other countries. Yet, another sign of change is the recent sluggish net job creation in a period of solid GDP growth.

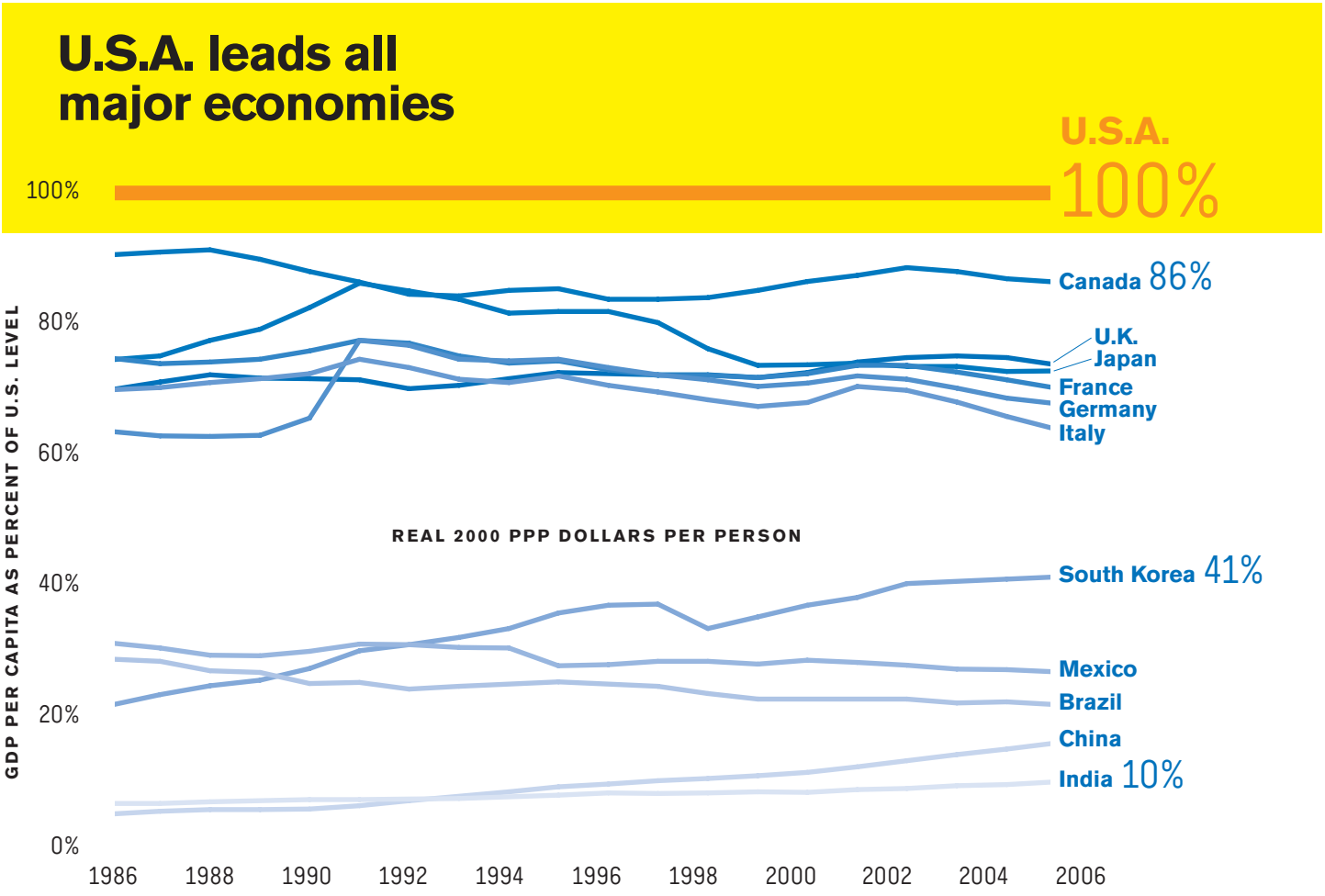
Challenges for Workers, Families and the Economy Health care costs are rising everywhere, but the structure of the U.S. health care system has created a particularly problematic level of cost increases. Private debt, too, is rising.

Rising Levels of Income, Wealth and Inequality

U.S. Standard of Living Outpaces the Rest of the World…

2.1 The United States Leads All Major Economies in GDP Per Capita

Source: Global Insight, Inc.



The most basic measure of prosperity is gross domestic product (GDP) per capita. U.S. GDP per capita is among the highest in the world and has more than doubled in real terms over the past 30 years.[23] The United States also leads the world in other metrics of standard of living such as gross national income per capita and disposable personal income per capita.[24]

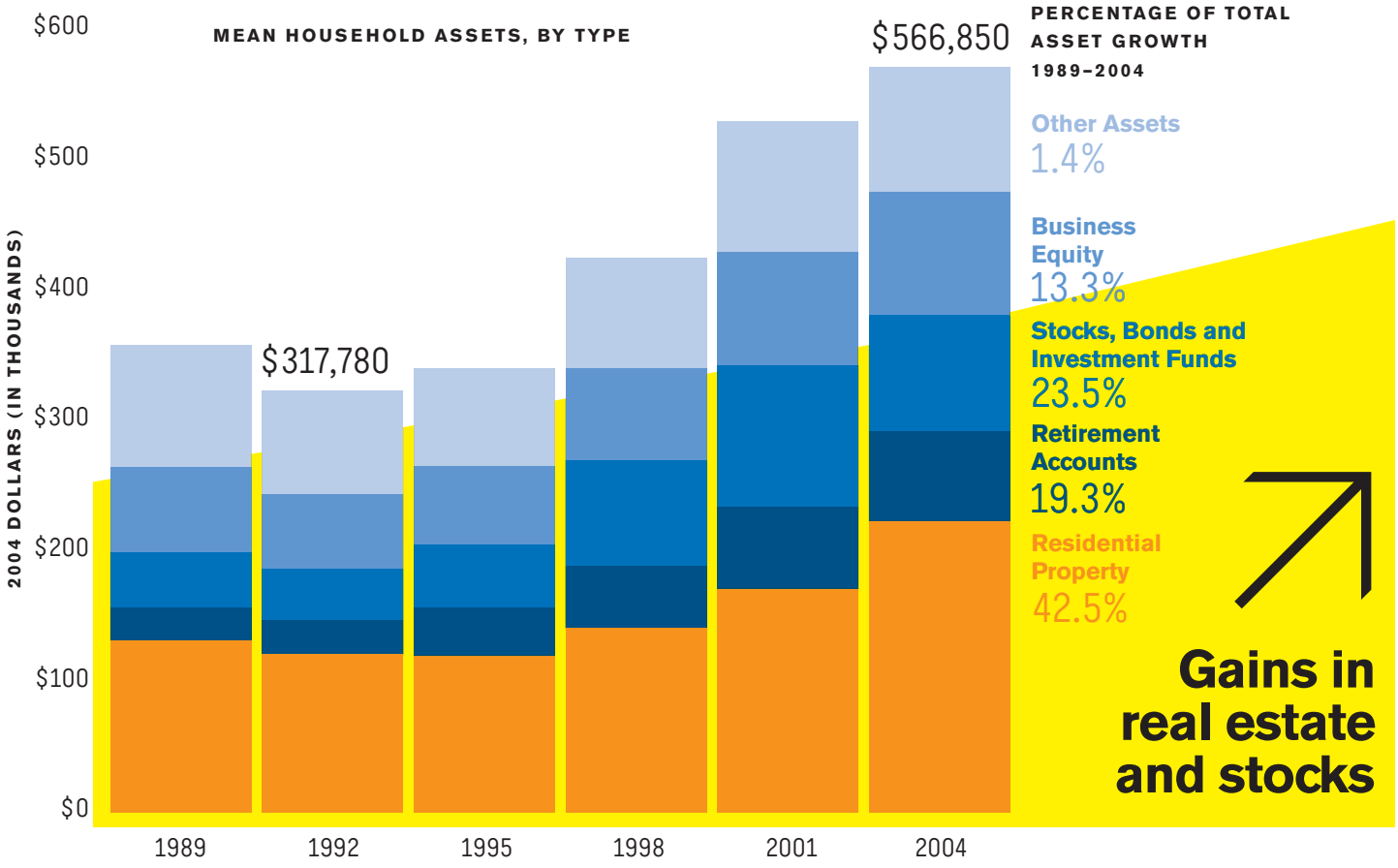
Despite an intense race to "catch up" with the United States in the 1980s and 1990s, Japan and Europe have fallen behind in recent years. Japan's GDP per capita fell from a high of 85 percent of the U.S. level in 1991 to 72 percent in 2005, while Canada, the United Kingdom, France, Germany and Italy have also experienced relative declines compared to the United States.

Developing economies are making significant strides, but their prosperity remains at levels well below that found in the United States. Even though China's level of GDP per capita has doubled in less than a decade, it is still at only 16 percent of the U.S. level.

…With Average Household Wealth at All-Time Highs…

2.2 Household Wealth Grew Strongly, Supported by Gains in Real Estate and Stocks

Source: Federal Reserve Board, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," Federal Reserve Bulletin (2006)



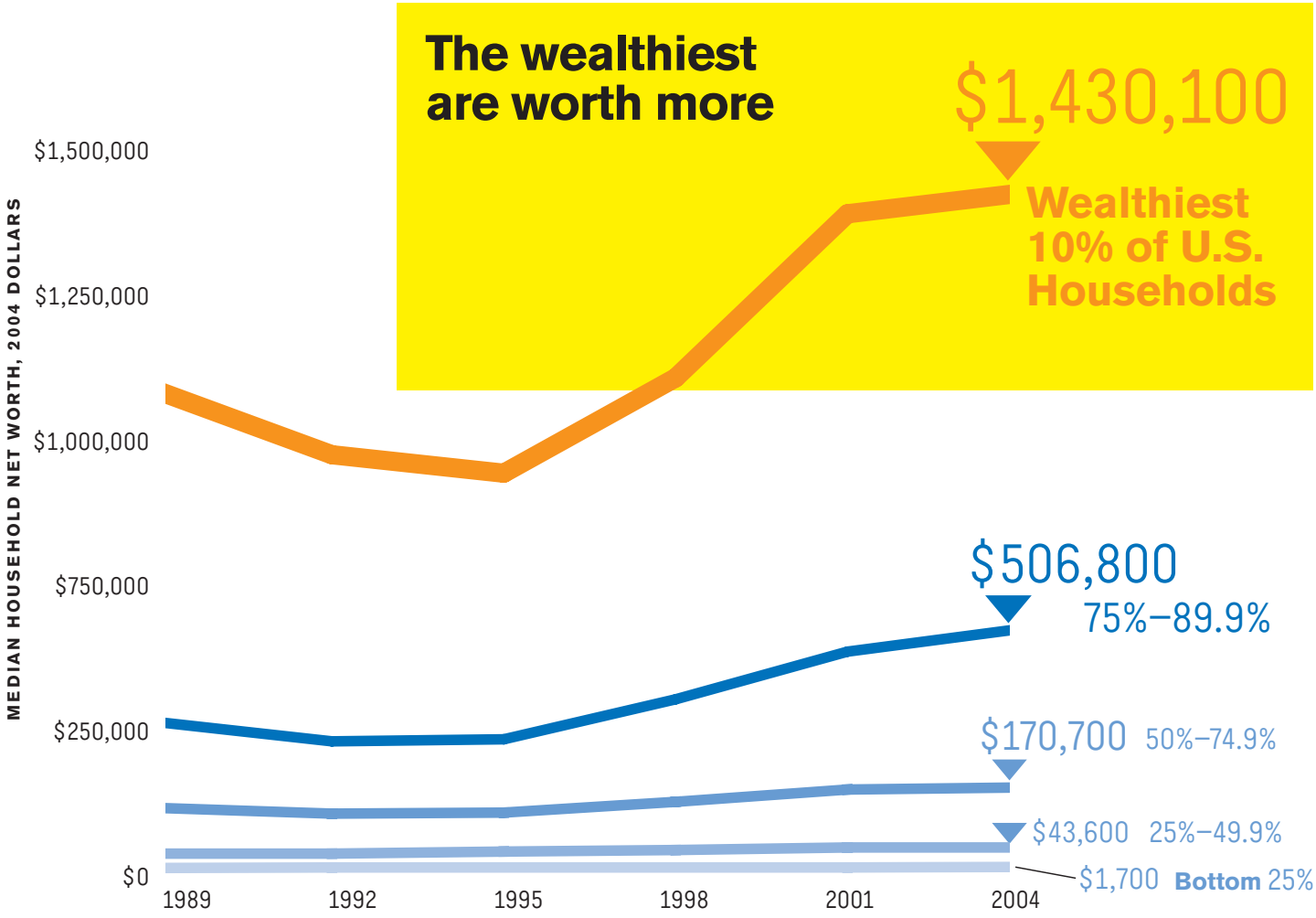
Average U.S. household wealth has increased 61 percent from 1989 to 2004 – led in large part by significant increases in real estate and stock holdings.[25] The percentage of families holding stocks rose from 32 percent in 1989 to just below 50 percent in 2004[26] – at a time of soaring equity values. And home ownership rates rose from 64 percent in 1986 to 69 percent in 2005[27] – while median home prices more than doubled, rising from $64,300 in 1989 to $167,100 in 2006.[28]

Americans have also built up assets by investing in tax-favored retirement plans. The number of workers participating in defined contribution retirement plans has skyrocketed – rising from almost 37 million in 1986 to 70 million in 2004.[29] Total assets increased from $488 billion to $2.4 trillion.

…Though the Wealthiest Households Saw the Largest Gains in Net Worth and…

2.3 The Top 10 Percent Have Seen The Largest Increases in Net Worth

Source: Federal Reserve Board, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," Federal Reserve Bulletin (2006)



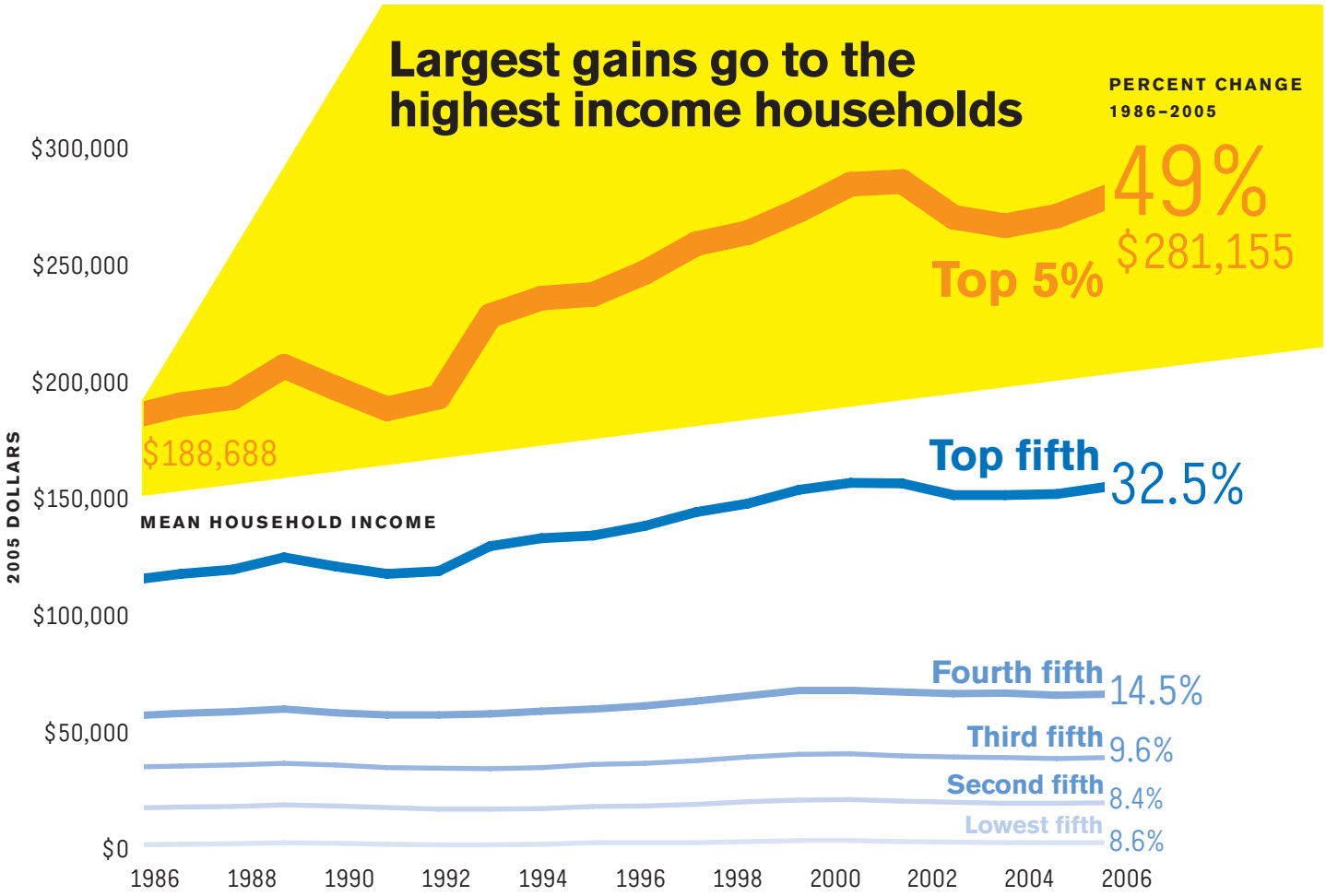
From 1989 to 2004 median household net worth grew 35 percent, and all groups saw increases in wealth. But while Americans overall are wealthier, wealth in the United States is unevenly distributed. Over the past two decades overall inequality has increased as those with the most wealth saw the greatest gains.

The top 10 percent of households now own approximately 70 percent of total net worth.[30] And 23 percent of households have a net worth of less than $10,000.[31] While a large number of Americans own stock, the top 1 percent of private stockowners in 2004 held 51 percent of all stocks by value — and of those households that held stock in 2004, only 20 percent had holdings of $15,000 or more.[32]

…The Top Earners Increased Their Share of Total Income

2.4 Most of the Gains in Income Have Gone to the Highest Income Households

Source: U.S. Census, Income, Poverty, and Health Coverage in the U.S.: 2005 (Aug. 2006)



Households in every income group have made gains over the past two decades, and the number of households earning more than $50,000 has increased by more than 40 percent since 1986.[33]

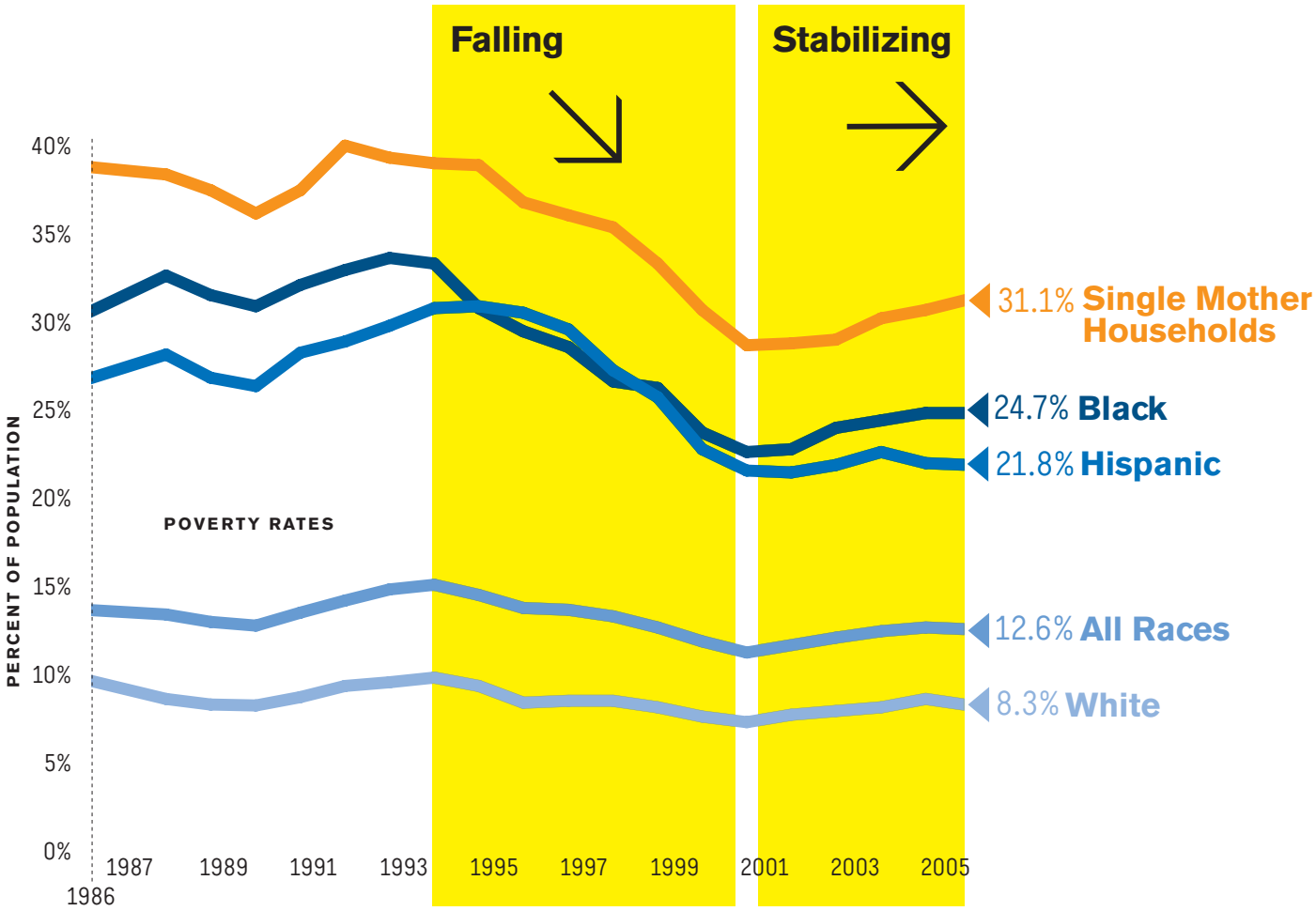
Adjusted for inflation, median pre-tax household incomes have increased 9.5 percent between 1986 and 2005, while per capita disposable income (after tax) has increased by nearly 37 percent.[34] Personal incomes are driven primarily (69 percent) by compensation – the combination of wages and salaries and healthcare and retirement benefits. Compensation has grown more rapidly than wages due to the growth in healthcare benefits. Due to tax cuts, disposable income continued to grow strongly after 2000, even as total compensation slowed.

But the fastest gains have gone to the top earners. The bottom 60 percent of households have seen gains of less than 10 percent in real terms between 1986 and 2005, while incomes for the top quintile have risen 32.5 percent and those for the top 5 percent have risen 49 percent. In addition, the top 1 percent of Americans now receive 15 percent of all income, up from 8 percent in the 1960s and 1970s.[35] The United Kingdom and Canada have seen similar increases in top income shares, while Japan and France have seen almost no change since the late 1940s.[36]

Poverty Remains a Problem, But It Has Fallen Significantly

2.5 Poverty Rates Improved for All Groups over the Past Two Decades

Source: U.S. Census, Income, Poverty, and Health Coverage in the U.S.: 2005 (Aug. 2006)



While the United States is the wealthiest nation in the world, it also has one of the highest poverty rates of any industrialized nation.[37] But the poverty rate has fallen from 22 percent in 1959 to 13 percent in 2005, and all groups made major gains in the 1990s.[38] In a global context, poverty has increased in a number of other developed nations including Australia, the Netherlands and Taiwan.[39]

Poverty, however, has increased or remained relatively unchanged every year since 2000, despite strong economic growth and low unemployment. Even after significant progress during the 1990s, poverty rates for Blacks (25 percent) and Hispanics (22 percent) are significantly higher than for non-Hispanic Whites (8 percent).[40] But for most families this is a temporary situation. Three out of five families that fall into poverty in any one year are out of poverty the following year.[41]

More Bang For Your Buck

Wages, income and net worth are important measures of prosperity, but they do not tell the whole story for a number of reasons.

Because of rising levels of expenditures and falling prices, Americans have better lifestyles than ever. In 1971, 45 percent of American households had clothes dryers, 19 percent had dishwashers, 83 percent had refrigerators, 32 percent had air conditioning and 43 percent had color televisions; by the mid 1990s all of these ownership rates were exceeded even by Americans below the poverty line.[42] Among those in the bottom 10 percent of spending in 2001, 91 percent had a color television, 64 percent had a car, truck or van, and 21 percent had a computer.[43]

Another factor that has increased Americans' purchasing power is that inflation and interest rates over the past 15 years have been very low by historical standards. The prime rate passed 20 percent in 1981 and since then has trended downward, falling all the way to 4 percent in 2005 before starting a slight upward trend.[44] Over the same period inflation averaged just 3 percent.[45] Overall price increases have been low, and prices have fallen drastically for some products. Increasing imports of cheaper goods and rapidly rising levels of productivity have been important drivers of low inflation.[46]

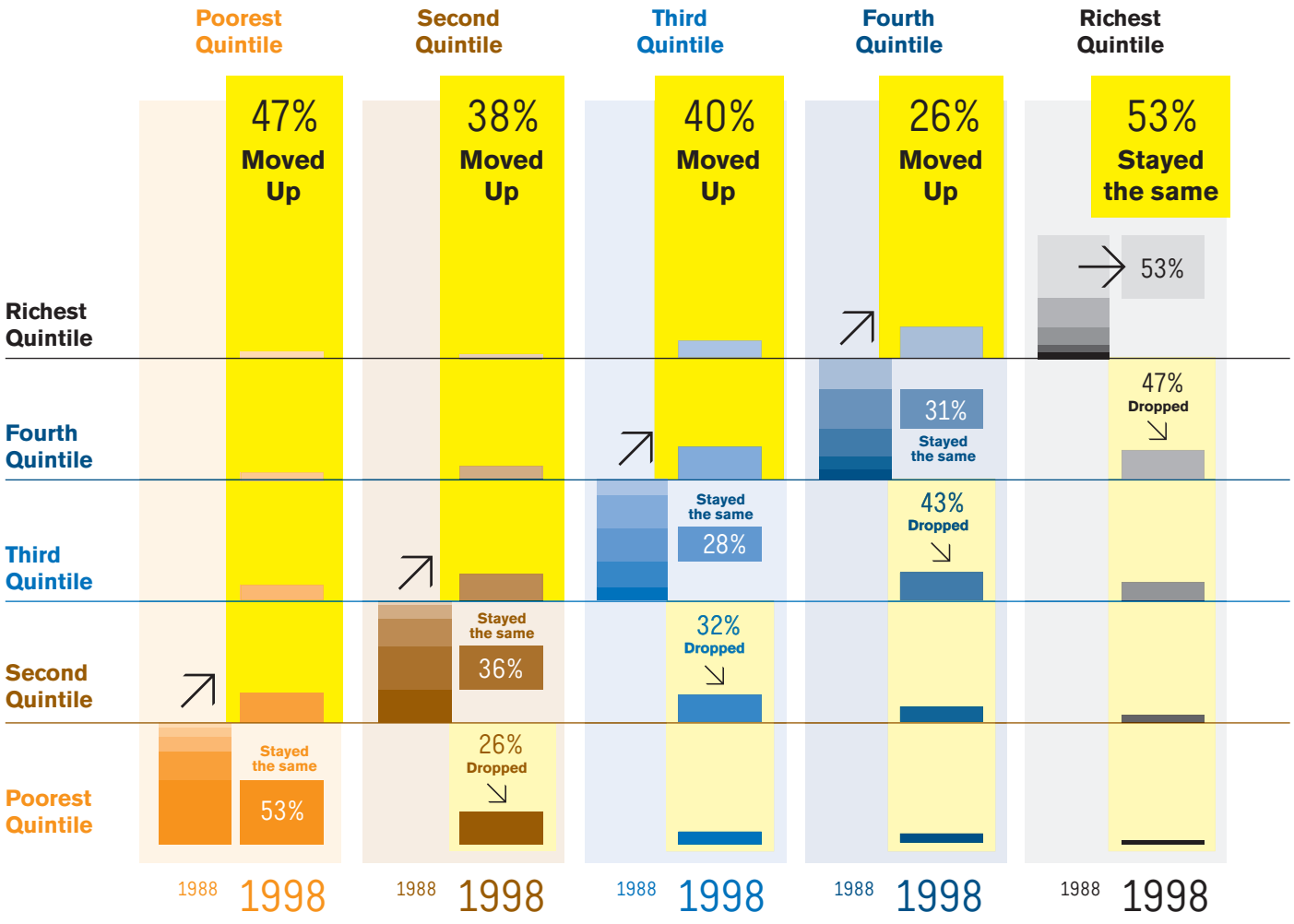
As productivity and competition have increased, consumers have benefited. Studies have shown, for example, that the expansion of Wal-Mart alone over the period from 1985-2004 can be associated with a cumulative decline of 3.1 percent in overall consumer prices. This impact amounts to a cumulative consumer savings of $263 billion by 2004 – the equivalent of $2,329 per U.S. household over this period.[47]

Education and Mobility – Keys to Prosperity

Social Mobility Remains a Powerful Force in the U.S. Economy – Reducing the Long-Term Impact of Inequality

2.6 Over a Decade, Most Families Move between Income Groups

Source: Katharine Bradbury and Jane Katz, "Are Lifetime Incomes Growing More Unequal? Looking at New Evidence on Family Income Mobility," Regional Review (Q4 2002)

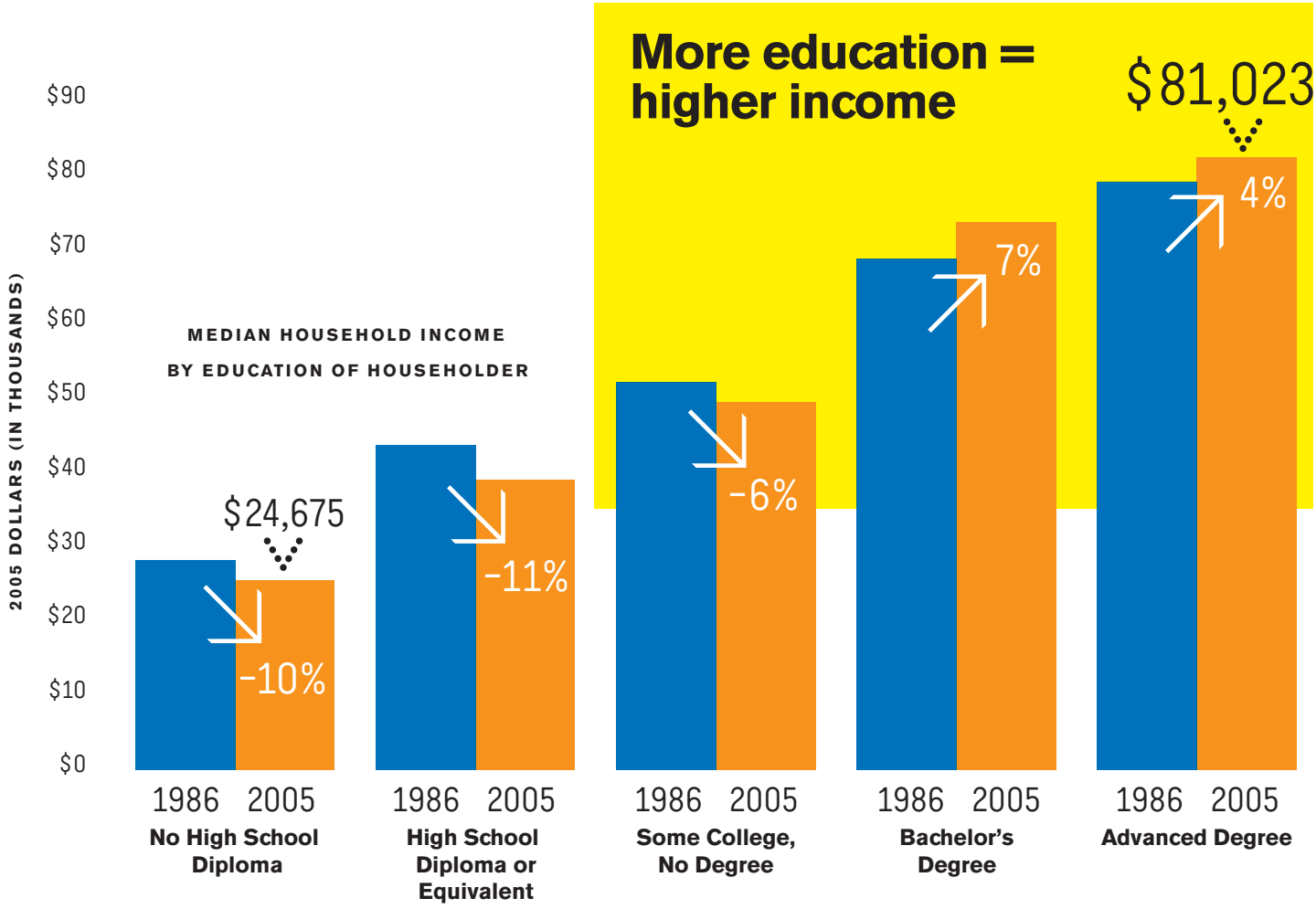


Charts that show changes in income over time by quintiles can be misleading. Most people move from one income group to another over the course of their lives. Between 1988 and 1998, 47 percent of those in the lowest quintile moved up to a higher group, with 4 percent actually reaching the top quintile. Other quintiles showed even more mobility: 72 percent of households in the middle quintile moved out over the course of the decade, with 40 percent moving up and 32 percent moving down. Overall, 60 percent of households moved up or down. (Because it is a relative measure, the number of households moving up is equal to the number moving down.) The absolute level of income rose for all groups. So even those who stayed in the same quintile saw their income rise on average over the decade.

The Returns to Educational Attainment Are Growing over Time

2.7 Only Households Headed by a College Graduate Saw Their Incomes Rise over the Past 20 Years

Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements



Education remains the ticket to increased prosperity in the United States. Higher levels of education translate directly into higher wages — and the education premium has increased over time. In 1986, the average college graduate earned two and a half times more than an American with no high school degree. By 2005, college graduates earned three times as much as a high school dropout and twice as much as a high school graduate who never attended college. Only households headed by someone with a bachelor's degree or higher saw their income rise between 1986 and 2005.

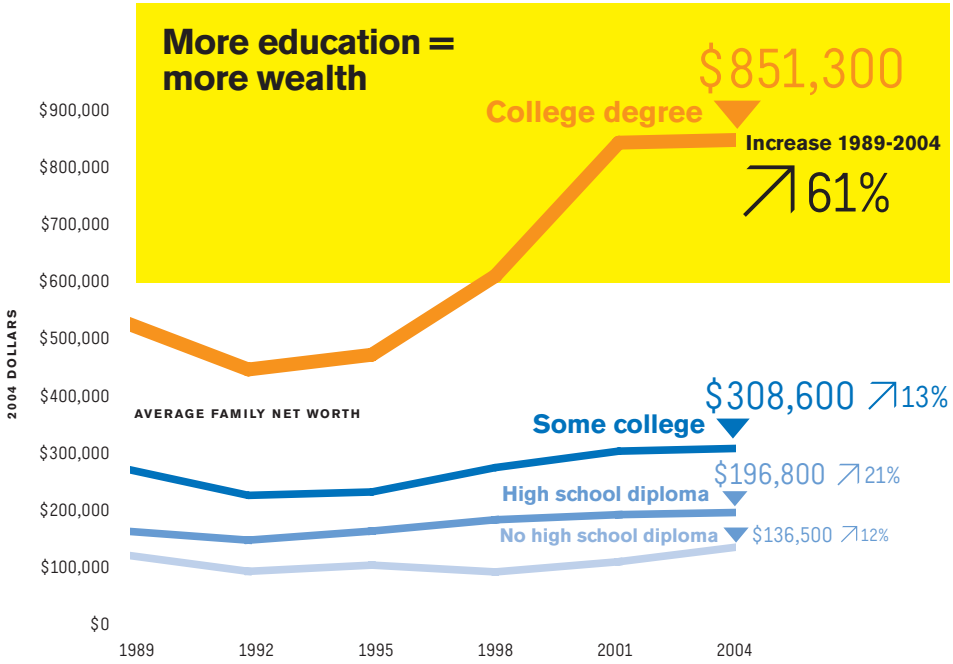
People with more education are also less likely to be unemployed. The unemployment rate for a person without a high school diploma is more than three times higher than that for someone with a bachelor's degree.

Education — the great driver of mobility — can also be a barrier to mobility when access is not equal. In 2001, only 44 percent of high school completers from the bottom income quintile enrolled in college the October after high school, compared to almost 80 percent of those in the upper quintile.[48]

College Graduates Have Made the Largest Gains in Net Worth

2.8 College Graduates Experienced Rapid Gains in Wealth Creation in the Late 1990s

Source: Federal Reserve Board, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," Federal Reserve Bulletin (2006)



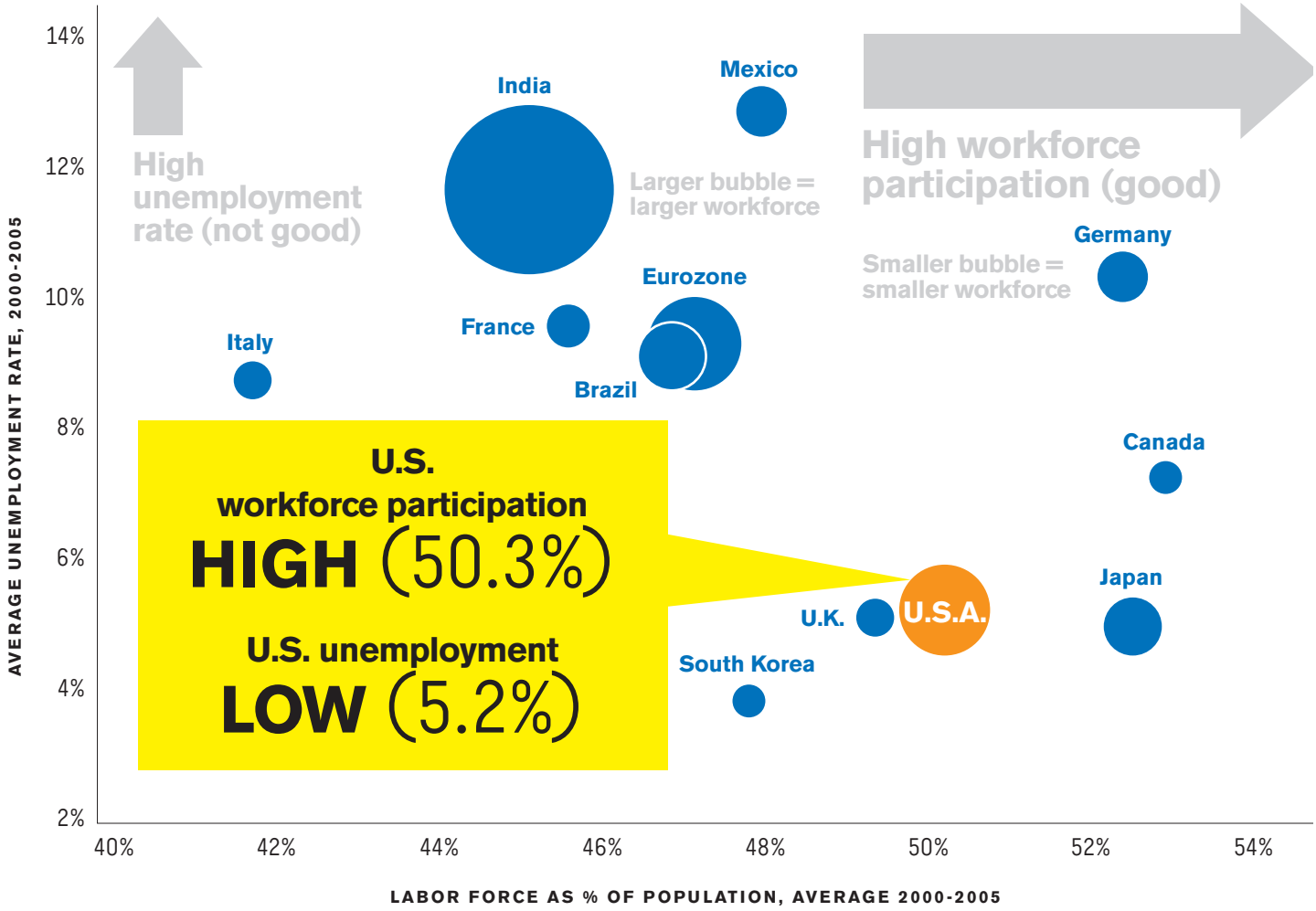
The cumulative returns of education are even clearer when one looks at household net worth. In 2004, the average net worth of a household headed by a college graduate was $851,300, more than four times larger than the average net worth of a household headed by a high school graduate with no college ($196,800) and more than six times more than that of someone who did not complete high school ($136,500). Almost all of the gains made by households headed by college graduates happened in the six years between 1995 and 2001, a period of rapid economic expansion, unprecedented stock market gains and an increasingly knowledge-intensive economy.

A Dynamic Job Market

Americans Are Working in a Churning, Full-Employment Economy…

2.9 The United States Combines High Workforce Participation Rates with Low Unemployment

Source: Global Insight, Inc.

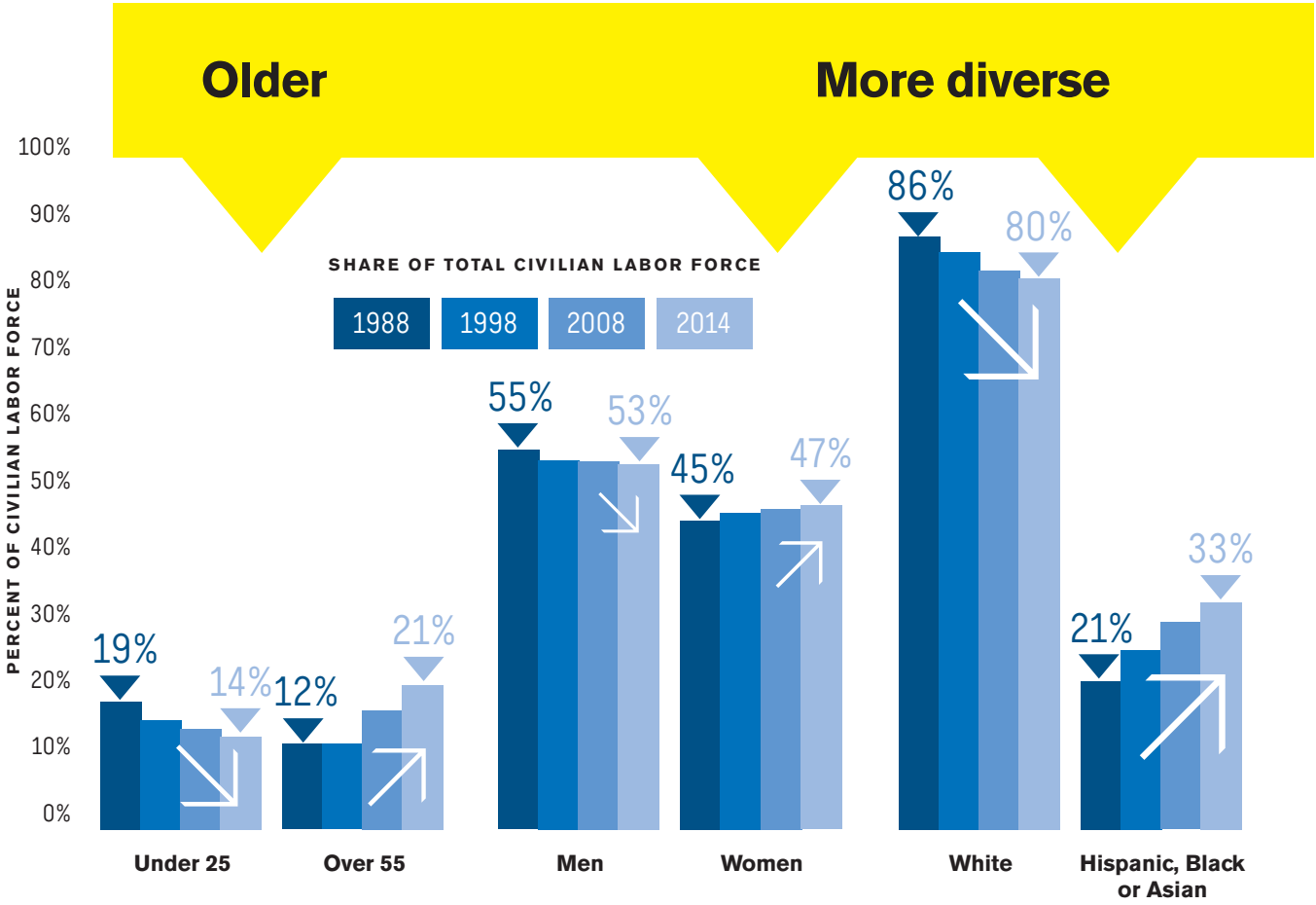


Employment is still the primary source of income and the main mechanism for social mobility for Americans. A strong labor market has played a critical role in wealth creation. The U.S. workforce has grown by 48 percent since 1986, adding more than 43.8 million jobs over the past two decades — more than the entire workforce of Germany in 2005.

...Strengthened by an Increasingly Diverse Workforce

2.10 More Diverse and Older Workers Are Driving Growth in the American Workforce

Source: U.S. Bureau of Labor Statistics



As the "baby-boomers" age, the U.S. labor force will continue to grow older, with the annual growth rate of the 55-and-older group projected to be 4.1 percent, four times the growth rate of the overall labor force. By contrast, the annual growth rate of the 24-to-54 year-old age group is projected to be 0.3 percent.[49]

Women have made major progress in the U.S. labor market. The labor force participation rate for adult women rose dramatically during the 1970s and 1980s, and their employment to population ratio (the proportion of the population that is employed) reached 58 percent in 2005 (compared to about 72 percent for men).[50]

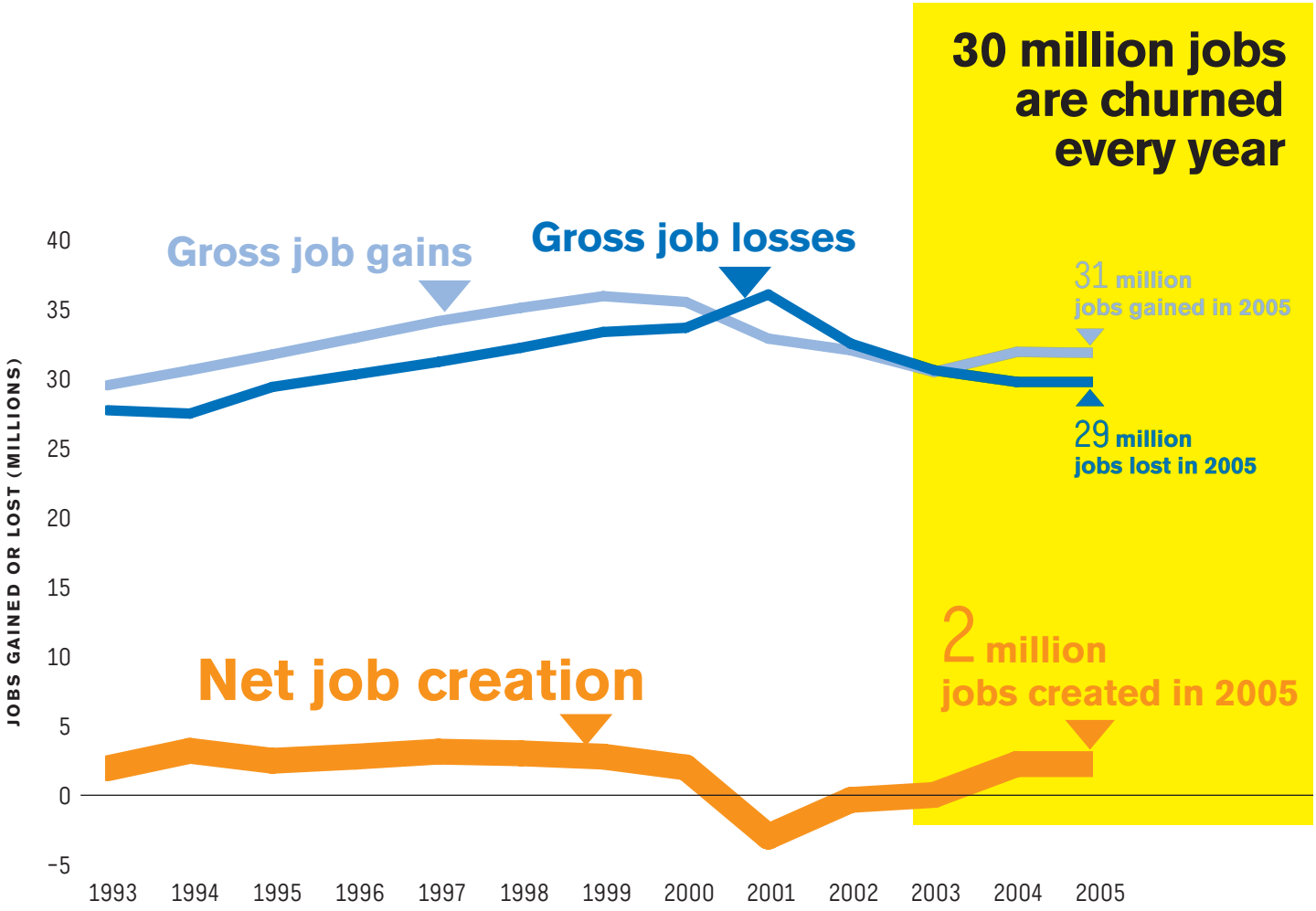
With immigration as a main driver of population growth, and with the high labor force participation rates of the Hispanic and Asian groups, the share of minorities in the U.S. workforce is expanding more than ever before. The Hispanic labor force is projected to grow 33.7 percent from 2004-2014, and reach 25.9 million. The Asian labor force is projected to grow 32.4 percent, and reach more than 8 million. The Black labor force is expected to grow by 16.8 percent during the period, and reach 19.4 million. This compares to an increase of 3.1 percent for non-Hispanic Whites.

On the one hand, workforce diversity is increasingly recognized as a competitive asset. In business enterprises that thrive on creativity and innovation, a diverse workforce produces different perspectives, different approaches to solving problems, and a richer pool of ideas. On the other hand, some of the fastest growing groups in the U.S. labor force are those with lower rates of educational attainment.

Job Churn Points to a Strong and Flexible Economy

2.11 The United States Has High Levels of Job Churn

Source: U.S. Bureau of Labor Statistics



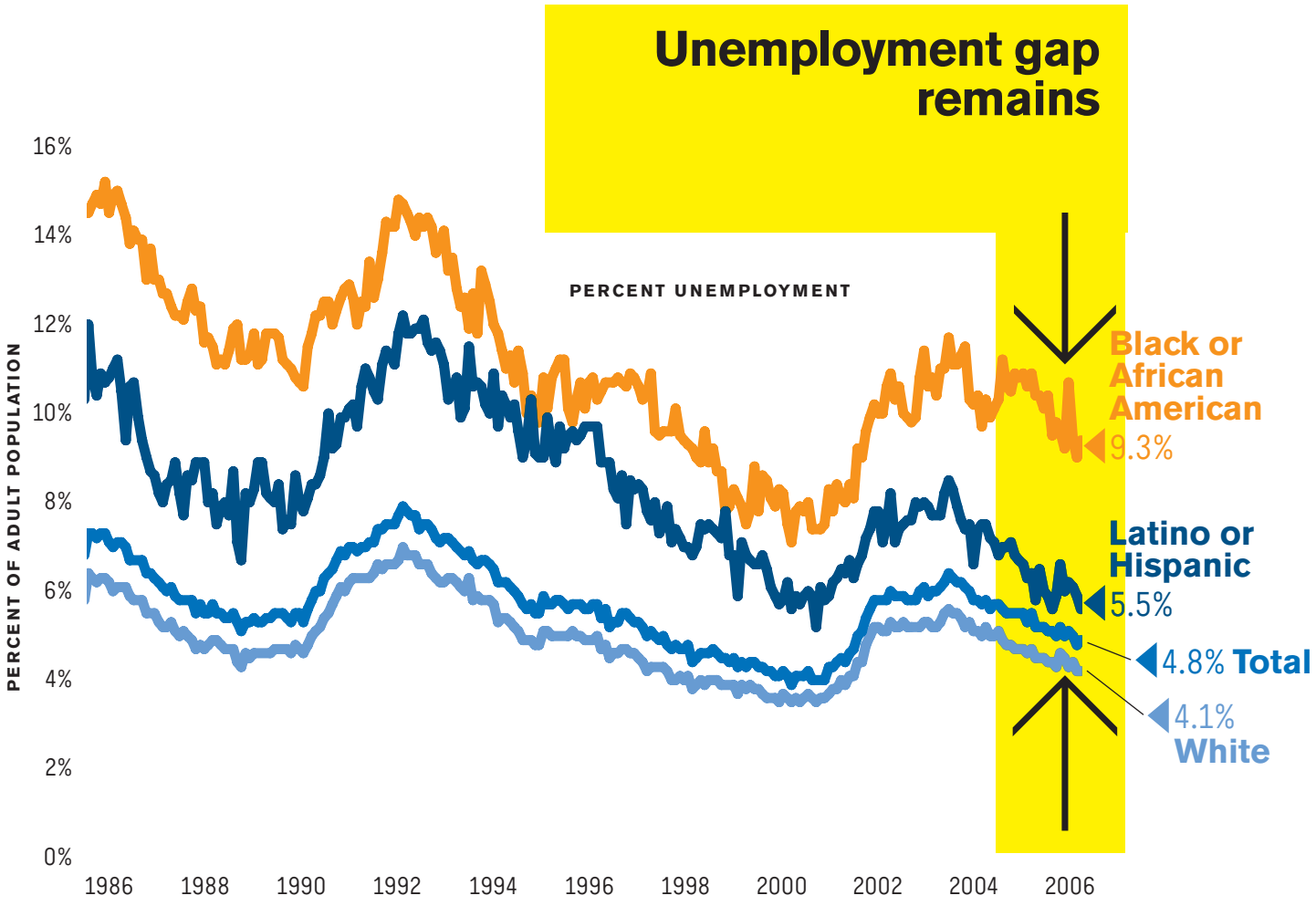
A flexible labor market is critical for economic growth as workers quickly shift from less productive sectors to more productive sectors. While many people focus on net job creation numbers, the net number of jobs gained or lost is actually small compared to the total number of jobs gained or lost. In 2005, for example, about 2 million new net jobs were created: 29 million Americans lost their jobs, while 31 million Americans started new jobs.

In the United States about 10 percent of all jobs are destroyed each year compared to 6 percent in the European Union (4 percent in Germany, 5 percent in France, 7 percent in the United Kingdom and 9 percent in Spain). The higher rate of churn in the United States is due to more flexible labor markets.[51]

Unemployment Is Down over Past Two Decades

2.12 U.S. Unemployment Has Fallen Since the 1980s, but Racial and Ethnic Gaps Remain

Source: U.S. Bureau of Labor Statistics



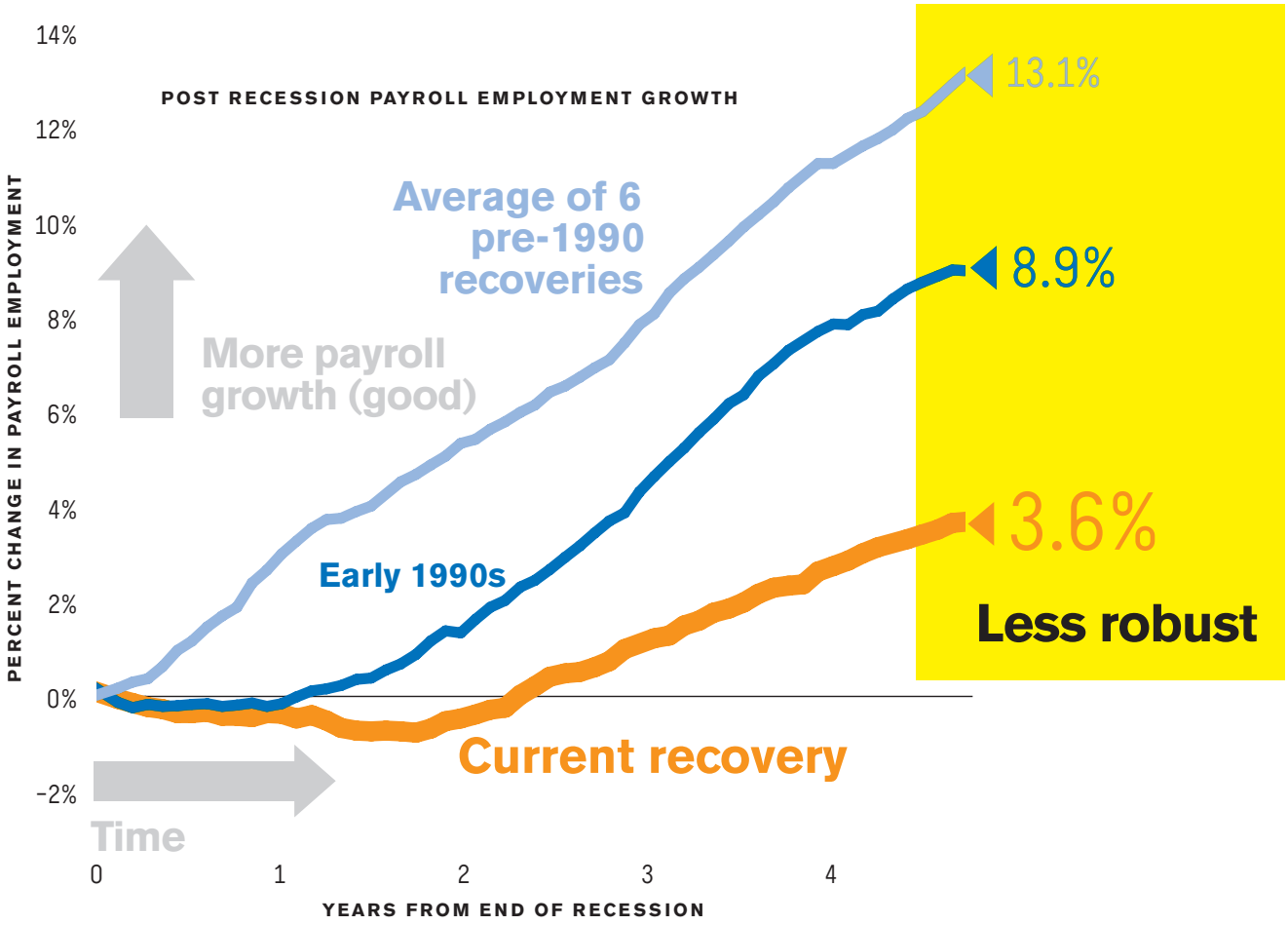
Unemployment has trended downward over the past two decades. Even during the last recession, the peak unemployment rate was significantly lower than in any recession since the mid-1970s. Through the 1990s all racial and ethnic groups saw improvements, though the gaps between Whites and Blacks grew again after 2001.

Perhaps even more important, the United States does not suffer from the type of long-term, structural unemployment that characterizes other economies with less flexible labor markets. For example, in 2005 only 12 percent of unemployed American workers could not find work within 12 months, compared to 22 percent in the United Kingdom, 43 percent in France, 54 percent in Germany, and 52 percent in Italy. For the European Union as a whole, 46 percent of the unemployed were out of work for more than a year.[52]

But Job Creation Has Not Kept Pace with Past Economic Recoveries…

2.13 Although Unemployment Remains Low, Payroll Employment Growth Has Lagged Other Recoveries

Source: Global Insight, Inc.



The rate of employment growth after the 2001 recession has lagged compared to the rate associated with previous economic recoveries. It took about two years for the number of jobs to return to their peak, compared to one year in the pre-1990s recoveries. A number of other industrial economies experienced similar slow-downs in job creation.

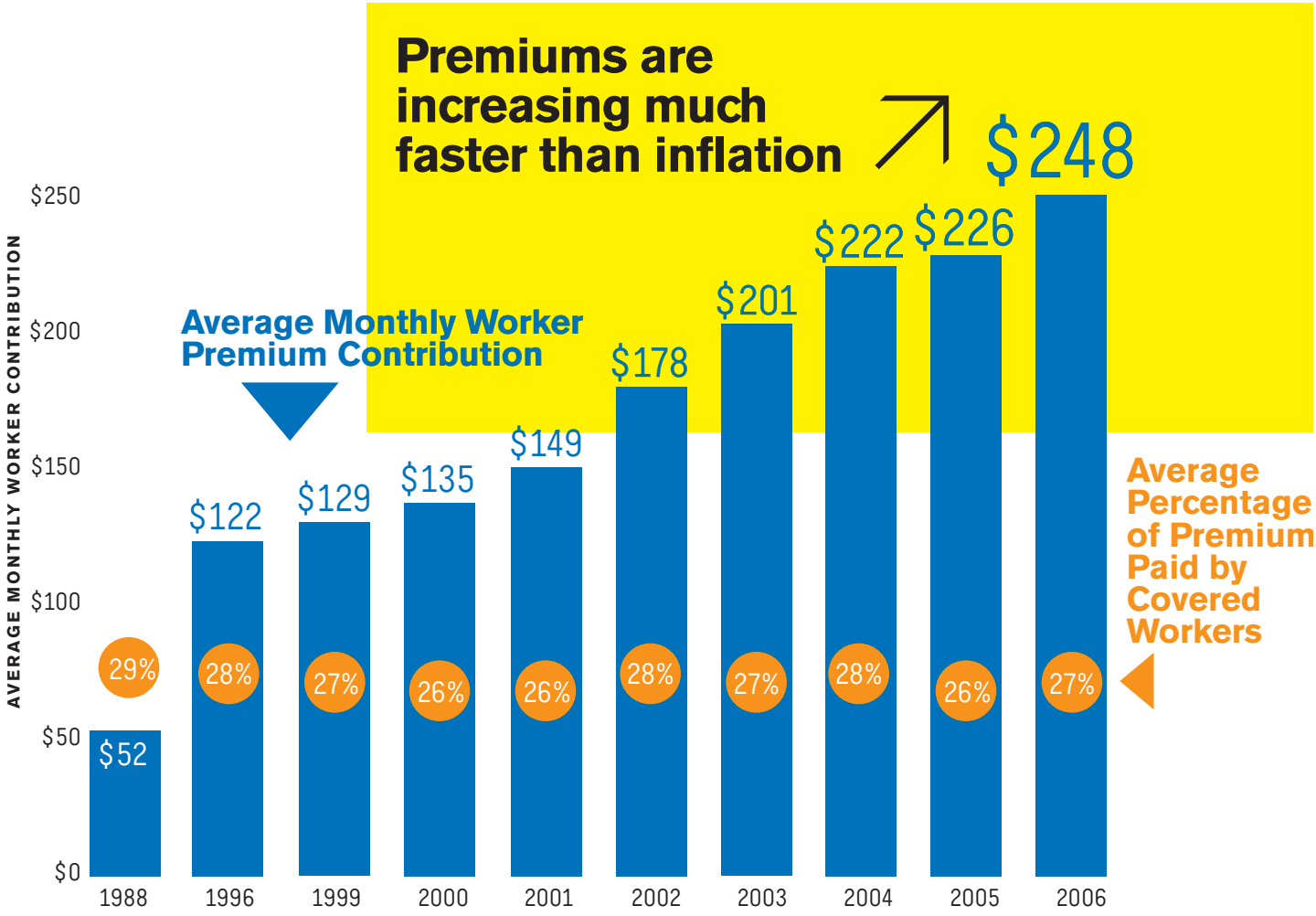
While unemployment has remained low, labor force participation rates have fallen from a peak of 67.2 percent in early 2000 to 66 percent in 2005, indicating that an increasing number of people are simply no longer looking for work (and therefore no longer counted as unemployed).[53]

A number of other factors have contributed to the slower expansion of employment: employers have been hesitant to hire new workers given an uncertain economic outlook, productivity gains have allowed output to recover without increasing employment, and the working age population is growing more slowly due to changing demographics.

…And American Families Face Mounting Healthcare Costs…

2.14 Premiums for Health Insurance Coverage Have Grown Faster Than Inflation

Source: Kaiser Family Foundation, Employer Health Benefits 2006 Annual Survey



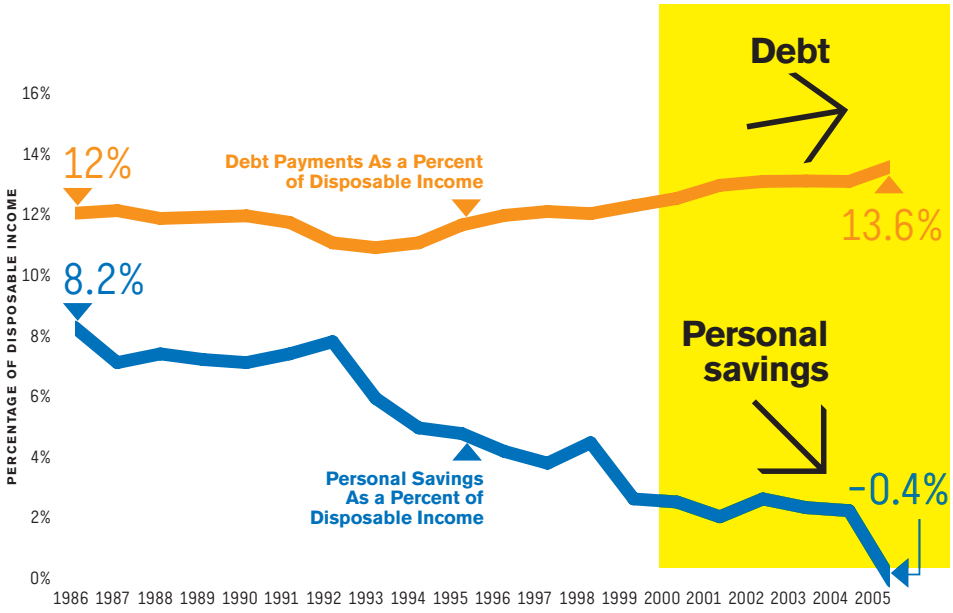
While household wealth has increased significantly over the past two decades, so too has financial uncertainty. Rapid increases in the cost of health care, declines in insurance coverage, and the fact that most health care benefits are tied to a person's employer have all contributed to an increasing sense of risk among Americans. Since 1987, the percentage of Americans with no health insurance has increased from 13 percent to 16 percent, while the percentage of Americans covered by employer-based insurance has fallen from 62 percent to 59.5 percent.[54] Kaiser Family Foundation surveys find that about one in six people with health insurance are very worried about losing their coverage. One in eight people stay in their current job because they fear they will lose health coverage if they change.[55]

The main driver of declining coverage is the rapidly rising cost of insurance both to employees and employers. Monthly premium costs for employees with a family of four increased 377 percent between 1988 and 2006. This is in addition to any out-of-pocket costs for medical treatment. Over the same time, the employee share of the total premium has remained relatively constant between 26 and 29 percent, meaning that employers are also seeing significant increases in costs. While the vast majority of large employers continue to offer health insurance, a growing number of small employers have stopped in the face of mounting costs.

…While Dealing with Growing Financial Risks

2.15 Debt Payments Have Increased While the Saving Rate Has Fallen

Source: Federal Reserve Board, U.S. Bureau of Economic Analysis



Challenges for Workers, Families and the Economy

At odds with U.S. prosperity are rapidly falling personal savings rates and rising levels of household debt. Since the early 1990s, personal savings rates have declined dramatically – falling to levels not seen since the Great Depression.[56] Personal savings were actually negative in 2005, meaning that U.S. consumers spent more than their after-tax income.

At the same time as personal saving rates have fallen, debt payments as a percent of disposable income are on the rise. After hovering around 12 percent from the mid-1980s to the mid-1990s, they had risen to nearly 14 percent by 2005. Rates of bankruptcy and foreclosure have also increased as more Americans struggle to keep up with rising debt levels. Further adding to economic insecurity is the rising volatility of income. The odds that a family will experience a drop in income of 50 percent or more in a given year have more than doubled since the 1970s (from 7 percent in 1970 to more than 16 percent in 2002).[57]

A paradox of U.S. prosperity is that while Americans are much richer than they were in the 1980s – they earn more, their homes are worth more (and more of them own homes) and they can buy much more – they are trying to manage high levels of debt on more volatile incomes and very little savings.

The Bottom Line for the United States The United States remains the most prosperous economy in the world, with a high level of average prosperity across a large and growing population. U.S. citizens have accumulated significant private assets that create income streams in addition to wage income. It provides opportunities for employment, including for minorities and entrants to the job market, and for social advancement.

But U.S prosperity is facing important challenges. One challenge is the increasing divergence between the outcomes for those who are skilled and wealthy relative to those who are unskilled and poor. A second set of challenges affects the overall economy: increasing health care costs, increasing levels of private debt, and an aging workforce impose risks on the ability to sustain high levels of future prosperity.

The U.S. economy generates a high standard of living and a wide set of opportunities. The task for policy makers will be to equip more Americans with the capabilities to take advantage of the new global economic environment, instead of seeing them as a threat.

3. U.S. Performance — How is America Doing?

The prosperity of Americans can only be sustained and improved over time if the U.S. economy continues to perform well. This profile of U.S. strengths and weaknesses provides important insights into the areas that economic policy should address to bolster competitiveness, including: the rate of national productivity growth, labor market utilization, innovation, and risks to reaching the full level of potential prosperity — in particular, macroeconomic imbalances.

U.S. Performance and Productivity U.S. productivity growth, higher than in most of the advanced economies, comes in large part from the unprecedented ability of the American private sector to leverage the transformational capabilities that come from the diffusion and use of information technologies. Openness to market entry for immigrants and other groups, and the large amount of churn that enables re-entry for employees who have lost their jobs drives the high U.S. labor utilization rate. The United States has maintained its position as the top destination for foreign direct investment through its stable investment environment, high productivity and its sophisticated market. Further, the United States remains the world's largest producer of manufactured goods and one of the world's top exporters.

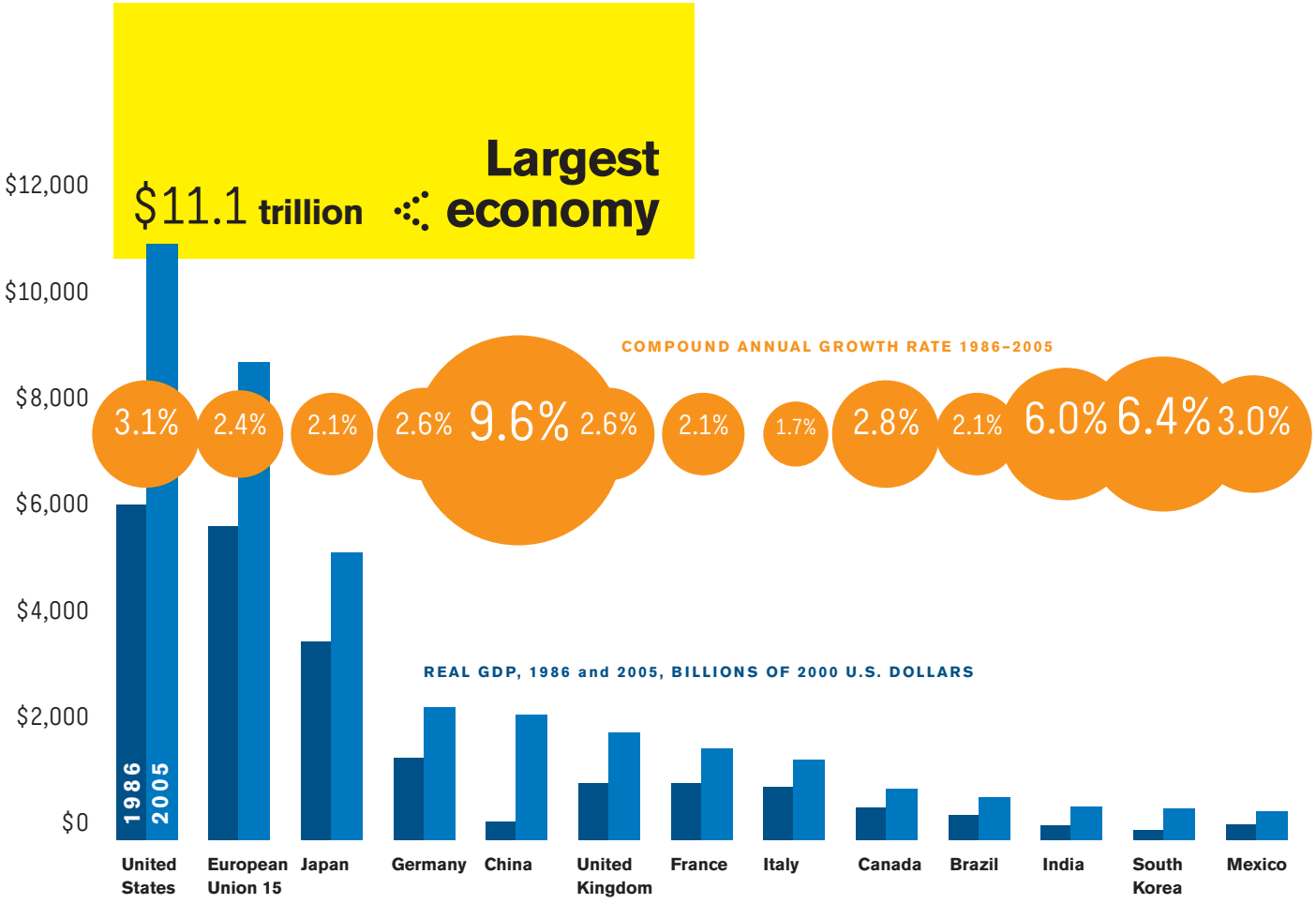
Growing Imbalances in the Global Economy The United States has served as the major growth engine of the global economy, but global dependence on American consumer spending has led to growing imbalances in international flows of goods and capital. America's current account deficit has increased rapidly while other regions have grown surpluses. In parallel, efforts to put America's public sector fiscal position in order have deteriorated.

U.S. Performance and Productivity

Two Decades of Strong Economic Growth in the United States…

3.1 The United States Has the World's Largest Economy and Growth Has Outpaced Other Developed Economies

Source: Global Insight, Inc.



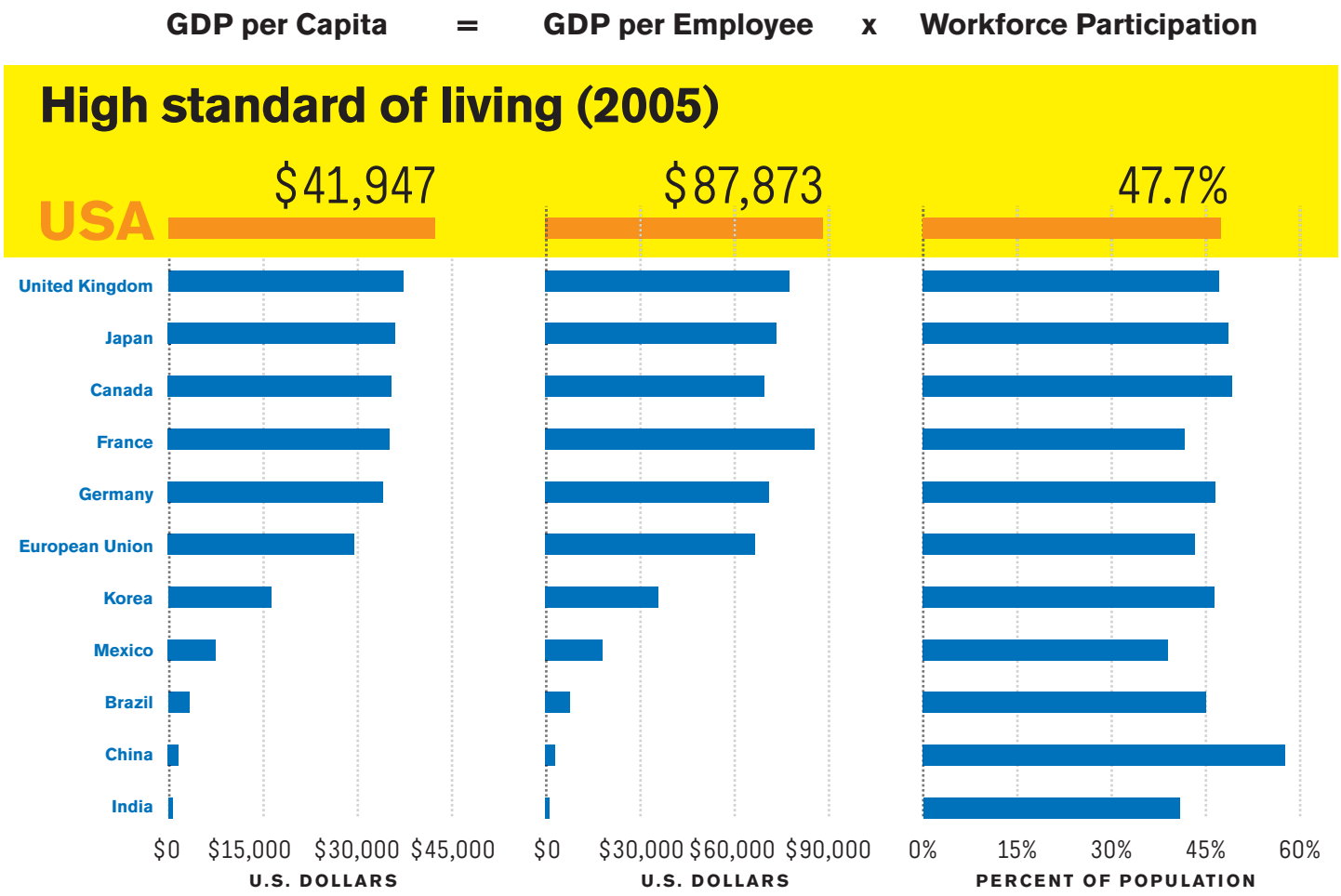
From 1986 to 2005, the U.S. economy grew at a compound annual rate of 3.1 percent, faster than any other major developed country.[58] As a consequence, real GDP nearly doubled, maintaining America's status as the world's largest economy. From 1991 to 2001, the U.S. economy experienced 10 years of uninterrupted growth, the longest economic expansion in U.S. history, and the recession of 2001 was one of the briefest and mildest on record.

The U.S. economy has demonstrated impressive resilience. Over the past six years, it has withstood a number of shocks – a major terrorist attack, a stock market crash, corporate governance scandals, two wars, a sharp increase in oil prices and a series of devastating hurricanes. But growth and productivity have continued to show strong gains.

…Based on High Productivity and Workforce Participation…

3.2 Americans Are More Prosperous Because American Workers Are More Productive Than Their Global Peers

Source: Global Insight, Inc.

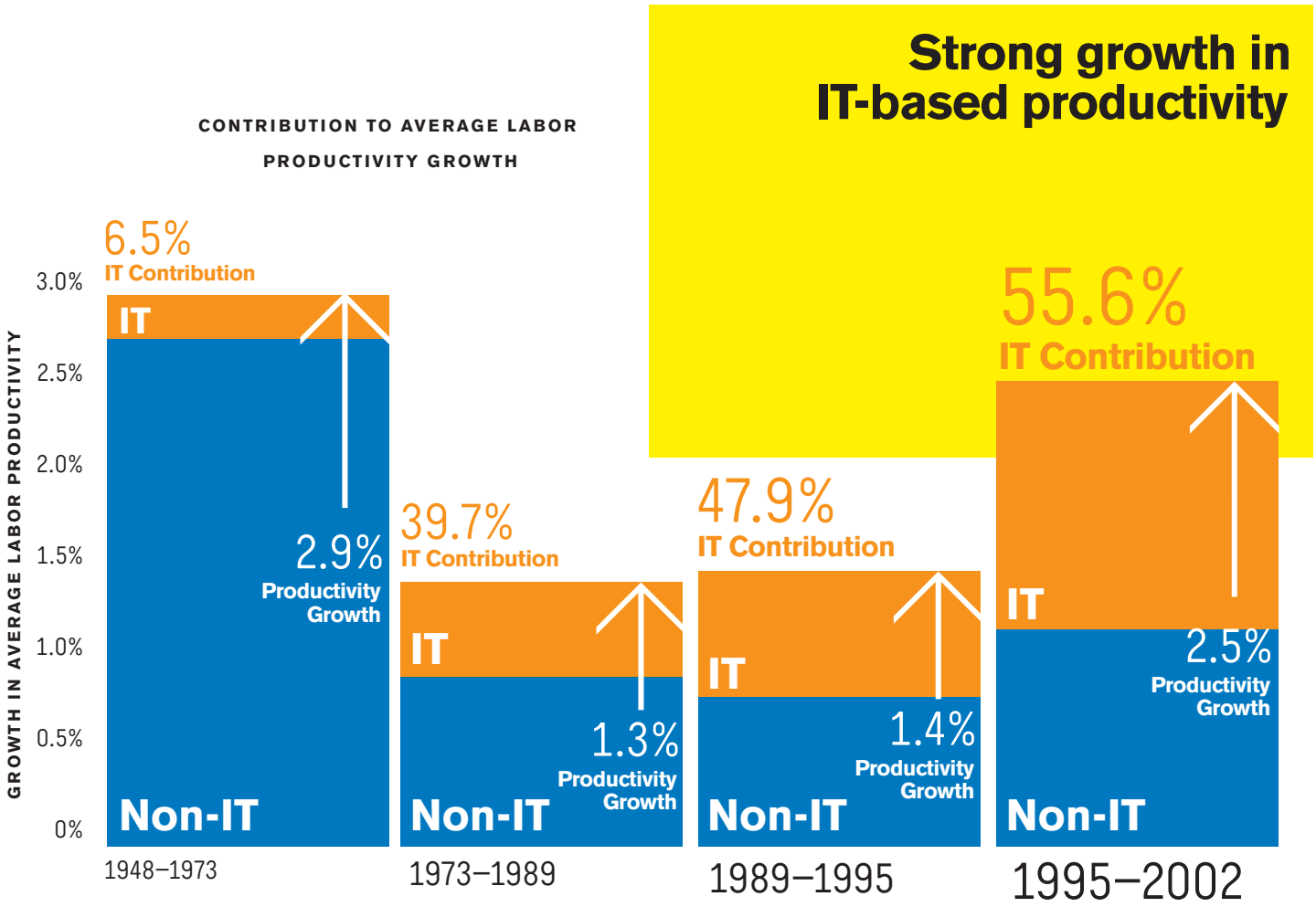


The absolute size of an economy does not make it more or less competitive. What matters is the overall level of productivity that drives both prosperity and economic growth. Standard of living, or GDP per capita, depends on two factors – productivity (output per worker) and the percentage of the population in the workforce. America's high standard of living is due to the fact that American workers are among the most productive in the world and a greater share of the American population works than in many other countries.

…And Accelerated by Information Technology

3.3 The Adoption and Diffusion of Information Technology Has Driven U.S. Productivity Growth

Source: Dale W. Jorgenson, Mun S. Ho and Kevin J. Stiroh, Productivity, Vol. 3: Information Technology and the American Growth Resurgence (Cambridge: MIT Press, 2005)



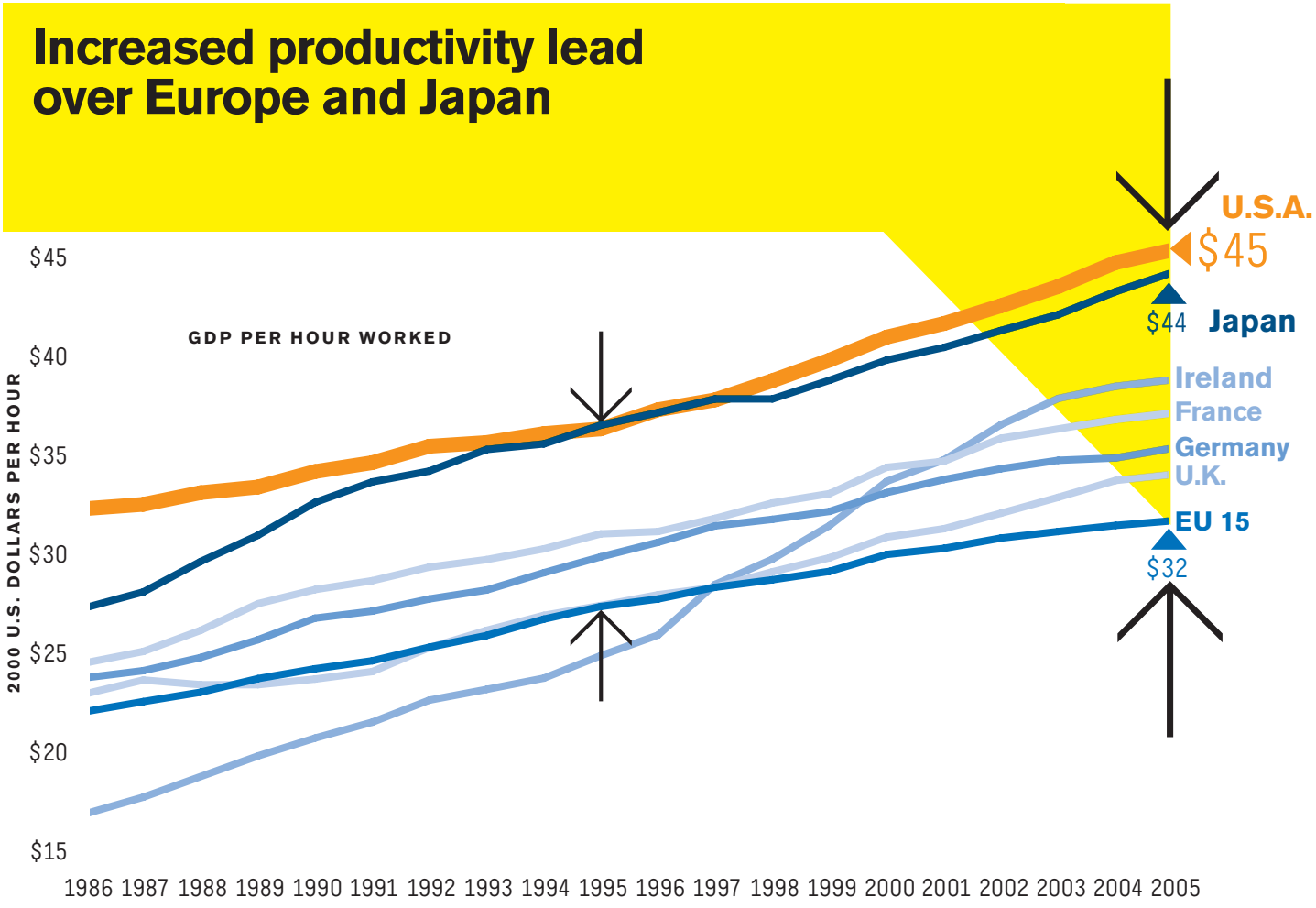
In the late-1990s, the United States experienced the strongest economic performance in a generation with strong GDP growth accompanied by low inflation and healthy employment growth. A rapid acceleration in productivity has been the primary driver of this trend. After slowing in the 1970s and 1980s, U.S. productivity growth accelerated in the 1990s. Productivity growth has continued even through the recession of 2001, driving a quick rebound in GDP growth.

The rapid diffusion and use of information technology (IT) has played a key role in the productivity boom of the late-1990s. From 1989 to 2001 the average productivity growth for IT intensive industries was 3.03 percent, while less IT-intensive industries averaged 0.42 percent.[59] IT-producing industries have made tremendous advances in production while the globalization of IT production has further contributed to rapidly falling prices for IT hardware, driving the widespread diffusion of IT throughout the U.S. economy.[60] IT and IT networks have transformed business organizations, leading to major productivity gains.

The United States Has Increased Its Productivity Lead

3.4 U.S. Productivity Growth Has Accelerated, Increasing America's Lead over Europe and Japan

Source: Global Insight, Inc.



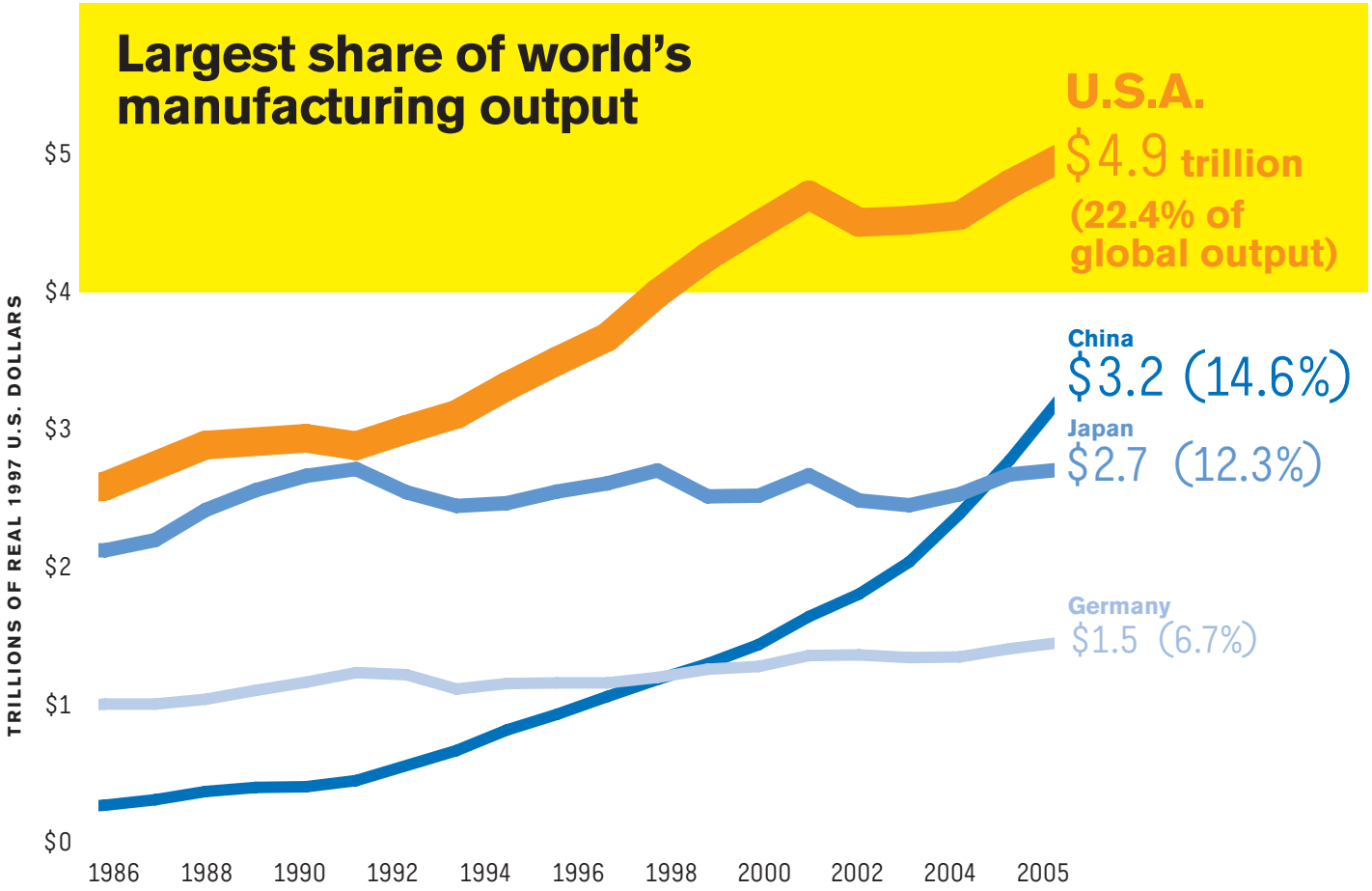
A wide range of countries invested heavily in information technologies throughout the 1990s and experienced some acceleration of productivity growth. But the United States has pulled ahead of other major economies, increasing its lead in productivity over the European Union and Japan.

According to the Conference Board, most of the U.S.-EU productivity gap is due to service industries that rely heavily on information and communications technologies. Retail and wholesale trade account for more than 50 percent of the total difference in average annual productivity growth.[61] U.S. companies were better able to integrate IT into new business practices because of a regulatory system that allowed for more experimentation.[62]

The United States Remains the World's High-Value Workshop

3.5 U.S. Manufacturing Output Continues to Lead

Source: Global Insight, Inc.



Higher levels of productivity allow the United States to remain competitive despite higher labor costs than in developing countries. Real value added per manufacturing worker more than doubled between 1987 and 2005, allowing total value added (the difference between the value of outputs and the price of inputs) to increase 77 percent, even as manufacturing employment fell over the same period by 19 percent (3.4 million jobs).[63]

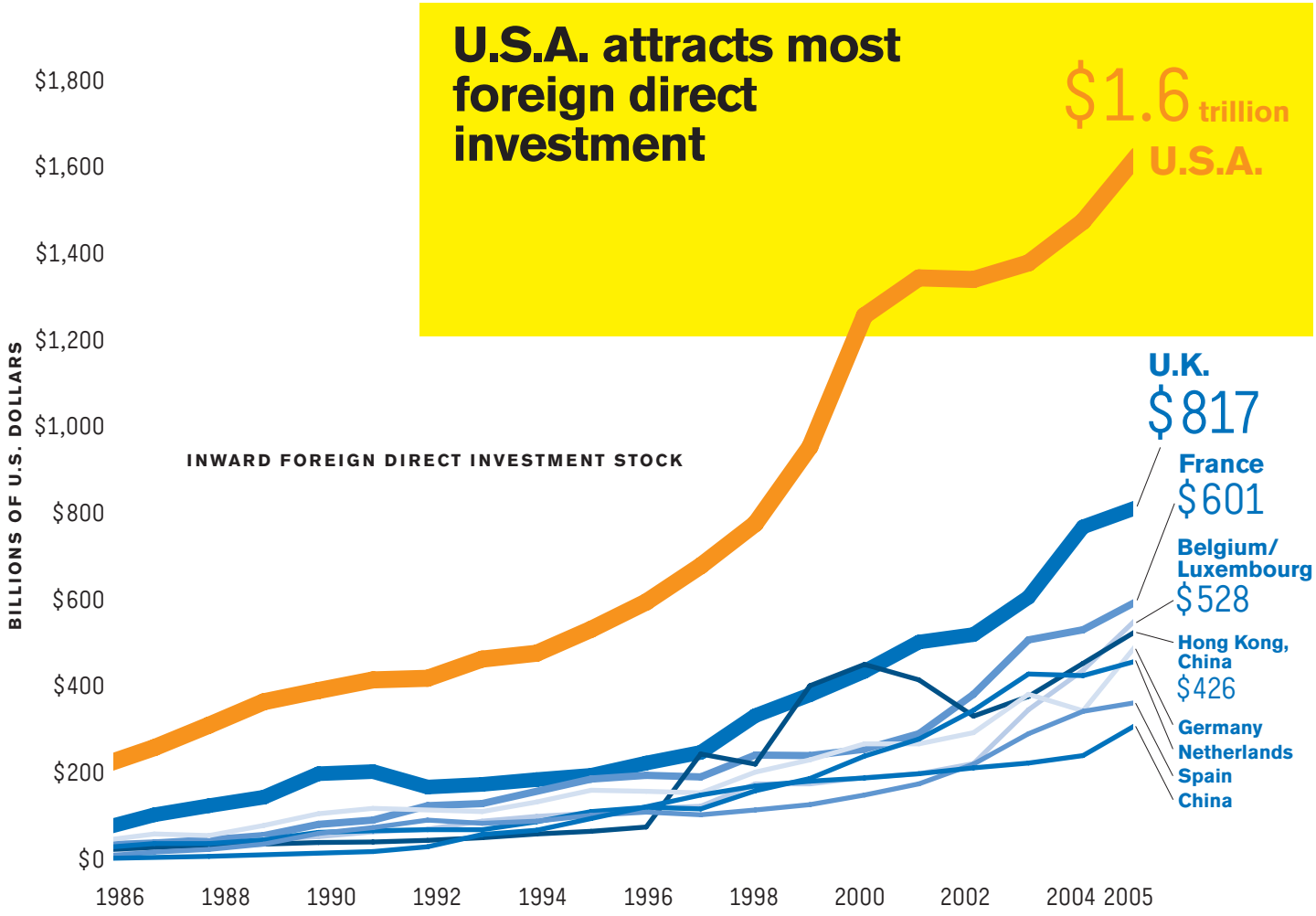
The United States still produces more manufactured goods than any other country in the world (although in 2003, Germany surpassed the United States as the world's largest merchandise exporter). America's share of global output has fallen slightly since the late-1990s, from 25 percent in 1999 to 22 percent in 2005, but still leads the world. U.S. manufacturing output in 2005 was 50 percent larger than China's.

America's lead is even greater in high technology manufacturing value added with almost 35 percent of the global total. The United States has maintained its share of global value added in high technology manufacturing even as China's share has soared from less than 2 percent in 1990 to almost 21 percent in 2006. The European Union, Japan and a number of Asian nations have all seen their shares decline.

The United States Remains a Magnet for Global Investment

3.6 America Continues to Attract the Largest Share of Foreign Direct Investment

Source: UNCTAD



America's high levels of productivity, strong growth and unparalleled consumer market have attracted more foreign direct investment than any other economy. The total stock of foreign direct investment in the United States is now $1.6 trillion, about twice that of the next largest recipient and more than six times as much as China. Between 1986 and 2004, the United States received greater annual flows of foreign direct investment than any other country in the world. (The United Kingdom received more in 2005.)

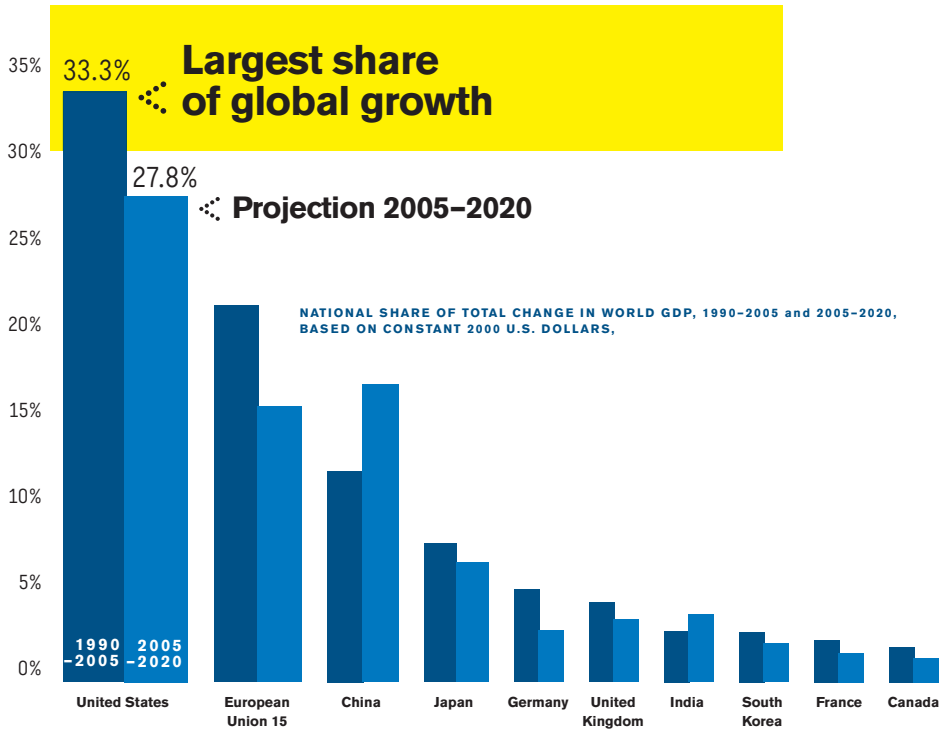
Foreign companies play an increasingly important role in the U.S. domestic economy. Sales by foreign companies in the United States grew from $672 billion in 1986 to $2.3 trillion in 2004. U.S. affiliates of foreign companies employed 5.1 million U.S. workers in 2004, accounting for 4.5 percent of U.S. private sector employment. These affiliates generated 6 percent of U.S. GDP and 11 percent of U.S. exports.[64]

The United States Is — And Is Projected to Remain — the Main Driver of Global Growth…

Growing Imbalances in the Global Economy

3.7 The United States Was Directly Responsible for One Third of Global Growth Over the Past 15 Years

Source: Global Insight, Inc.

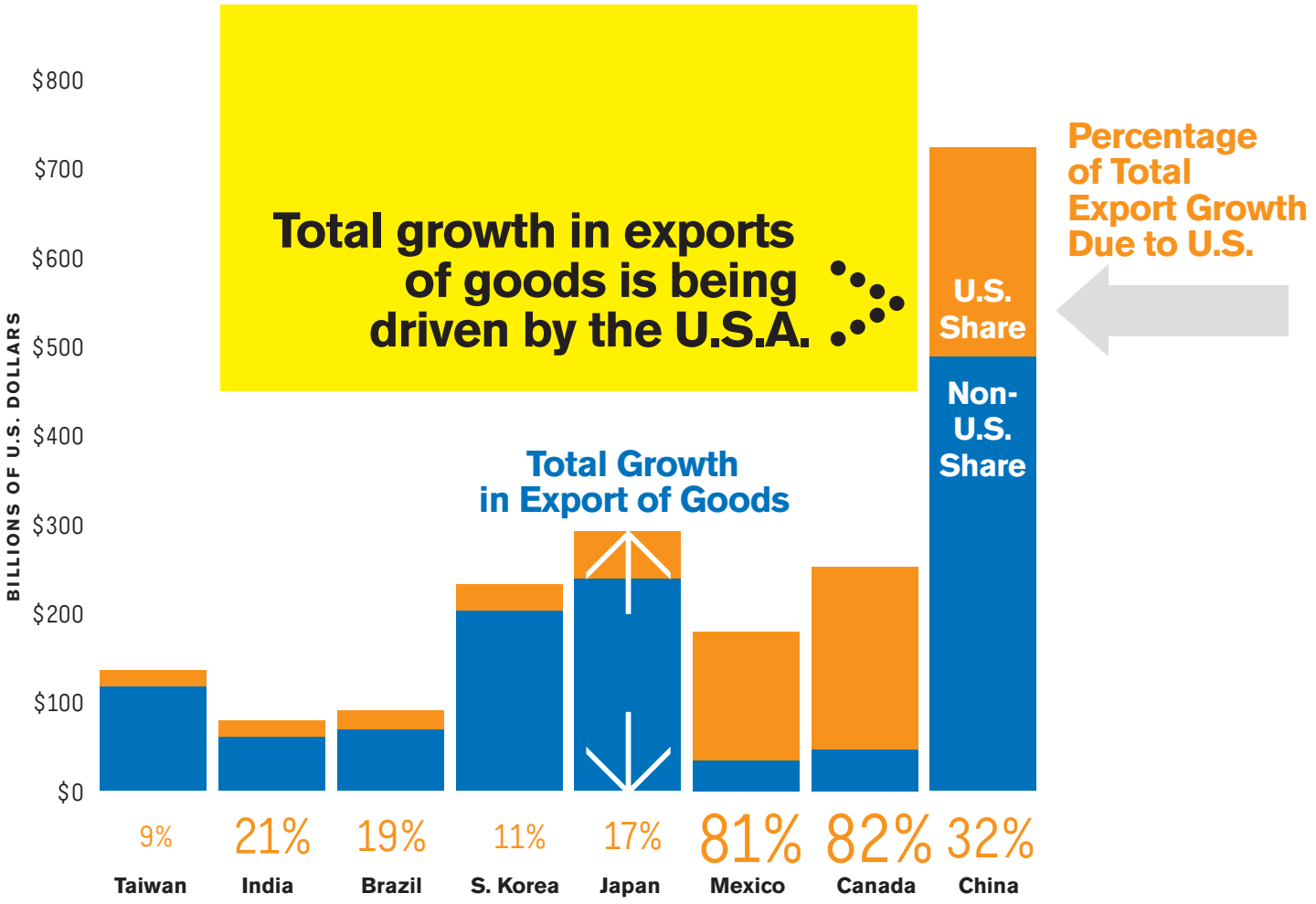


The size and sustained growth of the U.S. economy, powered by productivity, investment and consumption, has made it the world's economic engine. **The United States was directly responsible for one-third of total global growth between 1995 and 2005, and is expected to remain the largest contributor to global growth over the coming decade.** But nations like China are picking up the pace; over the next decade, economists predict that China will pull ahead of the European Union and account for nearly 16 percent of the world's economic growth.

…And the United States Is the World's Largest Consumer…

3.8 U.S. Consumption Has Driven Export-Led Growth around the World

Source: Global Insight, Inc.

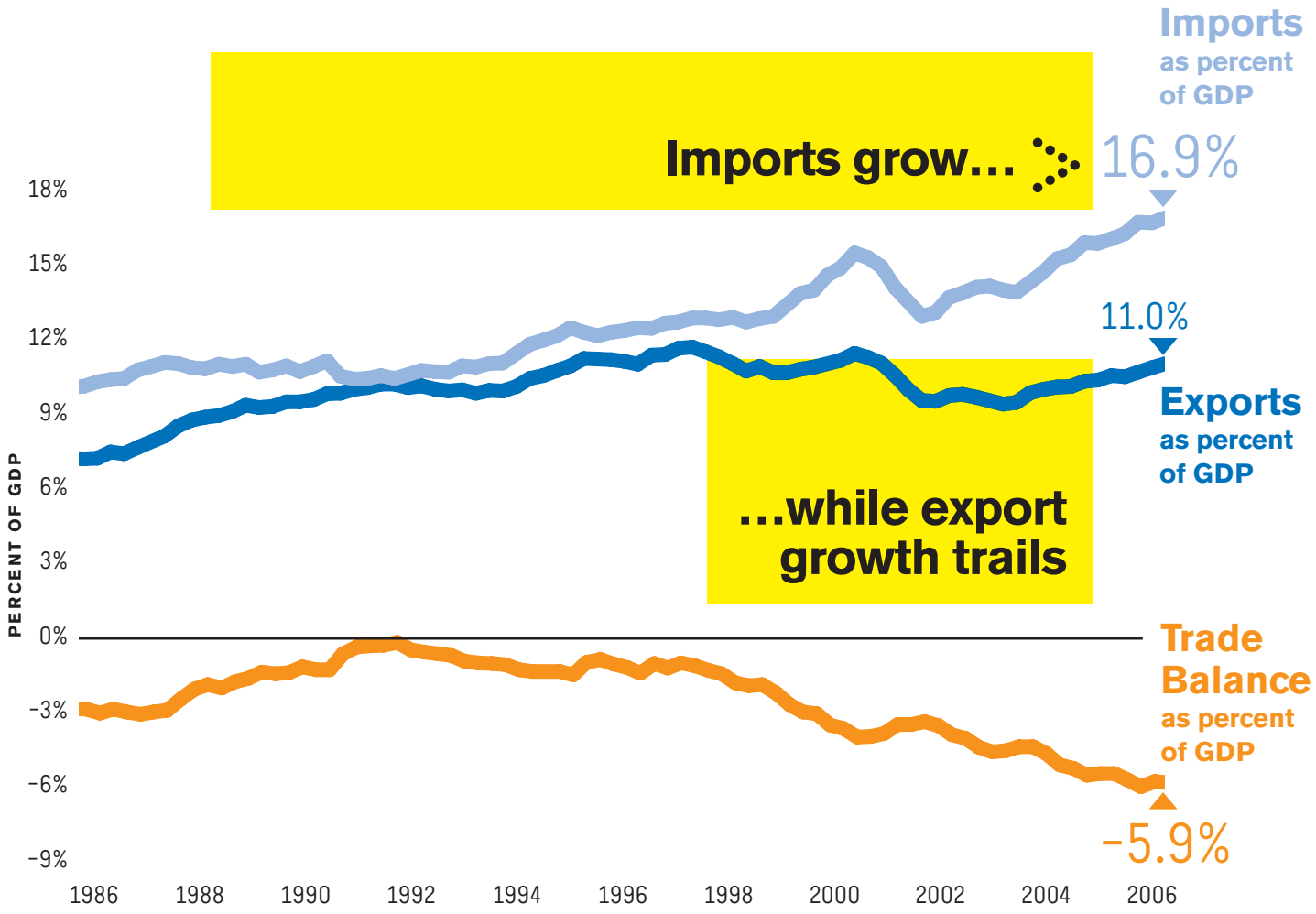


The United States has also contributed to global growth as the world's largest consumer. The rapid increase in U.S. imports (which have increased 114 percent since 1995)[65] has been a major driver of export-driven growth around the world. Between 1983 and 2004, the United States was responsible for almost 20 percent of the growth in exports from all other markets.

…Leading To A Signficant Deterioration in the Trade Balance

3.9 The U.S. Trade Balance Has Deteriorated as Imports Have Increased While Export Growth Has Trailed

Source: Global Insight, Inc.



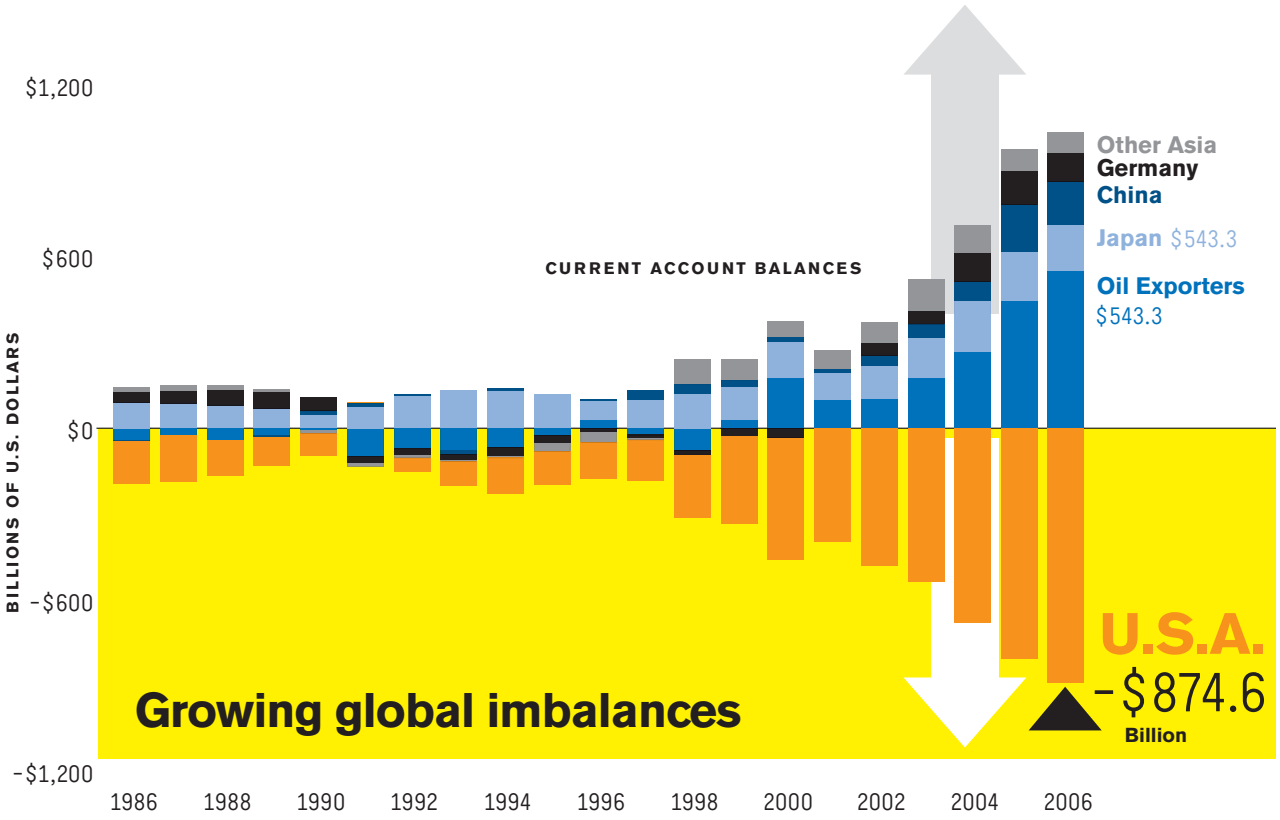
Despite the fact that the United States is the world's largest producer of manufactured goods and one of the world's largest exporters, it has run a trade deficit every year for more than two decades. Until recently, America's trade deficit was driven primarily by rapidly rising consumption of imports. Between 1986 and 2005 the import share of GDP nearly doubled, rising to almost 17 percent. Exports rose through the late-1980s into the 1990s, but slowed in the late-1990s and fell in 2001. Exports did not regain their pre-2001 level until mid-2006. But a large gap between exports and imports still remains. In 2005, the United States imported more than twice as much merchandise as it exported.[66]

Rising energy costs have also played a role in the growing trade deficit. The cost of U.S. oil imports in 2005 was $231 billion, accounting for 31 percent of the net U.S. trade deficit in that year.[67]

The U.S. Current Account Deficit Is Part of a Larger Global Imbalance…

3.10 America's Current Account Deficit Is Part of a Larger Global Imbalance

Source: Global Insight, Inc.



America's role as a global consumer has been enabled by a range of factors that represent an important shift in the global financial system. For the first time in history, emerging economies, such as China, are loaning enormous amounts of money to the world's richest country.

America's current account deficit means that it spends more than it earns. The current account is the difference between national savings and national investment. While investment has remained stable (averaging 19 percent of GDP over the past two decades), America's national saving rate has dropped significantly from 18 percent of GDP in 1999 to less than 14 percent in 2004.[68] The causes include a decline in household saving and the rising federal deficit. The only way the United States has been able to keep investing without increasing its saving rate has been to borrow from other countries.

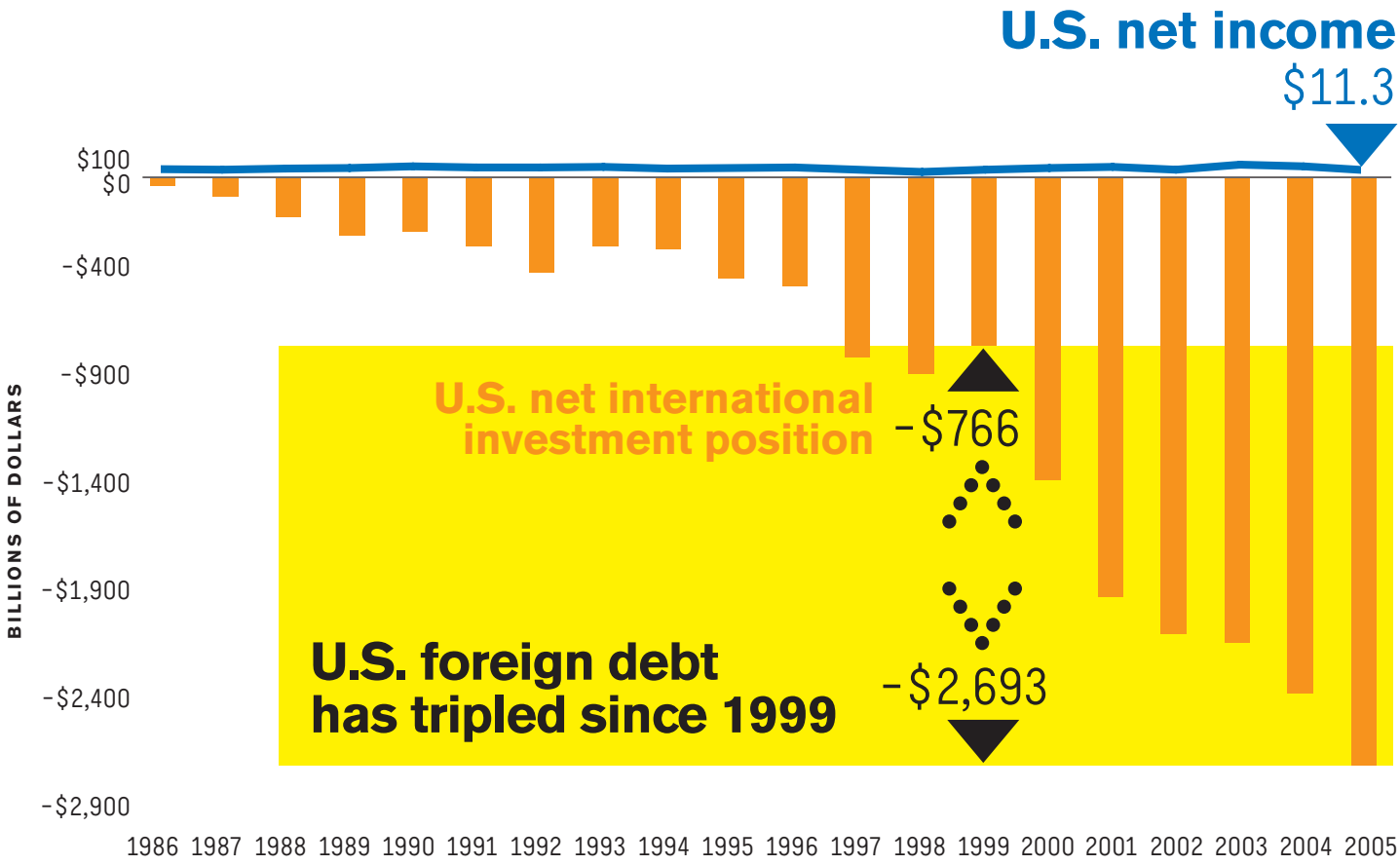
Other nations have significantly higher savings rates than the United States. China's is 50 percent of GDP, Japan's is 28 percent and Germany's is 21 percent.[69] Each of these nations saves more than they invest. Some economists have referred to this as a "global savings glut" – an excess of savings that these countries are not able to utilize domestically and must invest globally.[70] The United States currently draws in almost three-fourths of the world's current account surpluses and 65 percent of total global financial flows.[71] This equals $6 billion every working day that the United States must borrow from the rest of the world to maintain its level of spending.

These enormous inflows of foreign capital have lowered interest rates and prices, leading to a rapid increase in consumption by the United States. The stock market boom of the 1990s and the housing boom of the past few years are both linked to increasing foreign investment. To put it simply, foreign savings finance U.S. consumption which drives foreign export-led growth. The situation is mutually beneficial in the short term but creates increasing risk of a global financial crisis.

…Leading To Almost Three Trillion Dollars in Debt

3.11 America's Foreign Debt Has More Than Tripled in the Last 7 Years

Source: U.S. Bureau of Economic Analysis



As a result of its cumulative current account deficits, America's net foreign debts have increased from $36 billion in 1986 to $2.7 trillion in 2005, more than tripling just in the last 7 years. This represents the difference between U.S.-owned assets abroad — totaling $10 trillion in 2005 — and foreign-owned assets in the United States — totaling $12.7 trillion.

Paradoxically, U.S. net income has remained positive over this two-decade period. That is, despite the fact that foreign entities own more U.S. assets than Americans own foreign assets, the United States receives more in income from its investments than it pays out abroad. Some economists have suggested that the United States must have significant (some claim up to $3.1 trillion) foreign assets that are not being counted. This so-called "dark matter" (because it cannot be measured by standard accounting techniques) consists primarily of intangible assets.[72] Others believe that this paradox can be explained by the fact that Americans tend to invest in higher-risk, higher-return assets overseas (like new businesses or emerging market equities) while foreign entities tend to invest in low-risk, lower-return assets in the United States (like Treasury bonds). One analyst has described the United States as "the world's biggest hedge fund," borrowing at low rates to invest in high-risk opportunities.[73]

In 2006, however, as interest rates rose, net income has dipped into negative territory for the first time in 90 years. In the second quarter of 2006 the United States had to pay more to its foreign creditors than it received from its investments abroad — $2.5 billion.[74] These debt payments represent a share of national income that Americans will not be able to spend or save. If interest rates continue to rise, so will the debt payments, reducing America's ability to invest in other priorities such as research and development, education or infrastructure.

Apart from the potential drag on the U.S. economy, the size of these debts represents a threat to the entire financial system. A loss of confidence in America's ability to repay these debts could cause a crisis that would impact not just the U.S. economy but the entire global economy. As economist John Maynard Keynes noted, "If you owe your bank a hundred pounds, you have a problem. But if you owe a million, the bank has a problem."

The Bottom Line for the United States The data presented in this section intend to provide a balanced assessment of U.S. economic performance. The aim is to understand better the sustainability of current U.S. prosperity and point out areas of concern for the underlying competitiveness profile of the U.S. economy.

The United States continues to register strong economic performance. The nation combines high levels of productivity with a high level of workforce mobilization. It has been able to leverage the potential of new technologies, much more so than its advanced economy peers. And it registers strong performance on world export markets and as a location for investment.

But the U.S. economy is increasingly exposed to global imbalances. The trade deficit, the current account deficit, the fiscal deficit, and the low private saving rate all point toward an increasingly unsustainable macroeconomic environment.

The United States remains one of the most competitive economies in the world. Many indicators point toward the strength of the economy's underlying microeconomic conditions. Other economies are growing in size, but there is no indication that this comes at the expense of the United States. The growing macroeconomic imbalances in the global economy are a concern, however, because they can disrupt the ability of the U.S. economy to translate its underlying competitive assets into overall prosperity. The imbalances themselves are not a sign of waning competitiveness, but the disruptions they can create could very well erode future competitiveness. To avoid such disruption, the United States needs to do what it can alone and what it can with its international partners to move carefully along a path that brings it back into macroeconomic balance.

4. Foundations of U.S. Competitiveness And Sources of Future Prosperity

Economic performance is driven by the micro-economic foundations of an economy — the quality of the business environment, as well as the sophistication of companies. The *Index* highlights several key drivers critical for America's future competitiveness: innovation, entrepreneurship, education and energy.

Some of these drivers are related to current strengths that we need to foster and further develop. Others are related to current weaknesses or emerging challenges to address to avoid undermining the long-term competitive position of the United States.

Innovation – Can the United States Sustain Its Advantage?

Entrepreneurship – Does the U.S. Economic Engine Face Threats or Is It Primed for Continued Success?

Education – Are Americans Equipped to Prosper in the 21st Century?

Energy – How Will We Fuel Future Growth?

INNOVATION–CAN THE UNITED STATES SUSTAIN ITS ADVANTAGE?

The Evolving Global Innovation Environment Innovation has always been an important driver of economic success. The importance of innovation has even grown in recent years as more and more of the value generated in the economy is captured by those who create, possess, and apply new knowledge, not by those who merely reach high efficiency in the use of well established technologies and operation practices. A recent report from the President's Council of Advisors on Science and Technology concludes that "the big winners in the increasingly fierce global scramble for supremacy will not be those who simply make commodities faster and cheaper than the competition. They will be those who develop talent, techniques and tools so advanced that there is no competition."[75] In addition, innovation will be essential for solving many of the grand challenges facing government and society in areas such as healthcare, energy and national security.

The global environment in which innovation occurs is also clearly changing. Millions of researchers from emerging economies are becoming integrated into the global science system as their countries open up to international linkages. Foreign investors tap into these knowledge pools to conduct research at affordable costs. And growing markets in emerging economies increase the demand for applied research on products on services to serve the millions of new customers with their unique profile of needs.

America's Innovation Advantages
The United States has key advantages and is well placed to thrive in the global innovation economy.

The United States provides a mix of strong corporate investments in research and development (R&D) and significant public sector R&D investments, a combination that few other countries can match. The human talent it educates and attracts sets it apart from its global competitors. U.S. universities not only dominate cutting-edge research, they also have a much stronger tradition in terms of local clusters, collaborating with industries, and of helping to create new businesses. The United States also has a well-established legal framework for the protection of intellectual property, providing incentives to create new knowledge and intangible assets. Finally, regional clusters across the United States are

hotbeds of innovation, where new ideas, products and services became commercially viable.

Drivers of Future U.S. Innovative Capacity The United States remains strong in innovation, but a dynamic debate is taking place on the trends that could undermine this position. This debate has been fueled by the relative catch-up of other countries in terms of their own innovative capacity. But such catch up is natural: as other countries become more advanced, their demand for innovation will increase and so will their capacity to become part of the global innovation system. This creates a larger set of relations in which U.S. innovators can develop and apply their knowledge. It would be a concern if research activities were leaving the United States for these new locations. But the evidence does not point in this direction: investments in U.S.-based R&D continue to be strong and are complemented, not substituted, by R&D investments in other parts of the world.

The debate has, however, made a useful contribution to identifying some concerns about current trends in U.S. policies affecting innovative capacity. One concern relates to the focus on development versus research; the United States needs investments into basic research in order to create the foundations for new technologies that can be brought to market in the next decades. Another concern relates to the increasing dominance of life sciences in research activities; while other areas, such as the physical sciences and engineering have experienced less robust growth. Finally, science and engineering education remains an issue. Domestically, this is tied to the need to upgrade further our education system and build the capabilities of U.S. citizens, encouraging and equipping them to be full participants in an innovation-based economy. Internationally, it depends on the ability of the United States to attract the best and brightest from other countries — an attribute that has given our nation a critical edge in the past. The need to match this inflow of people with increasing security demands remains a crucial challenge.

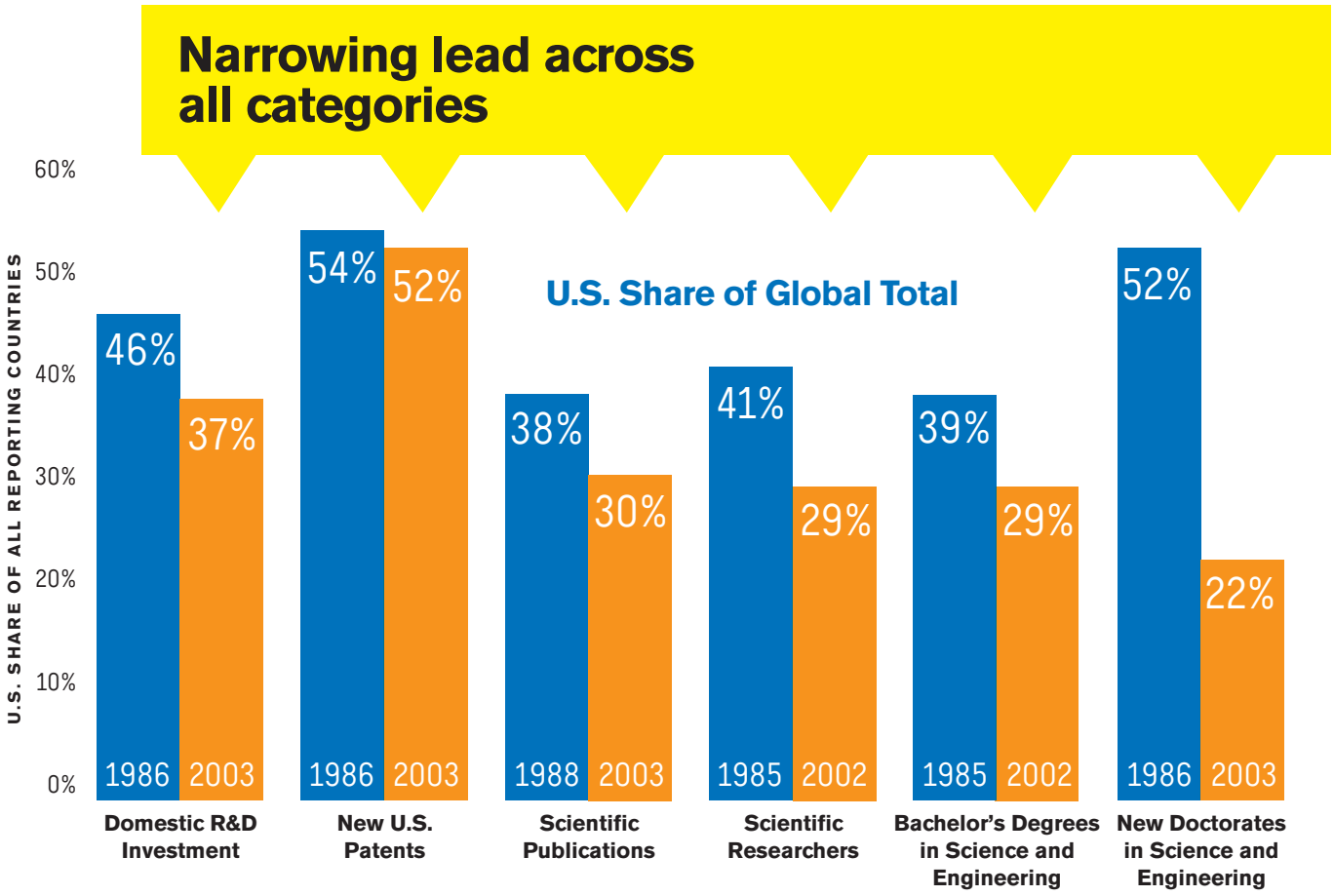
An issue that has often received too little attention in the public debate about competitiveness and innovation is the international protection of intellectual property (IP). As global trade occurs increasingly in knowledge and intangibles, providing the global trading system with solid rules and regulations that defend IP rights becomes more and more important. The United States is losing billions of dollars every year due to the theft of IP that U.S. companies have developed.

The Evolving Global Innovation Environment

America Still Leads the World in Science and Technology, But That Lead Is Narrowing

4.1 U.S. Share of Global Output Has Fallen Across a Range of Science and Technology Metrics

Source: NSF, Science and Engineering Indicators (2006), OECD, Main Science and Technology Indicators (2006), U.S. Patent and Trademark Office



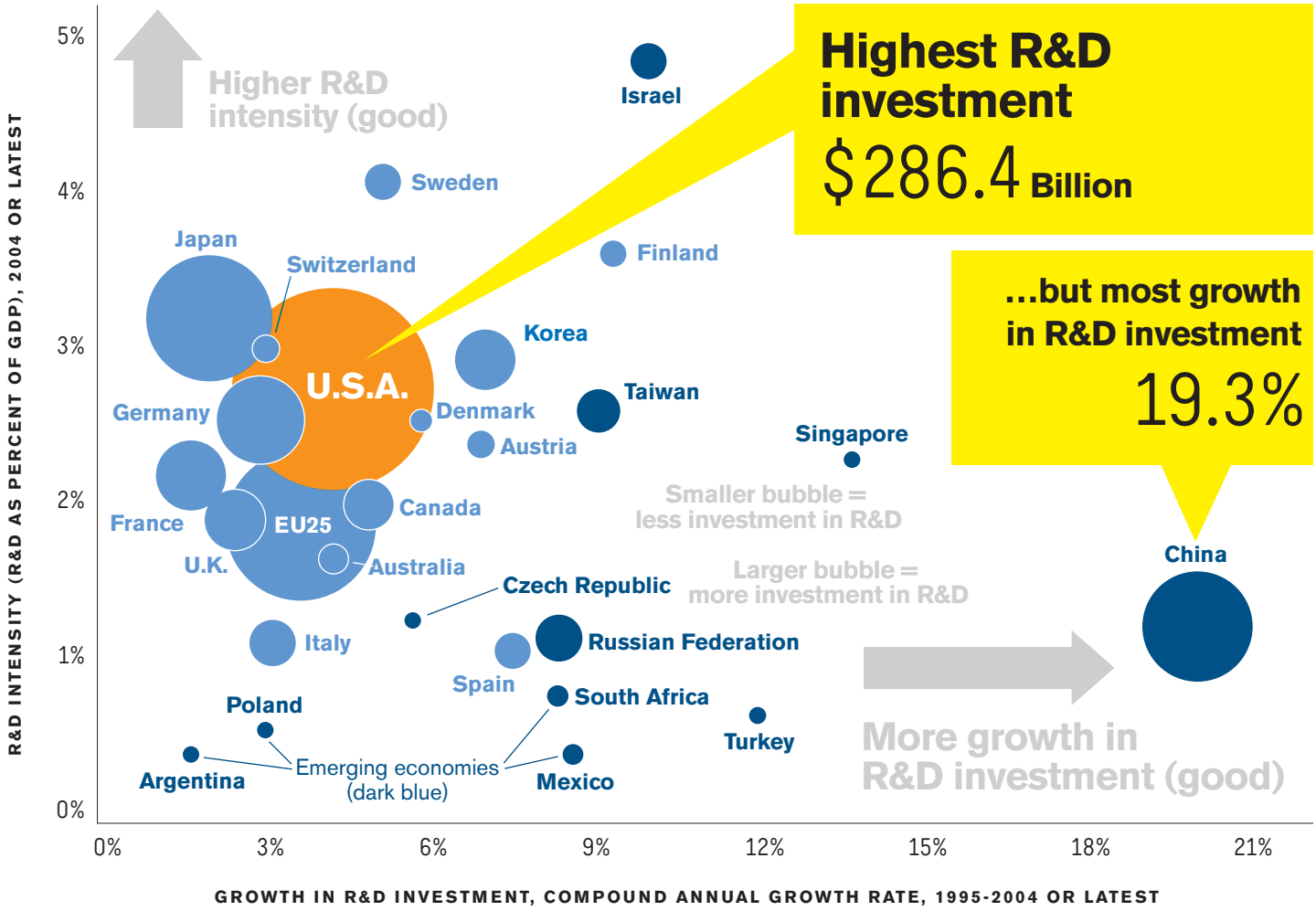
America's innovation infrastructure — its underlying science and technology assets — leads the world across a broad range of metrics. The United States spends more on R&D than France, Germany, Italy, Japan, Canada, and the United Kingdom combined.[76] It has more researchers than any other country[77] and leads the world in patenting.[78] But the very success of the American system has led other nations to follow its lead — increasing government funding for R&D, strengthening science and engineering education, and implementing innovation-friendly policies.

The United States came to dominate the world of science and technology after World War II, and to a large degree that dominance remains. With about 5 percent of the world's population and about 30 percent of world GDP, the United States is responsible for 37 percent of global R&D spending, has 29 percent of all researchers, publishes 30 percent of all scientific articles, produces 22 percent of all new doctorates in science and engineering, and attracts 31 percent of all international students.[79] Across all of these metrics, America's share has fallen as other countries have increased their science and technology-related activities, but the United States still has a significant absolute lead in almost every category. As a group, the countries that make up the European Union have surpassed the United States in terms of scientific publications and the production of Ph.D.s in science and engineering. In fact, the United States has seen an absolute decline in the number of publications and Ph.D.s since the mid- to late-1990s.[80]

U.S. R&D Investment Is Outpacing Large Developed Economies

4.2 U.S. R&D Investment Remains the World's Largest, but Others Are Increasing Their Investment Faster

Source: OECD, Main Science and Engineering Indicators (2006)



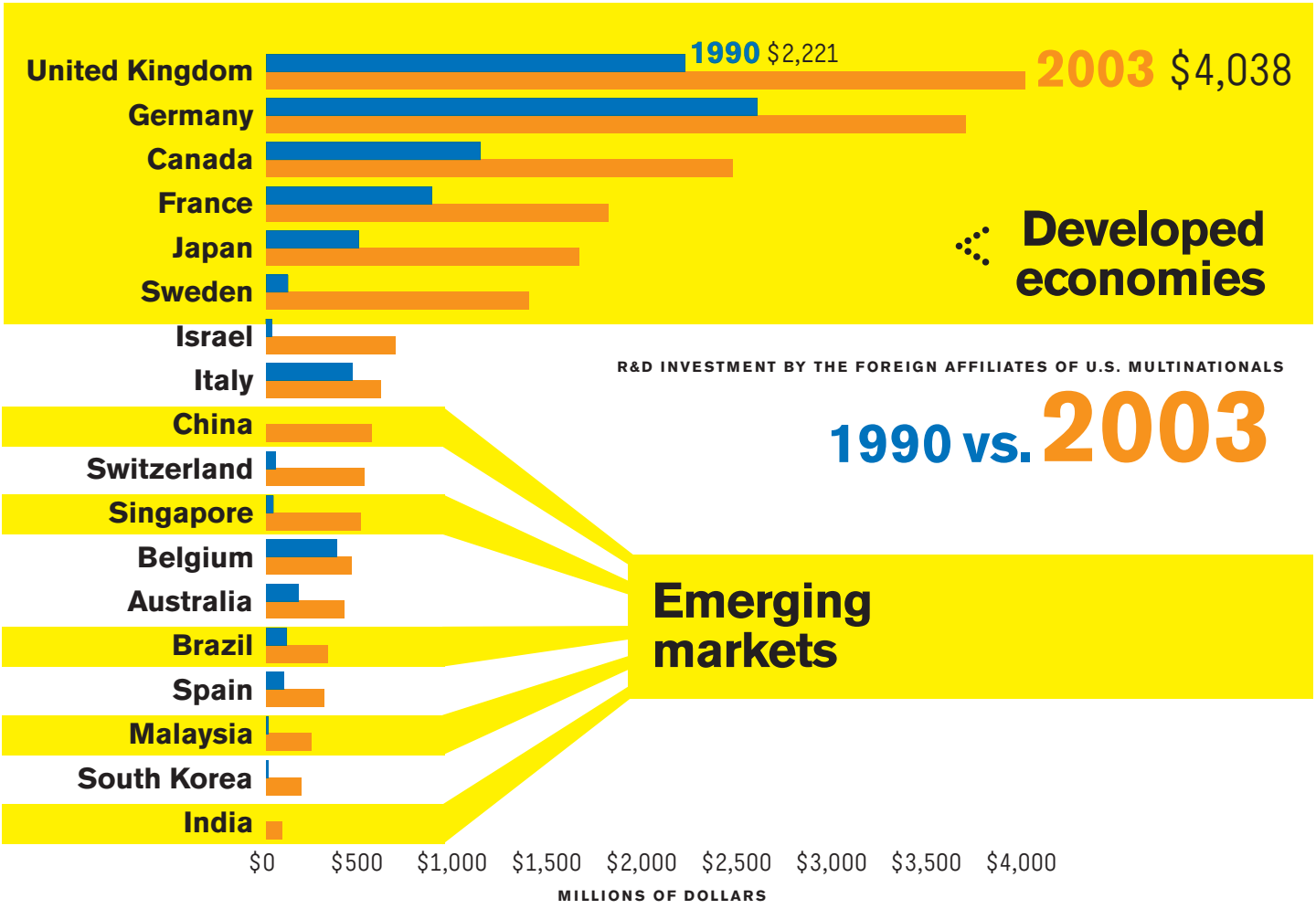
Higher national levels of R&D investment generate a range of economic benefits — boosting the stock of available knowledge, supporting the training of scientists and engineers, leading to commercial spin-offs, and creating an innovative environment that attracts additional investment.

The United States is by far the largest investor in R&D in the world (including both industrial and government R&D spending). Part of America's lead comes from the sheer size of its economy. A number of countries (including Israel, Sweden, Finland, Japan, Switzerland and Korea) invest more on R&D as a percentage of GDP. U.S. R&D investment grew at a compound rate of 4.1 percent between 1995 and 2004, faster than most of the other large R&D investors. Many of the countries with the fastest rates of growth in R&D investment are emerging economies, led by China, which increased its R&D investment at an annualized rate of nearly 20 percent over the past 10 years. China's investment in 2004 was the fourth largest after the United States, the European Union and Japan (adjusted for purchasing power parity). Still, China's R&D investment was only 30 percent of the U.S. level, and its R&D intensity was less than half that of the U.S. level.

But Emerging Economies Begin to Compete for Corporate R&D Investments…

4.3 U.S. Companies Perform Most Overseas R&D in Developed Economies, but Are Increasingly Turning to Emerging Economies

Source: U.S. Bureau of Economic Analysis



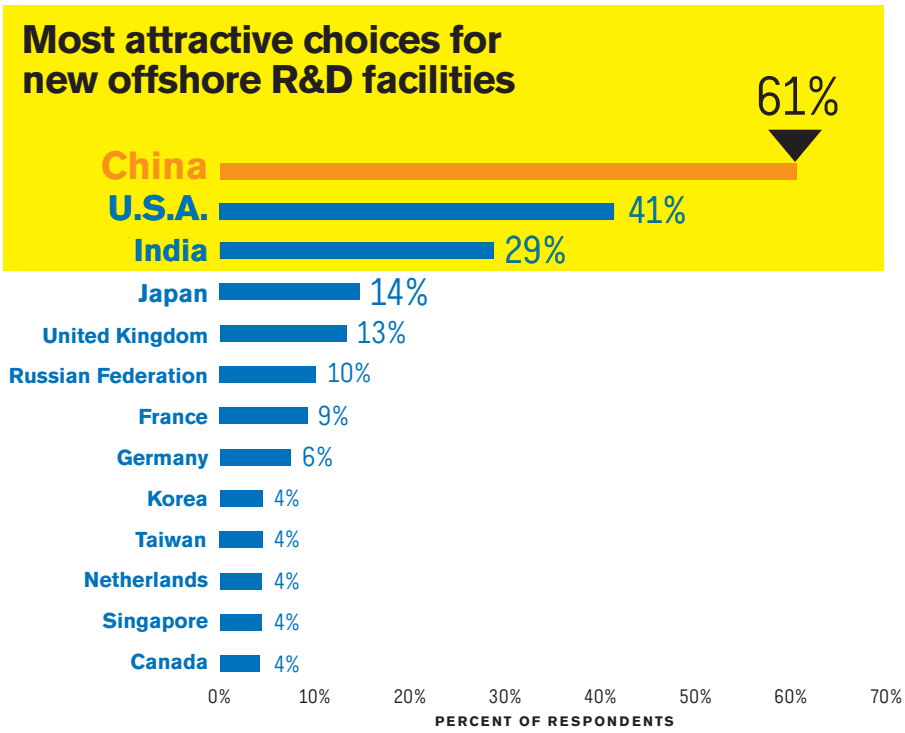
While a number of emerging economies are rapidly increasing their science and technology capabilities, developed economies remain the most popular places for foreign R&D investment. The United Kingdom, Germany, Canada, France and Japan accounted for 61 percent of all foreign R&D spending by U.S. foreign affiliates in 2003, down from 72 percent in 1990. Brazil, China, Hong Kong, India, Korea, Malaysia and Singapore accounted for a combined share of 2 percent in 1990, rising to 9.7 percent by 2003.

Establishing foreign affiliates to perform R&D is only one of many ways that companies leverage global innovation networks. Companies also outsource R&D to foreign firms, license foreign technologies, fund research at foreign universities, engage in international alliances and networks, and recruit foreign researchers.[81] As with other aspects of globally integrated enterprises, the full scope of global integration is difficult to measure because only some of these activities are captured by trade and investment statistics.

…And Some Emerging Economies Are Beginning to Surpass Developed Economies In Attractiveness

4.4 Global Corporations Rank China as the Most Attractive Location for New R&D Facilities

Source: UNCTAD, Survey on the Internationalization of R&D: Current Patterns and Prospects on the Internationalization of R&D (12 Dec 2005)



While innovation remains firmly dominated by advanced economies, a wide range of surveys shows that a majority of companies plan to expand their foreign R&D operations and that emerging economies are now among the most attractive destinations for new operations. More than half (57 percent) of the firms surveyed by UNCTAD already have an R&D presence in China, India or Singapore, and 67 percent indicate they would increase their foreign R&D.[82] Another survey has found that 38 percent of respondents plan to change substantially the worldwide distribution of their R&D work over the next three years.[83]

In the UNCTAD survey referenced here, China's attractiveness for new R&D facilities actually exceeds that of the United States. China's rise as a destination for R&D has been extremely rapid. Motorola established the first foreign-owned R&D center in China in 1993. In 1997, China had fewer than 50 research centers managed by multinational corporations but, by the end of 2004, there were more than 700.[84]

While lower costs are one factor driving the decision to locate facilities in emerging economies, a number of studies have shown that for many types of R&D cost is not the most important driver. While cost is a consideration, the high-growth potential of the market itself is often a major factor. Companies go where the customers are, and they locate R&D near their customers. The quality of local R&D personnel and the strength of local universities are also important considerations. Weak protection of intellectual property rights stood out as the biggest barrier to R&D investment in emerging economies.[85]

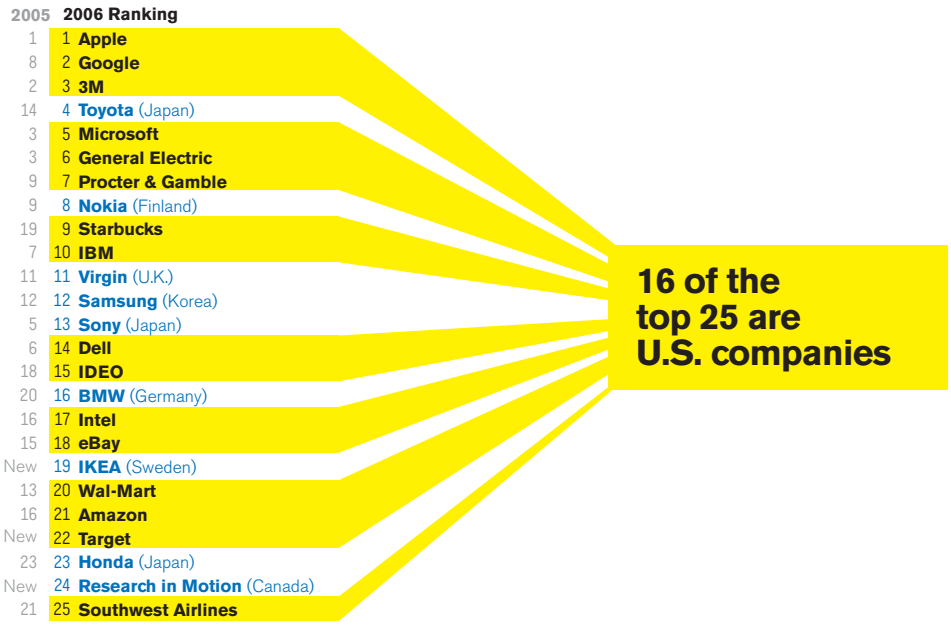
The type of work done in offshore R&D centers can vary tremendously — from localization of products, to software development to cutting-edge research. When firms do establish R&D operations overseas, they often have a different focus than those at home. Most R&D abroad is either production-supportive or for the adaptation of products and services to local markets. A recent study found that 43 percent of all work in developed markets is new, compared to only 22 percent in emerging markets.[86] But there are indications that this mix is changing rapidly as part of the shift to globally integrated enterprises. Global integration of R&D can lower costs, reduce risks and greatly speed up time to market. The challenge for developed economies such as the United States is that R&D may follow production overseas, and then the benefits from R&D (in terms of spillovers and spin offs) may accrue to those economies rather than the U.S. economy, as happened with Japan in the 1980s.[87]

While Innovation Involves More Than Just Science and Technology…

America's Innovation Advantages

4.5 American Firms Dominate the List of the World's Most Innovative Companies

Source: "The World's Most Innovative Companies," BusinessWeek (April 24, 2006)



American companies lead the world in innovation. They hold 8 out of the top 10, and 16 out of the top 25 slots in a recent survey ranking the world's most innovative companies. It is worth noting that many of the companies recognized for innovation are not only high technology-producing or R&D intensive companies. Apple, the company that tops the list, actually spends less on R&D as a percentage of sales than the average for its industry. Other companies like Google, Starbucks, eBay, Wal-Mart, Amazon, Target and Southwest are notable as much for their innovative business models as for their use of technology.

R&D spending or patent rates — traditional metrics of innovation — capture only part of what makes a firm innovative. Even productivity metrics typically revolve around a more efficient use of resources for generating the same level of output. They imply that cost and efficiency advantages in labor and capital automatically translate into more market share.[88] Real growth depends on innovation — on creating new markets and new value. This is reflected in the fact that almost 50 percent of current corporate sales are accounted for by products that are less than three years old.[89] The drivers of value creation are increasingly intangible — ideas, relationships, design, branding, and the ability to connect with customers in deep and meaningful ways.

…The U.S. Government Plays a Critical Role in Creating an Innovative Environment

4.6 Federally Funded Basic Research Has Been a Major Driver of Innovation — for Example:

The Internet	The Department of Defense's Advanced Research Projects Agency (DARPA) and the National Science Foundation funded the research that led to the creation of the Internet.
The laser	The laser, which was originally developed in 1960 with no specific application in mind, has led to technologies such as the CD, DVD, cornea resurfacing surgery, and precision drilling of materials.
Google	Grants from the National Science Foundation (NSF), NASA and DARPA supported the research of the Google founders as part of the federal government's Digital Library Initiative.
MP3 players	The breakthrough technologies of magnetic storage drives, lithium-ion batteries, and liquid crystal displays that go into the latest MP3 players in large part owe their existence to basic research funded by the Department of Defense, the National Science Foundation, the National Institutes of Health, the Department of Energy, and the National Institute of Standards and Technology.[90]

While innovation is more than simply science and technology, it certainly depends on access to a strong base of science and engineering. And that foundation often comes from outside of the firm. U.S.-government-funded basic research, for example, has had a critical impact on innovation. The global leadership of America's pharmaceutical and biotechnology industries is due in no small part to the massive federal investment in life sciences research. In fact, 70 percent of U.S. biotechnology patent citations were to papers originating solely at public institutions such as federally-funded research at public universities.[91]

Innovation is the result of numerous factors and their complex interactions, including firm-level decisions, the competitive environment in which firms operate, workforce skills, the availability of capital, the personal interactions of people from different institutions, and many others. Policy choices, therefore, play an important role in enhancing the environment for innovation, and national competitiveness increasingly depends on the ability of policy makers to create an environment that supports and stimulates innovative firms.

U.S. Research Universities Lead the World and Serve As Centers for Regional Innovation…

4.7 U.S. Universities Dominate World Rankings Based on Research Performance

Source: Institute of Higher Education, Shanghai Jiao Tong University, Academic Ranking of World Universities (2006)

America's research universities lead the world in a ranking based on indicators of research performance, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, articles published in leading journals, articles in major citation indices, and per capita academic output.

The strength of America's research universities is one of the fundamental supports for the entire U.S. innovation system. They train students and researchers, perform the majority of basic research (55 percent in 2004),[92] and over the past two decades, they have also become increasingly active in commercializing the results of their research.

Since the Bayh-Dole Act of 1980 gave universities the right to patent inventions resulting from federally funded research, there has been an explosion of commercialization activity, including patenting new technologies, licensing intellectual property to companies, creating spin-off companies, managing incubators, and providing consulting services. Between 1980 and 2004, U.S. universities, hospitals and research institutes spun out 4,543 companies based on licenses from these institutions.[93] Graduates from the Massachusetts Institute of Technology, for example, have founded more than 1,800 companies, generating $135.7 billion in revenues in 2003, while Stanford University students and faculty have launched more than 1,200 start-up companies including Hewlett-Packard, Cisco, Yahoo, eBay and Google.

University-industry collaboration has intensified over the past two decades due to the growing commercial potential of fundamental discoveries in computer science, bioscience and materials science; the growing scientific and technical content of all types of industrial production; the need for new sources of academic research funding created by budgetary stringency; and the prominence of government policies (federal, state and regional) aimed at raising the economic returns of publicly funded research.[94]

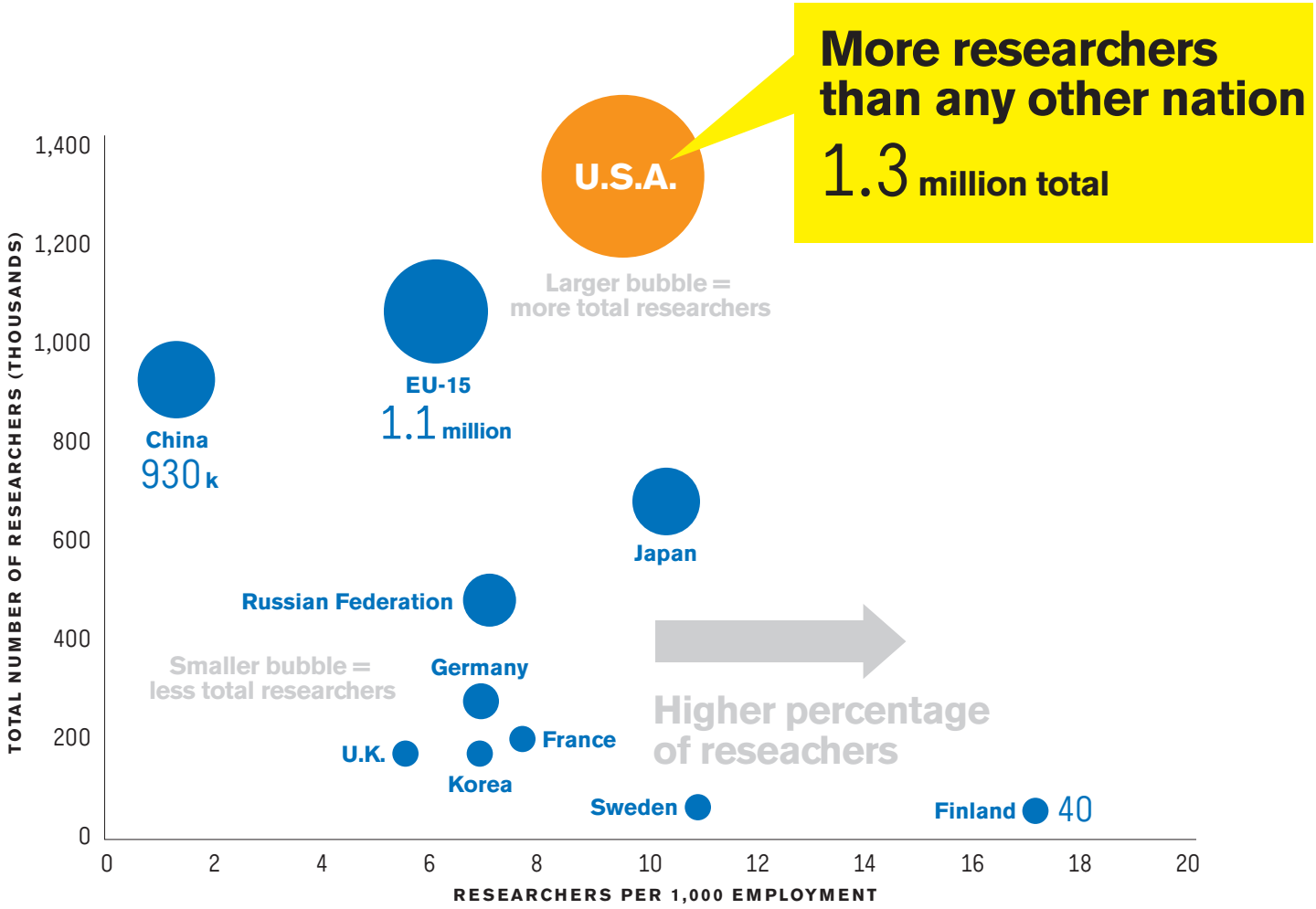
The commercialization activities of universities have a much broader impact than just patents or licensing revenue. While linkages between universities and industry can happen on a national or global level, their benefits occur disproportionately at the regional level. The examples of Silicon Valley, Boston's Route 128, the North Carolina Research Triangle and Austin, Texas, demonstrate the impact that universities can have on cluster and regional economic development. Universities serve as sources for talent and ideas, and function as magnets attracting investment, entrepreneurs and talented individuals to a region. They also help adapt knowledge to local needs and connect innovators throughout the region through incubators and technology parks.[95] Most academic entrepreneurs start up their companies near their university, where they can have continued access to the knowledge and talent critical for new companies.[96] Many universities have restructured their research capabilities to be more responsive to local industries, setting up specialized research units, joint cooperative ventures, or interdisciplinary projects.[97]

Despite increases in the indicators of commercial activity, there is concern about weakening ties between industry and U.S. universities. Between 1972 and 2001, industrial support to universities and colleges grew more rapidly than any other source of support for academic research and development. However, the share of university research funded by industry fell from 7.4 percent in 1999 to 5.0 percent in 2004. Industry funding of university research fell by 9.3 percent in constant dollars from 2000 to 2004. In 2004, industry devoted only 1.1 percent of its R&D spending to university research, down from 1.5 percent in 1994, despite a period of significant increase in total industry R&D investment.[98] The causes of this decline are unclear.

…And the United States Leads the World in Numbers of Researchers

4.8 The United States Has More Scientific Researchers Than Any Other Country

Source: OECD, Main Science and Engineering Indicators (2006)



The United States has significantly more researchers (1.3 million) than any other nation, though a few countries have more researchers as a percentage of their population. Around 38 percent of all OECD-area researchers reside in the United States, 29 percent in the European Union, and 19 percent in Japan.[99]

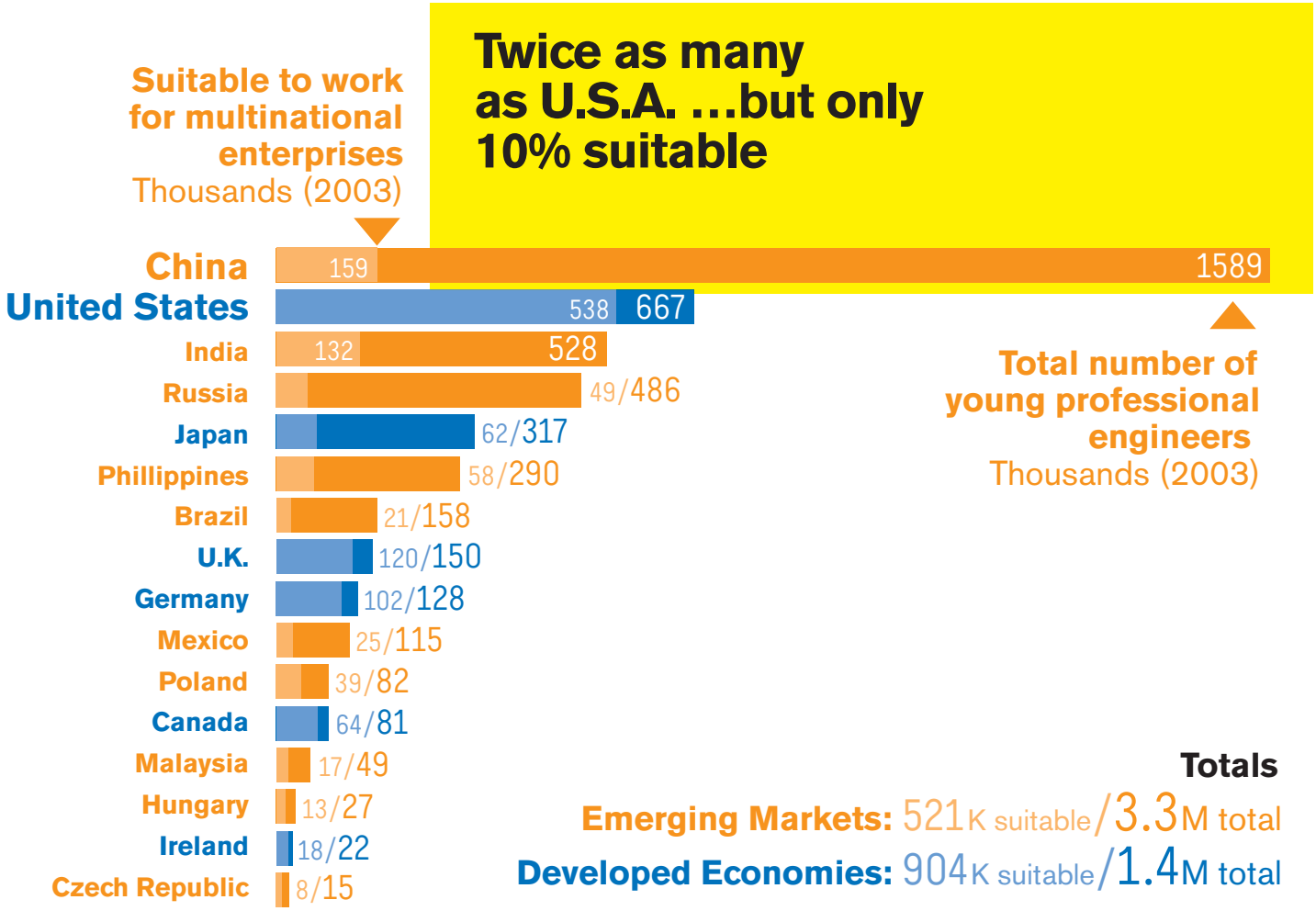
Many other countries, however, grant a significantly higher percentage of bachelor's degrees in science and engineering. In the United States, 33 percent of undergraduate students earn science and engineering degrees; 46 percent in South Korea; 59 percent in China; and 66 percent in Japan.[100] In 2002, European universities granted 532,000 science and engineering university degrees, or 42 percent of total OECD university degrees awarded in these fields, compared to only 23 percent for the United States.[101]

Trend data suggest the European Union may produce nearly twice as many science and engineering doctorates as the United States by 2010. If China continues at its current rate, it will also produce more science and engineering Ph.D.s than the United States by 2010.[102] In fact, the number of American Ph.D.s granted in every field of science and engineering other than the biological and social sciences has remained flat or declined since 1985. The overall number of new doctorates peaked in the United States in 1998 and declined through 2002.[103]

U.S. Engineers Are Primed to Work for Global Enterprises

4.9 The United States Has More Engineers Ready To Work for Multinational Enterprises

Source: McKinsey Global Institute, The Emerging Global Labor Market: Part II-- The Supply of Offshore Talent in Services (June 2005)



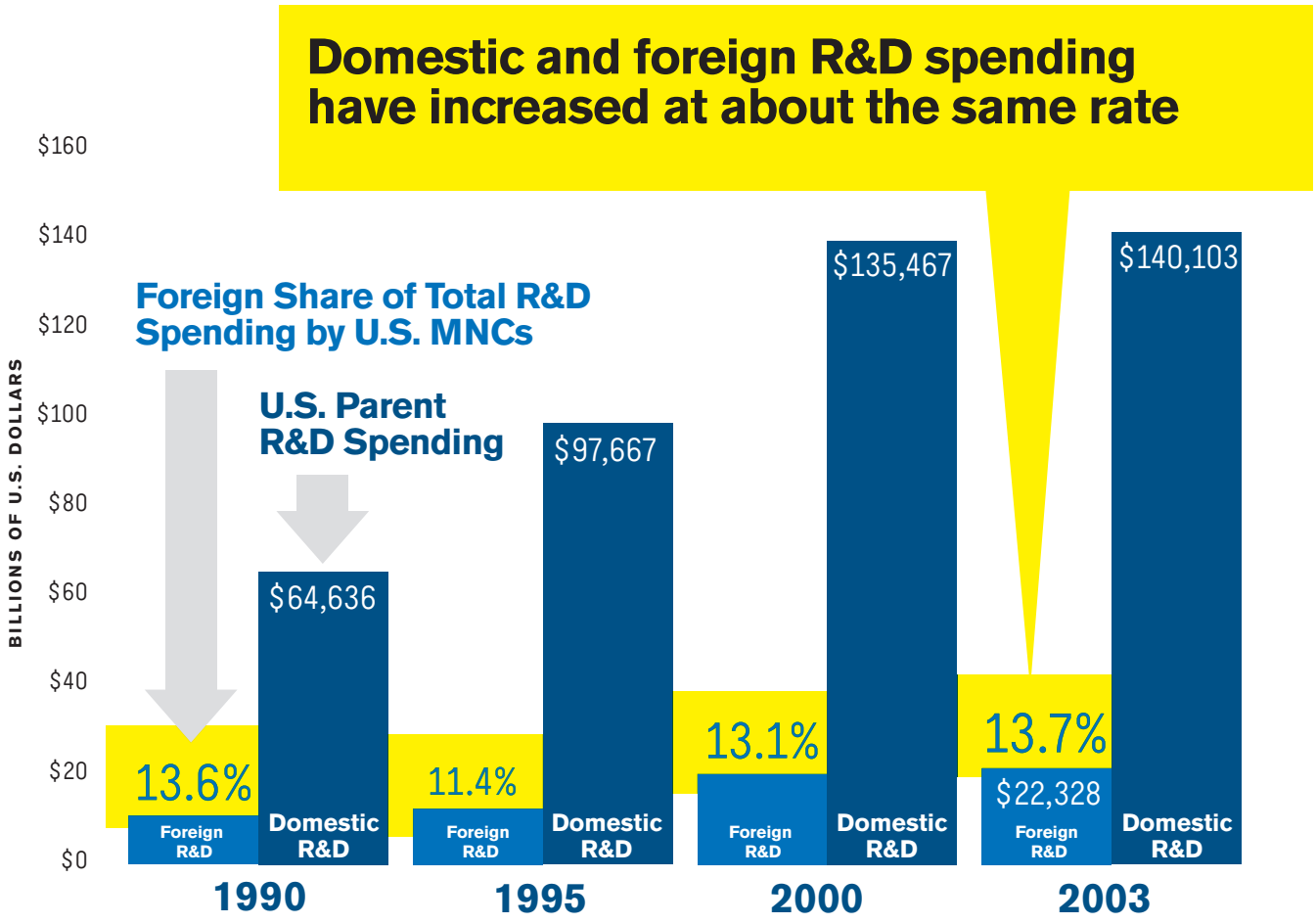
The rapid expansion of higher education in countries with large populations such as China and India has dramatically changed the global distribution of technical talent. Analysis from the McKinsey Global Institute estimates that there are currently 1.6 million young professional engineers in China (university graduates with up to seven years of experience), more than double the number in the United States (670,000) and triple the number in India (500,000), where most of the talent is in IT.

But only a small fraction (13 percent) of the young engineers in emerging markets are suitable for work in foreign multinational corporations due to language barriers, mobility issues, the quality of their education and cultural issues. After adjusting for these considerations, the United States has three times as many suitable young engineers as China. Of the 1.6 million young Chinese engineers, McKinsey estimates that only 160,000, or 10 percent, are suitable for work in multinational companies, while 25 percent of India's engineers (132,000) are suitable. Globally, McKinsey found about 1 million suitable young engineers in high- and mid-wage countries, compared to about 700,000 in low-wage countries. But the number in low-wage countries was projected to grow more than twice as fast between 2003 and 2008 as the number in high- and mid-wage countries.

U.S. Multinationals Are Increasing Their Foreign R&D at About the Same Rate As Their Domestic R&D

4.10 Domestic R&D Investments by Multinationals Rising As Fast As Foreign R&D Investment

Source: U.S. Bureau of Economic Analysis



The availability of talent, increasing global science and technology capabilities, and the rapid growth of emerging markets are all leading multinational companies to globalize their R&D activities. U.S. multinationals have rapidly expanded their investments in R&D performed outside the United States. Foreign R&D investment more than doubled between 1990 and 2003. However, domestic R&D investment rose nearly as fast, leaving the overseas share of total R&D spending virtually unchanged at about 14 percent. Industrial R&D spending in the United States dropped 3.4 percent from 2000 to 2002 before increasing in 2003 and 2004.[104] But this appears to be a reaction to the bursting of the Internet bubble rather than a sudden increase in the attractiveness of offshore R&D.

While the rise of emerging markets as R&D centers has the potential to transform global competition, the impact so far has been relatively small. The United States still receives significantly more foreign investment in R&D than China. In fact, the United States receives more R&D investment from foreign companies than American companies invest overseas. The United States also has a positive trade balance in royalties and technology licensing.

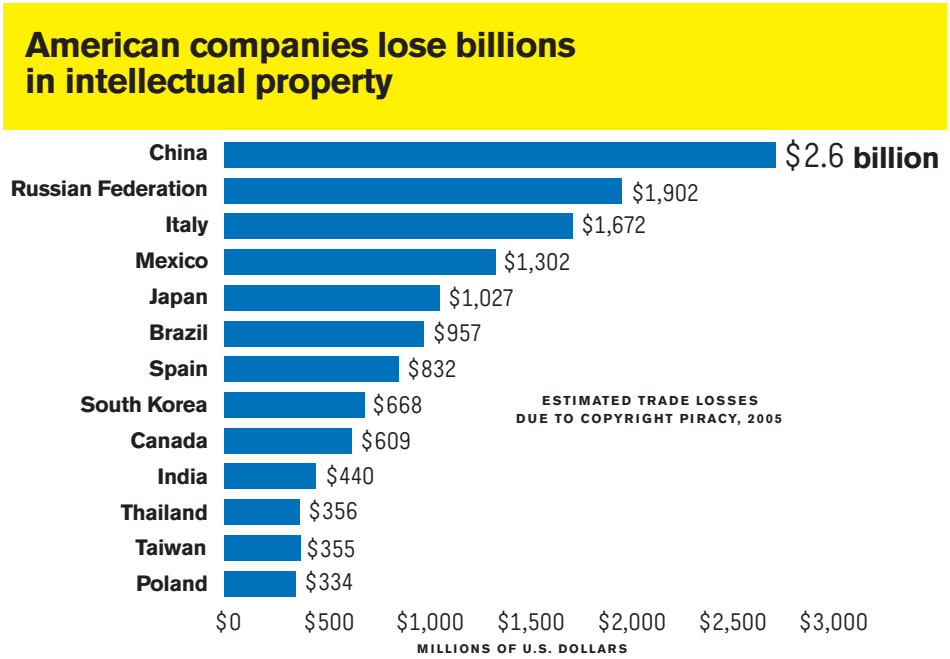
Corporate R&D remains the least internationalized activity of multinationals; production, IT, finance and back office operations are significantly more globalized. Research intensive activities often represent the core value generators of a firm, and companies are reluctant to move them far afield (particularly to countries where protections for intellectual property may be weak).

Intellectual Property — the Foundation of Innovation — Is at Risk

Drivers of Future U.S. Innovative Capacity

4.11 American Businesses Lose Billions of Dollars Annually Due to Intellectual Property Violations

Source: International Intellectual Property Alliance, "2004-2005 Estimated Trade Losses Due to Copyright Piracy" (Sep. 18, 2006)

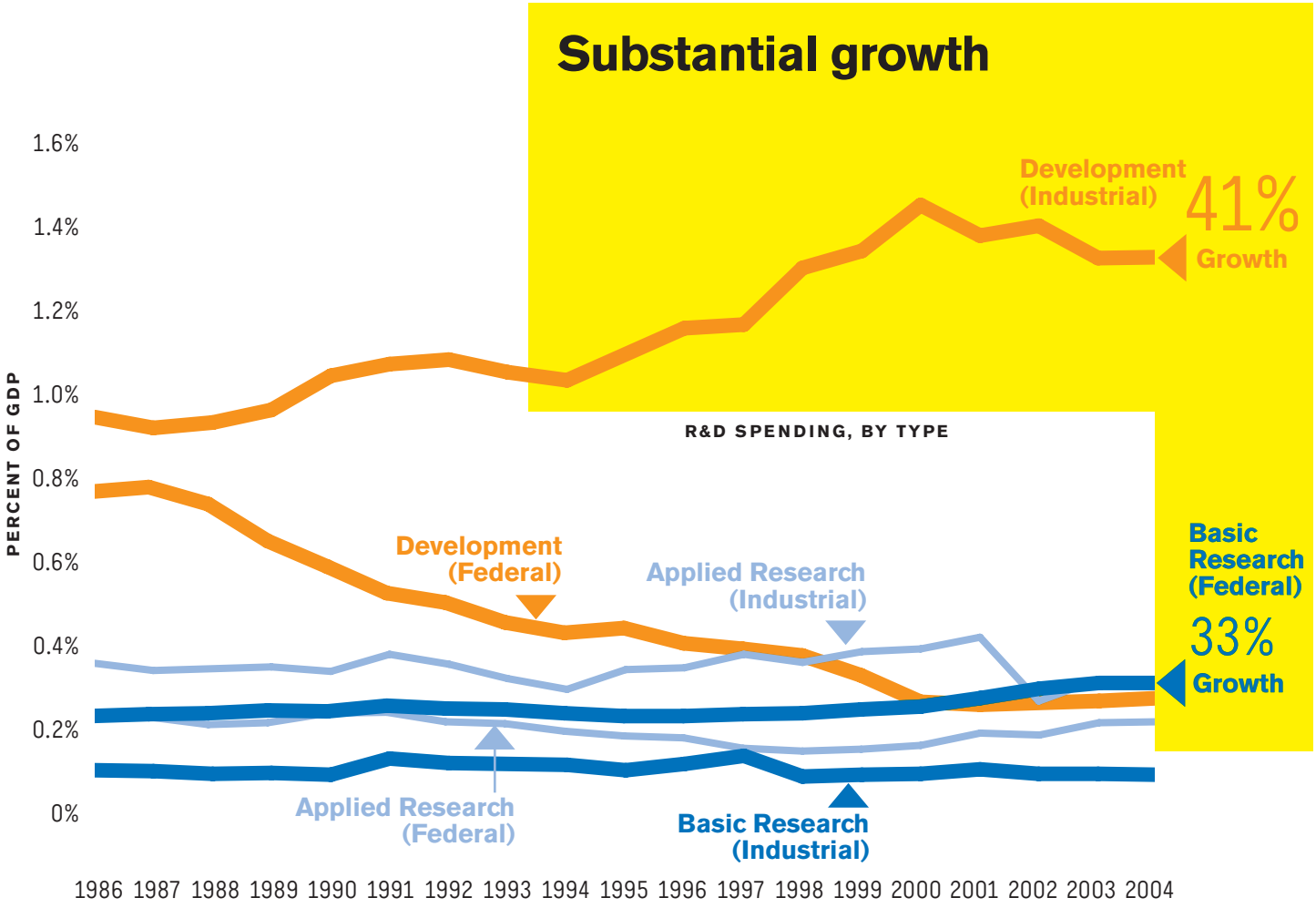


One of the historical strengths of the U.S. science, engineering and technology enterprise has been the vigorous protection of IP rights — the foundation of nearly every major innovative firm and industry based in the United States. However, in a world in which R&D and innovation capabilities are going global, and in which value comes even more from the intangible and the conceptual, protection of IP is even more critical. Strong protection in the United States needs reciprocal global protection, and losses due to IP theft are rising. Estimates of U.S. trade losses due to copyright piracy of business software, records and music, motion pictures, entertainment software and books in 2005 totaled more than $17 billion. Such losses amount to a tax on future investments — one that could hamper future innovations that would benefit Americans and people around the world.

Industry Has Been the Primary Driver of Growth in U.S. R&D Investment

4.12 Most of the Growth in U.S. R&D Investment Has Come from Corporate New Product Development

Source: National Science Foundation, Science and Engineering Indicators (2006)



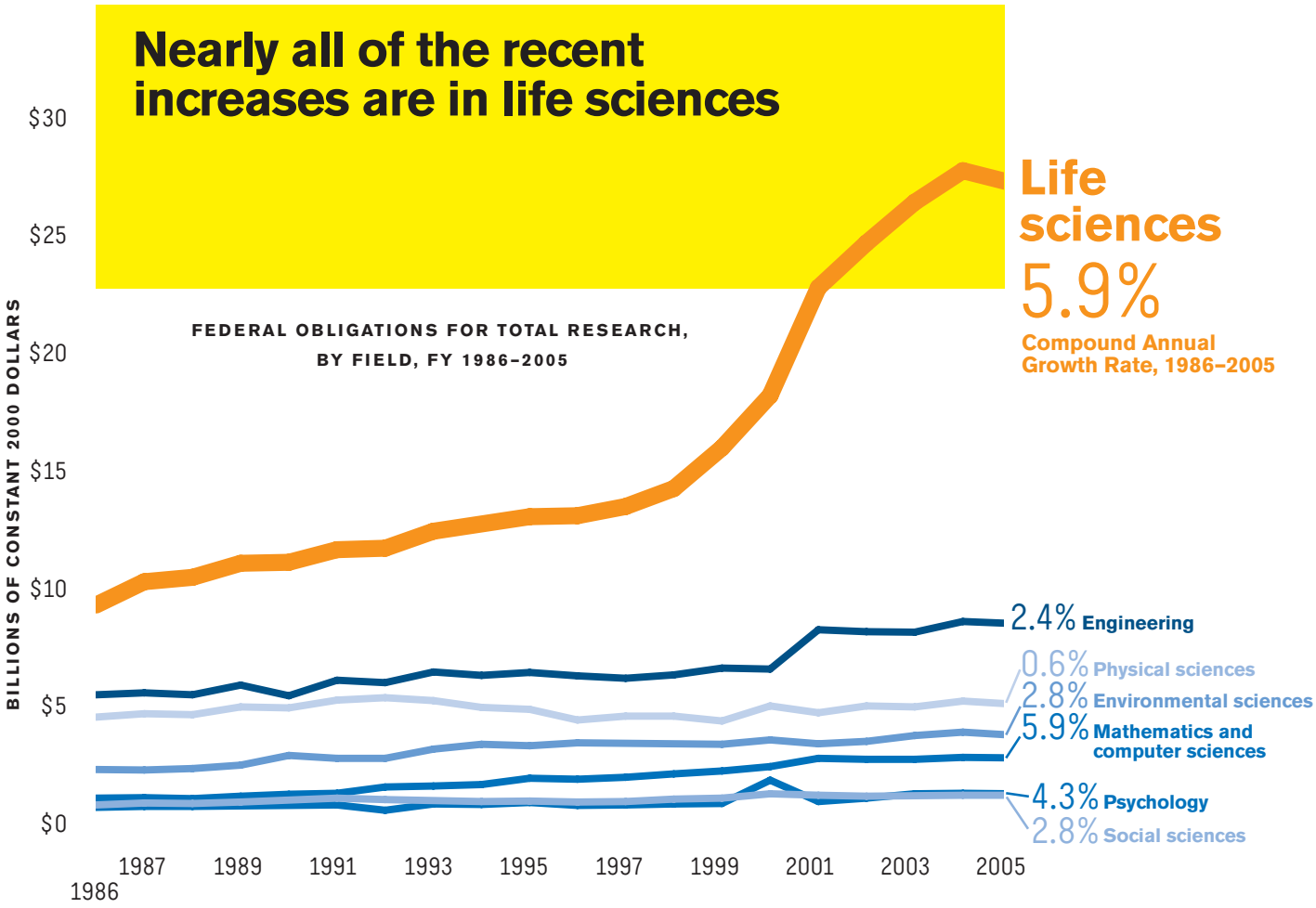
Industry has been the primary driver of growth in U.S. R&D investment. Since 1986, total corporate R&D more than doubled in real terms, while total federal spending has grown by only 13 percent.[105] As a result, industry now funds and performs the vast majority of U.S. R&D.[106] The manufacturing sector alone accounts for 42 percent of total U.S. R&D. A single corporation, IBM, invests more than $5 billion annually on R&D — more than the entire U.S. federal budget for physical sciences research.[107] As industry's investment has risen significantly, the federal government's share of total U.S. R&D investment has fallen from more than 60 percent in 1965 to less than 30 percent in 2002.[108]

The overall increase in U.S. R&D spending masks a shift in emphasis from basic and applied research to development. As the chart shows, all of the net increase in corporate R&D investment has focused on developing new and improved goods, services, and processes, while spending for basic research decreased or at best remained constant as a percentage of GDP. The federal government, by contrast, has increased its funding of basic and applied research as a share of GDP, but their share of total R&D spending has fallen.

The U.S. Federal R&D Portfolio Is Heavily Weighted in Life Sciences

4.13 Within the Federal Budget for Basic and Applied Research, Life Sciences Dominate

Source: National Science Foundation, Science and Engineering Indicators (2006)



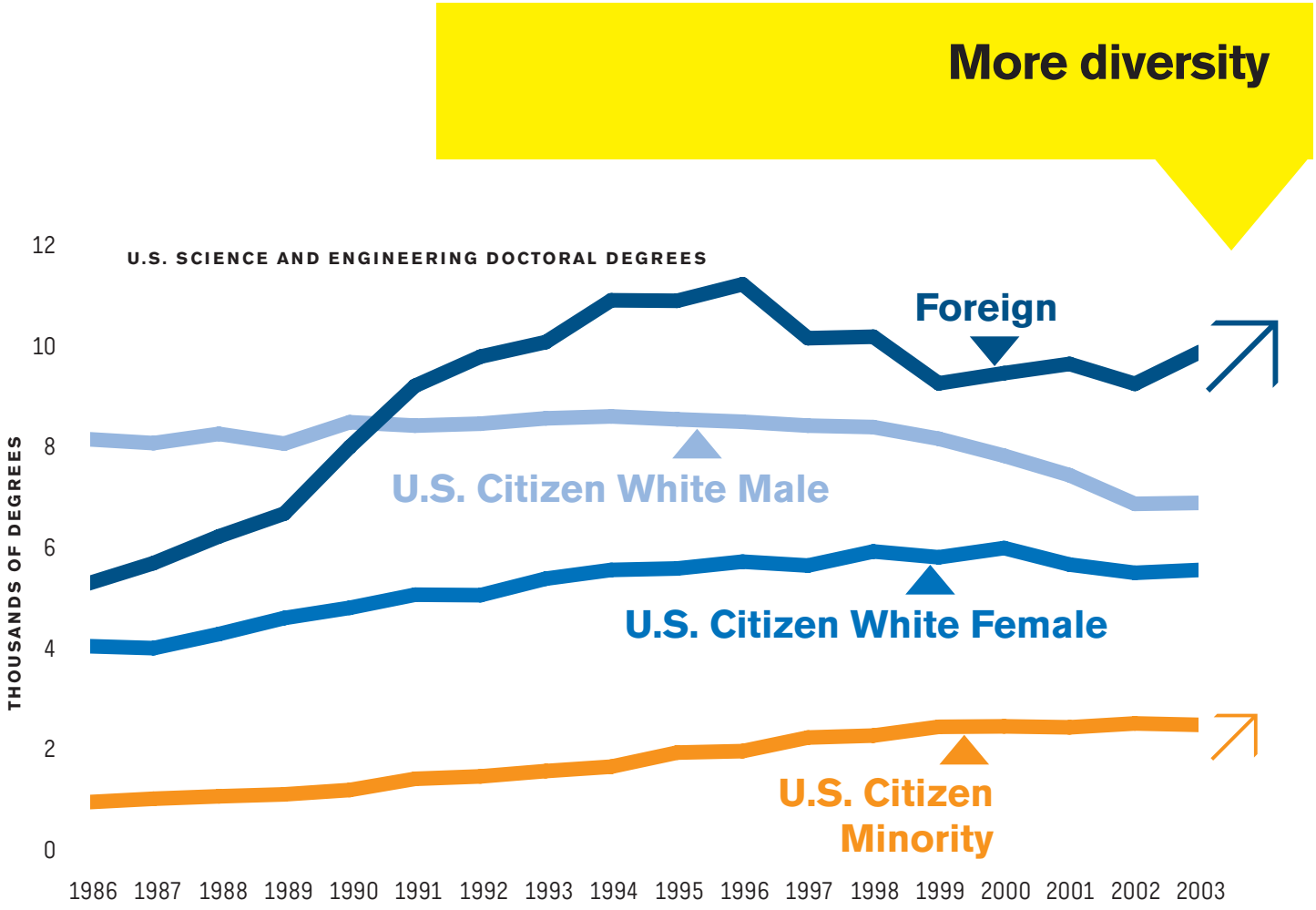
There are also significant imbalances within the federal R&D portfolio. As budgeted for FY 2006, 59 percent of all federal R&D is for defense. And, within defense spending, the vast majority of funding (81 percent) is for the development and testing of weapons systems. Missile defense systems alone had a budget of $8.1 billion in FY 2006 — nearly twice the entire research budget for the National Science Foundation ($4.3 billion).[109]

Of the 41 percent of the federal R&D budget allocated for civilian research, a little more than half (54 percent) is devoted to health sciences. The chart shows just the research portion of federal spending (basic and applied but not development), indicating that the vast majority of the increases since the late 1990s have gone to the life sciences. The dramatic increases in life sciences funding have led to a range of major advances and have helped to establish the United States as the premiere global center for biosciences. But flat levels of funding for the physical sciences (declining as a share of GDP) have raised concerns that investment is inadequate for the United States to remain at the forefront of physical research in the long term. The President's American Competitiveness Initiative proposes to increase dramatically federal spending for basic research in the physical sciences and engineering to address this imbalance.

American Citizens Make Up a Declining Share of Science and Engineering Students

4.14 Most of the Growth in Ph.D.s in Science and Engineering Has Come from Foreign Students

Source: National Science Foundation, Science and Engineering Indicators (2006)



Over the past two decades, women, minorities and temporary residents have all increased their participation in science and engineering — both in terms of education and the science and engineering workforce. Women now earn more than half of all science and engineering bachelor's degrees, and the number of women earning Ph.D.s in science and engineering has increased by 37 percent since 1986. Minorities have made gains as well but are still underrepresented. The number of White male citizens has declined steadily since the 1970s, while foreign students have grown to become the largest group earning Ph.D.s in the United States.

Over the past decade the United States has met an increasing share of the demand for scientists and engineers by attracting technical professionals from around the world. The United States — with its globally dominant science and technology enterprise — is the first destination for highly skilled expatriates with 7.8 million; the European Union has 4.7 million, Canada has 2 million, and Australia 1.4 million.[110]

The United States captures over half of skilled immigrants from non-OECD countries.[111] Nearly 60 percent of the growth in the number of Ph.D. scientists and engineers in the United States in the 1990s was accounted for by immigrants.[112]

While a Ph.D. remains an essential credential for many scientific research positions, employers are increasingly looking for workers who combine advanced training in science with a practical knowledge of business, law or other fields. To

meet this demand, colleges and universities are getting more creative. For example, Professional Science Masters (PSM) programs are designed to create a new cadre of technically trained professionals better able to integrate scientific and technical know-how into the nation's economic enterprise, and to extend innovative activity outside of laboratories. Recognizing that most science and engineering careers today are in the private sector, the PSM offers a graduate-level degree in science, mathematics and technology fields that extends training into strategic planning, business management and government regulation.

Created in 2000, and with 53 programs at 46 universities in 25 states, the PSM prepares students for a career through a two-year masters program. The program is also intended to attract underrepresented groups into science-based disciplines at higher rates than traditional academic research programs.

The Bottom Line for the United States

Innovation is probably the most important area of economic performance for the long-term prosperity of this country.

The global innovation environment is changing, confirming the need to revisit whether the United States can sustain its past position under these new circumstances. But we also find that while emerging economies are indeed gaining position, for many years other advanced economies will be more relevant rivals to the United States. Emerging economies are instead more likely to provide complementary or additional capacity for innovation.

The United States remains strong on many dimensions of innovation. It is home to many innovation-driven companies, its government — including the critical national laboratory infrastructure — makes significant investments into science and research, and its universities lead the world on knowledge creation and on the education of researchers ready for the global innovation economy. Given this environment, continued heavy R&D investment by U.S. companies in the United States is no surprise.

There are areas in which the United States needs to review the direction of current policies, as the nation cannot afford to rest on its laurels as the leading innovation economy in the world. But the current discussions around the country, the steps already taken by the administration, and the proposals currently under debate in Congress are positive signs that need to be complemented by steps to strengthen innovation assets like the protection of intellectual property rights.

ENTREPRENEURSHIP – DOES THE U.S. ECONOMIC ENGINE FACE THREATS OR IS IT PRIMED FOR CONTINUED SUCCESS?

Entrepreneurship in the Modern Economy Entrepreneurship is a critical driver of success in the modern economy. New companies and their subsequent growth create most of the new jobs in the United States. New companies also provide an increasing share of knowledge creation, an area that has traditionally been dominated by large companies and their substantial R&D expenditures. Research indicates that productivity growth occurs primarily through the entry and exit of new businesses, rather than performance improvements in existing businesses.[113] Entrepreneurship fundamentally depends on the flexibility of an economy to provide opportunities for new companies to emerge, but also for existing companies to fail.

The growing importance of entrepreneurship is a reflection of fundamental changes in the nature of value creation in many industries. Today, companies must focus on their respective competitive advantages while relying on other companies to provide the complementary products and services needed to serve customer needs. This outsourcing of activities has created many opportunities for entrepreneurs to create spin-offs and other new ventures to serve large companies as well as create entirely new markets. Another driver of entrepreneurial activity has been a change in the innovation process itself. Large corporate R&D centers have been replaced by — or are collaborating more — with smaller, research-focused companies, often with strong ties to universities.

The U.S. Economy as the Global Role Model of an Entrepreneurial Economy In many ways the United States defines the nature of an entrepreneurial economy. Its lead in entrepre-

neurial dynamism and the many opportunities the U.S. business environment provides for entrepreneurs make it a role model for many other countries. The United States is home to a higher share of entrepreneurs than any other economy in the world, and a higher share of its entrepreneurs have the ambition to create high growth companies.[114]

America's entrepreneurial spirit is alive and well — and serves as a key source for economic growth, employment, productivity and innovation. Small and medium-sized companies drive job creation in the U.S. economy; similar to many other economies. Women, immigrants, and minorities play a significant and growing role in new company formation. And large U.S. companies have fuelled this trend by taking the lead in pursuing the opportunities of outsourcing and restructuring core activities.

There are a number of factors in the U.S. business environment that are important drivers behind the U.S. global lead in entrepreneurship. Entrepreneurs in the United States face relatively small regulatory barriers to entry. They have better access to risk capital from multiple sources — just one dimension of the strong and very dynamic U.S. financial market. They can draw on a large talent pool of well-trained managers, supplied from universities that increasingly see the education of entrepreneurs as one of their natural missions. They can draw on more well-established regional clusters that provide the full breadth of supporting suppliers, service providers, research specialists and lead customers to translate an idea into a viable business. And, perhaps most important, entrepreneurs in the United States benefit from a set of values and attitudes that celebrate entrepreneurship and view the success of entrepreneurs as a sign of performance, not of political connections or criminal behavior.

Is the U.S. Lead in Entrepreneurship Eroding? While the U.S. economy clearly leads its peers in entrepreneurial dynamism, this lead is not a birthright. Other countries have taken steps to learn from the U.S. experience and improve the climate they provide for entrepreneurial activity. All Nordic countries, for example, have in the last few years launched efforts to develop their local venture capital industries and have created a number of public risk capital funds for small and medium-sized companies.[115] The World Bank's "Doing Business" analysis of rules and regulations for starting and running businesses identifies many countries that have tried to reduce bureaucracy and red tape to increase the attractiveness for entrepreneurs.

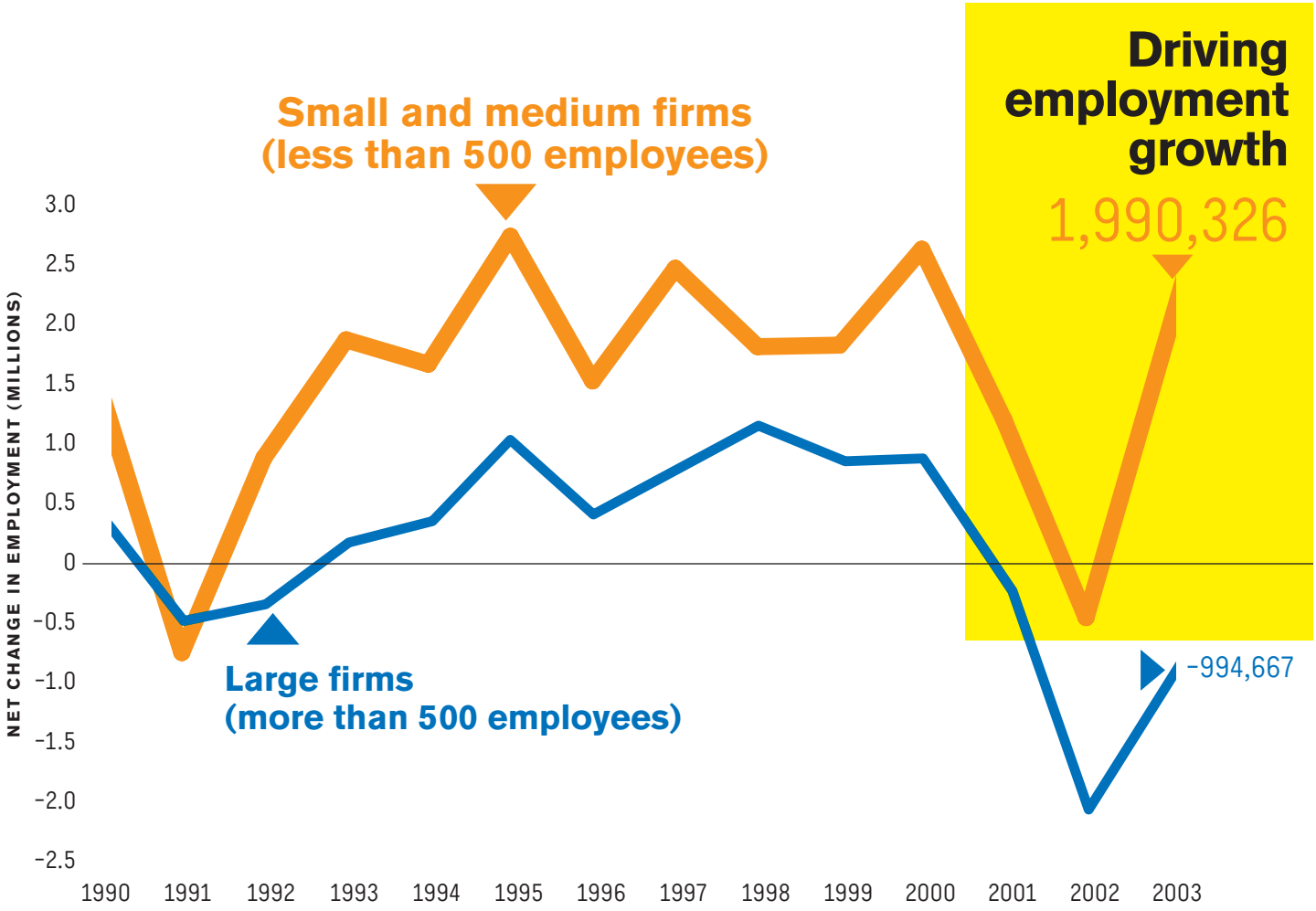
But the U.S. lead is under pressure not only because of reforms by others but also because of emerging weaknesses at home. One challenge stems from a broad set of regulatory issues that add costs. Litigation costs are substantial relative to many other countries and are particularly harmful to small companies. Health care costs are rising, and the current structure of the U.S. health care system puts the burden largely on the employment relation, again making it disproportionately harder for smaller companies to add jobs. Another challenge is related to the differences in entrepreneurial environments across U.S. regions. Venture capital, for example, is widely available in a number of metropolitan regions of the United States, but it is much scarcer in other parts of the country. This represents a significant untapped opportunity.

Entrepreneurship in the Modern Economy

Small and Medium-Sized Firms Are the Engines of U.S.Growth

4.15 Small and Medium-Sized Firms Create Most New Jobs

Source: Office of Advocacy, U.S. Small Business Administration



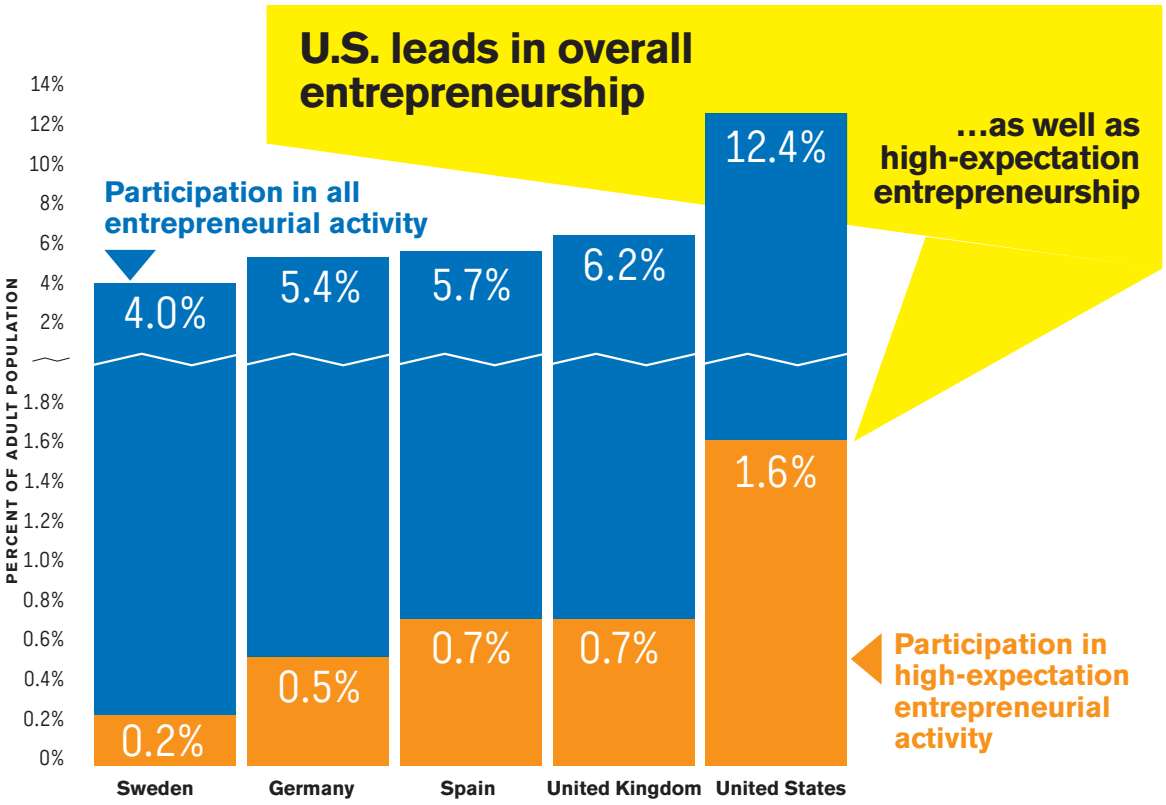
Over the years 1990-2003, small and medium-sized firms (those with less than 500 employees) created more new net jobs than did large firms in every year but 1991.[116] A similar pattern emerges when comparing young and mature firms. From 1980-2001, the entire growth in net U.S. jobs was attributable to young firms (less than 5 years old). Mature firms (older than five years) actually lost jobs over the period.[117]

While it is difficult precisely to assess the contribution of high-growth entrepreneurial firms to job creation, recent studies suggest that they were responsible for approximately 80 percent of the total net new jobs created by entrepreneurs in the last two decades.[118] One good proxy for measuring the impact of high-expectation entrepreneurs is to assess the impact of firms that have received venture capital funding, as all venture funding is invested in firms that aspire to high growth. In 2003 there were approximately 26,500 venture-backed companies in the United States, about 1 percent of all U.S. firms. According to Global Insight, these venture-backed companies were responsible for 9.6 percent of total U.S. firm revenues and approximately 9.4 percent of total U.S. employment in 2003.[119]

The United States Leads the World in Entrepreneurial Activity

4.16 Total Entrepreneurial Activity in the United States Continues to Outpace All Major Industrial Economies

Source: Global Entrepreneurship Monitor, 2005 Executive Report and High Expectation Entrepreneurship, 2005



The United States leads all major industrial economies in the percent of the adult population engaged in entrepreneurial activity. According to the Global Entrepreneurship Monitor (GEM) survey, in 2005 12.4 percent of the U.S. population – 23 million Americans – owned or managed a firm, or had taken steps toward creating a new business in the previous year.

Entrepreneurs can be divided into two broad types: lifestyle and high-expectation. By far the most common type is a "lifestyle" entrepreneur who opens a business to employ themselves and perhaps a small number of others. "High-growth" or "high-expectation" entrepreneurs launch firms with the intent of significantly growing their companies.[120] These firms, less than 15 percent of all start-ups , are usually formed to pursue the commercialization of an innovative new process, product or service.[121] GEM estimates that 2.9 million of America's 23 million entrepreneurs were high-expectation entrepreneurs.[122] The percentage of high-expectation entrepreneurs in the U.S. population is significantly higher than in any country or region in the world. The United States has more than five times the number of high-expectation entrepreneurs of even relatively large countries like Germany and the United Kingdom.[123]

The United States also has high rates of entrepreneurship among women and immigrants. According to the U.S. Census Bureau, women owned 6.5 million businesses in 2002 – growing in numbers by 20 percent between 1997 and 2002 – twice as much as the national average. Women-owned businesses made up nearly 30 percent of non-farm businesses in 2002, generating more than $940 billion in revenues.[124]

Immigrants have also taken advantage of opportunities afforded by the entrepreneurial culture of the United States. For example, a recent study by the Kauffman Foundation reported that in 2005 approximately 350 out of 100,000 immigrants started a business per month, compared to 280 out of 100,000 native-born Americans.[125] Some of America's most recognized corporations – such as Sun Microsystems and Yahoo – were founded by immigrants.

The United States Has the World's Largest And Most Advanced Risk Capital Infrastructure

4.17 The United States Has a Diverse Range of Sources of Capital for Start-Up and Growth Companies

Source: Small Business Administration, National Venture Capital Association, National Association of Seed and Venture Funds, Center for Venture Research

Diverse range of funding sources

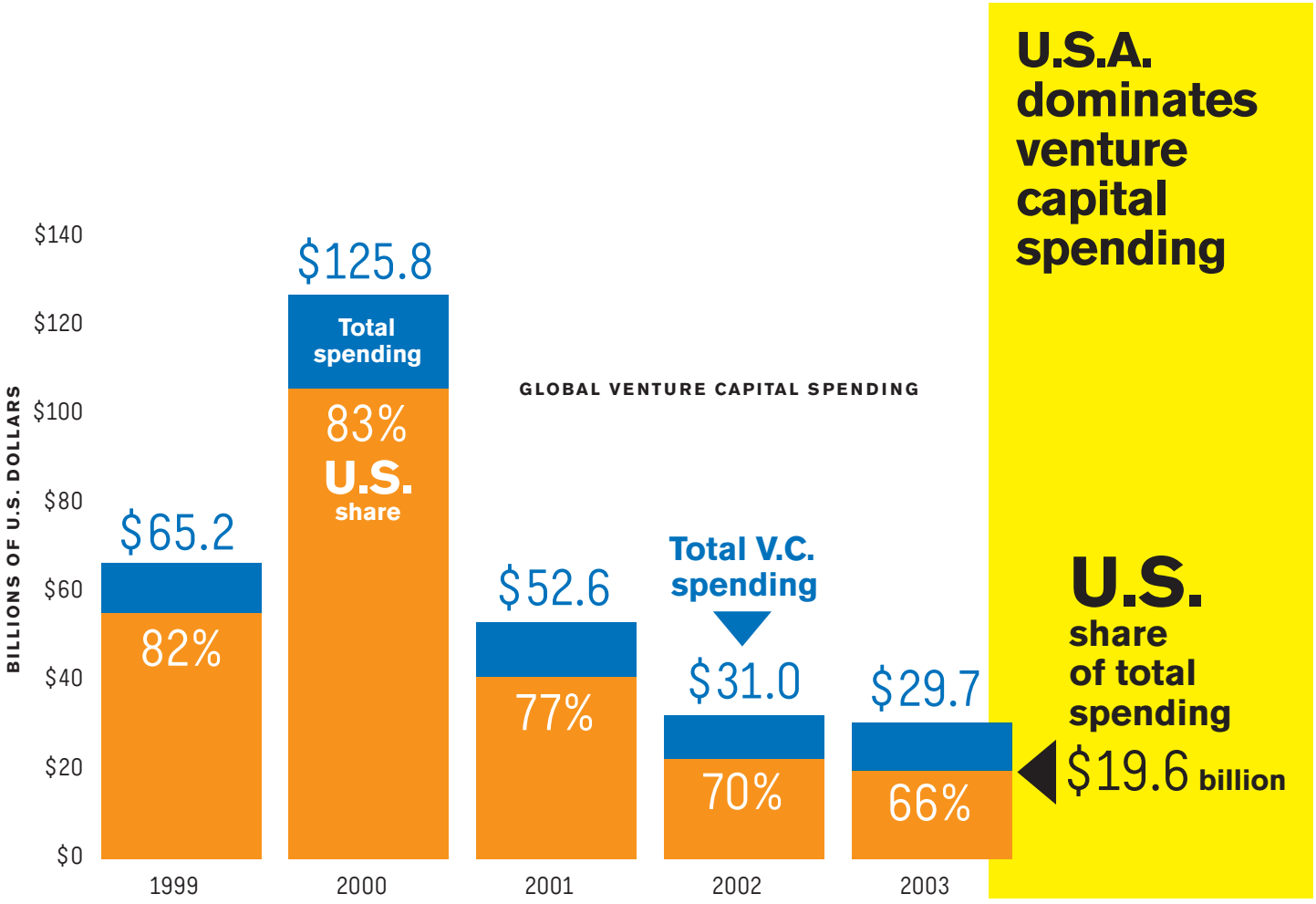
Angel Investors	**$23.1 billion invested (2005)**
Venture Capital Firms	**$22.4 billion invested (2005)**
State Venture Capital Programs	**$2.2 billion available (2006)**
Federal Programs (SBIR/STTR)	**$2.0 billion invested (2004)**
Corporate Venture Funds	**$1.1 billion invested (2005)**

One reason the United States is a hotbed for entrepreneurial activity is the strength of its risk capital infrastructure. American innovators have access to more money and more potential investors than innovators anywhere else in the world. In the United States, governments, pension funds, corporations, and individuals are all significant sources of venture funding. In addition, the "delivery system" for risk capital investments is more diverse and more dynamic than in other countries. Because of the rise of venture capital firms, formal angel groups and intermediary organizations that aim to link idea generators with investors, U.S. entrepreneurs have less trouble finding funding sources than do their counterparts in other nations. And because of the risk-accepting culture, it is easier to convince potential investors to invest than it is in other, more conservative, countries.

The United States Leads the World in Venture Capital

4.18 The United States Has the Largest Share of Global Venture Capital Investment

Source: William Bygrave, "Financing Entrepreneurial Ventures," Global Entrepreneurship Monitor



The U.S. venture capital industry is, by far, the largest in the world. The United States has over 1,800 VC and private equity partnerships that manage over $650 billion in funds.[126]

Many other countries, through both private and public sector entities, are increasing the amount of venture capital available to their firms. As a percent of GDP, U.S. venture capital investment has actually been surpassed in recent years by countries including Israel and Sweden.[127] And the U.S. share of total global venture capital is down considerably since 2000.

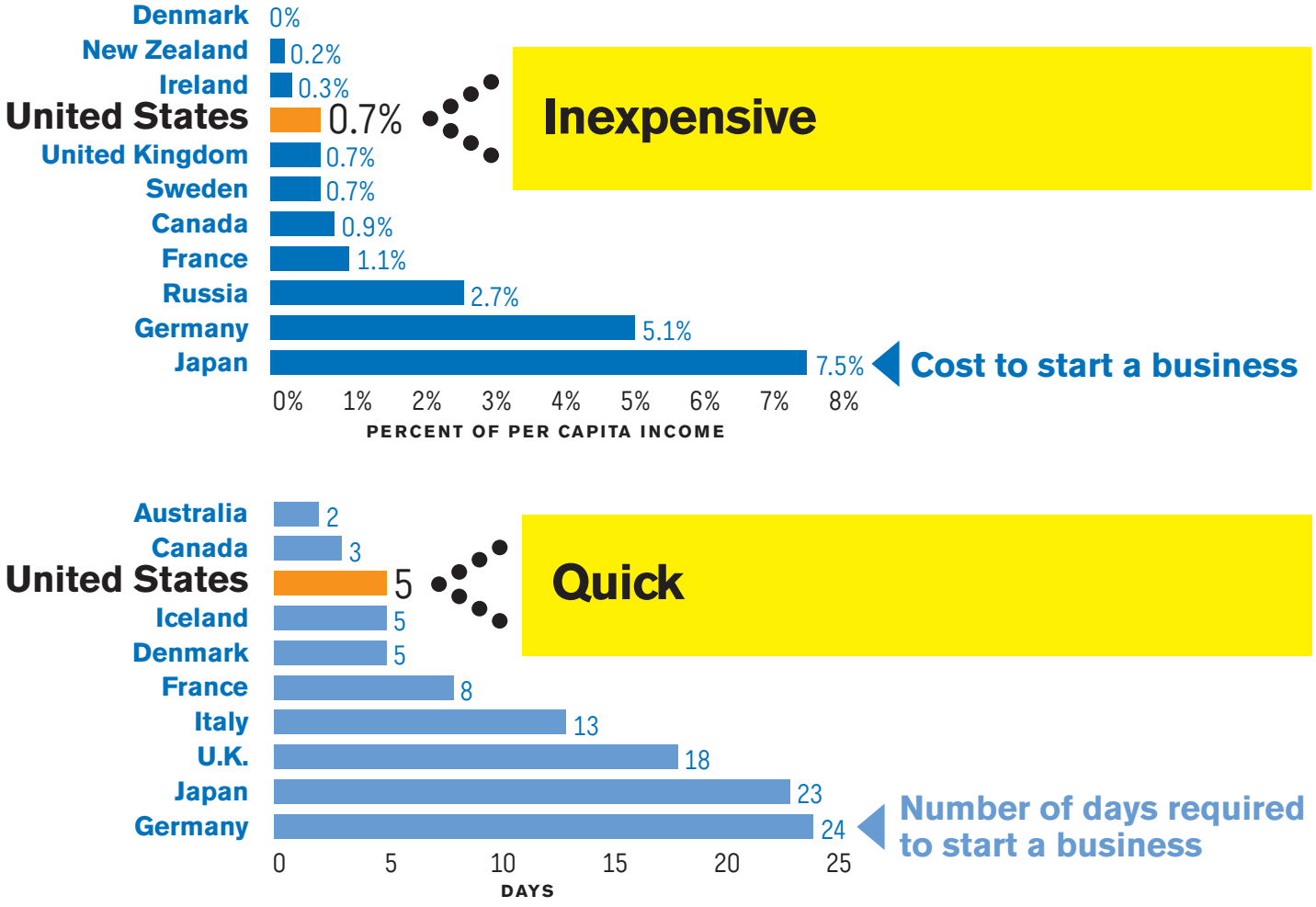
However, the United States is still well ahead in funding offered by angel investors. Angel investors are high net worth individuals or "accredited investors" that typically invest in start-up companies in their initial stages of growth.[128] They represent a particularly important funding source because angels are more likely to invest in the risky stages of company development than are venture capital funds. Angels are also more widely distributed across the country than venture capitalists.

In 2005, angel capitalists invested approximately $23 billion in the United States, slightly more than venture capitalists.[129] Over the last thirty years, the cumulative investments made by angels have been double that of investments made by venture capitalists.[130]

The U.S. Regulatory Structure Supports Business Start-Ups

4.19 The United States Is One of the Easiest Places to Start a Business

Source: World Bank, Doing Business 2007

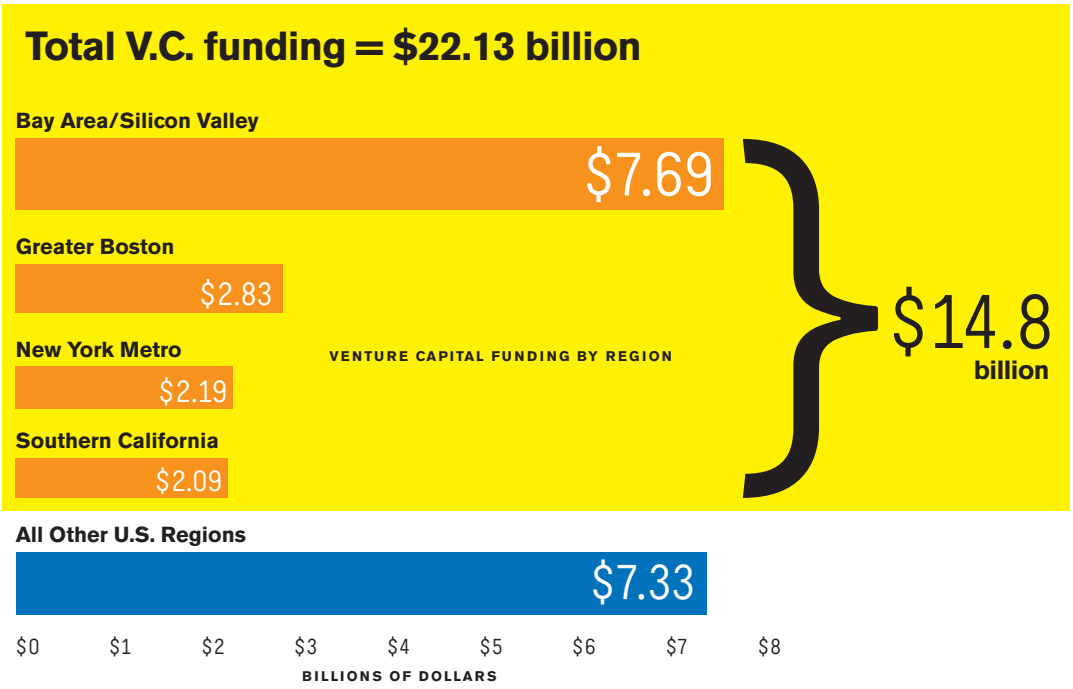


The United States regulatory and legal environment is another key factor that supports entrepreneurial activity. U.S. policies related to technology transfer, patent protection and contract enforcement are models for the world. The United States ranks third in the world in the overall ease of doing business, according to the World Bank's "Doing Business" Index. The United States is among the world leaders in terms of both the cost and time it takes to start a new business.

But U.S. Entrepreneurial Opportunities Have Not Been Fully Tapped

4.20 Venture Capital Investment Is Highly Concentrated in a Handful of U.S. Regions

Source: Dow Jones Venture One Press Release, January 2006



While the United States is the world leader in entrepreneurship, the level of entrepreneurial activity varies significantly across the country. Particularly when it comes to high-growth entrepreneurs, there is a high concentration of firms in a handful of regions. Over 66 percent of these ventures investments are located in only four regions: San Francisco/ Silicon Valley, Greater Boston, New York Metro, and Southern California.

These four areas maintain business environments that support risk-taking and appreciate entrepreneurial endeavors. The existing base of innovative firms, skilled labor, strong academic and research centers, and financial support organizations fuel a virtuous cycle in which entrepreneurs locate in these areas because they are more likely to be funded and to find key talent.

The present level of concentration represents an opportunity for many regions. Ideas and smart people are significantly more dispersed than entrepreneurial funding sources, and leaders can take steps to promote high-expectation entrepreneurship.

Many states and regions are actively upgrading their entrepreneurial environments. To increase the relative lack of venture and angel capital common in most areas, many state governments are launching investment funds and technical assistance efforts that focus on in-state entrepreneurial firms. In addition, many regional economic development organizations have been focused on organizing local angel investors into formal angel networks. These efforts have been successful – in 1996 there were only about 10 formal angel groups in 1996; today, there are over 200.[131]

At the university level, the Kauffman Foundation has been particularly active in supporting the training and support of nascent high-expectation entrepreneurs. A variety of efforts have also been launched to support female and minority entrepreneurs – groups that have seen rising rates of business ownership over the past decade.

National policy should support and strengthen efforts to build stronger regional entrepreneurial platforms throughout the country.

The Bottom Line for the United States

The United States continues to be the leading location for entrepreneurship in the global economy, especially in those segments of entrepreneurship that have the highest impact on the overall development of the economy. Key drivers of this position are the low barriers that entrepreneurs face when entering a new market, and the set of supporting structures, including the availability of risk capital, that enable them to pursue such opportunities.

The United States derives significant benefits from its strong position in entrepreneurship. Small and medium-sized companies are the most important drivers of job creation. But there are also signs of untapped opportunities, for example, in those regions in the United States where risk capital is still in short supply. And there are signs of challenges emerging, for example, in terms of rising health care and litigation costs reducing the incentives for companies to expand employment and grow.

The United States is ahead of its global peers in entrepreneurship. While other countries might find it relatively easy to provide risk capital, streamline regulations and set advantageous tax rates, they will find it difficult to match the entrepreneurial attitudes and values so pervasive in the United States. Nonetheless, the United States will need to work to maintain this lead — focusing on keeping open domestic and global markets; reining in the costs of unnecessary regulations; and, sustaining strong public support for the virtues of entrepreneurship.

EDUCATION – ARE AMERICANS EQUIPPED TO PROSPER IN THE 21st CENTURY?

Education enables individuals to increase their incomes, provides employers with more capable workers, and boosts the overall productivity of the economy. In an economy where technical change is one of the major drivers of growth, and where lower-wage workers in emerging markets are increasingly able to compete directly for work that once could be done only in America, the demand for more skills — higher educational attainment and higher-order competencies in communication and expert thinking — has risen rapidly. Despite decades of focus on this issue and progress in some areas, the U.S. educational system still fails to meet the needs of a globally competitive economy on many levels.

Progress in U.S. Education America has one of the highest levels of educational attainment in the world (in terms of average years of formal education). Since 1960, the percentage of Americans with a high school degree has doubled, while the percentage of Americans with a college degree has more than tripled. And all racial and ethnic groups have made progress, though significant gaps still remain.

Performance Gaps – Domestic and International The United States invests more per student on primary and secondary education than all other countries except Switzerland, and long-term trends show some improvement for fourth- and eighth-graders — but none for twelfth-graders. As such, many American students leave high school unprepared for college and unsuitable for many kinds of employment. And large gaps in skills between some racial and ethnic groups persist. As minorities come to make up a larger percentage of the population and workforce, a failure to address these gaps could mean declining levels of educational attainment across the entire workforce.

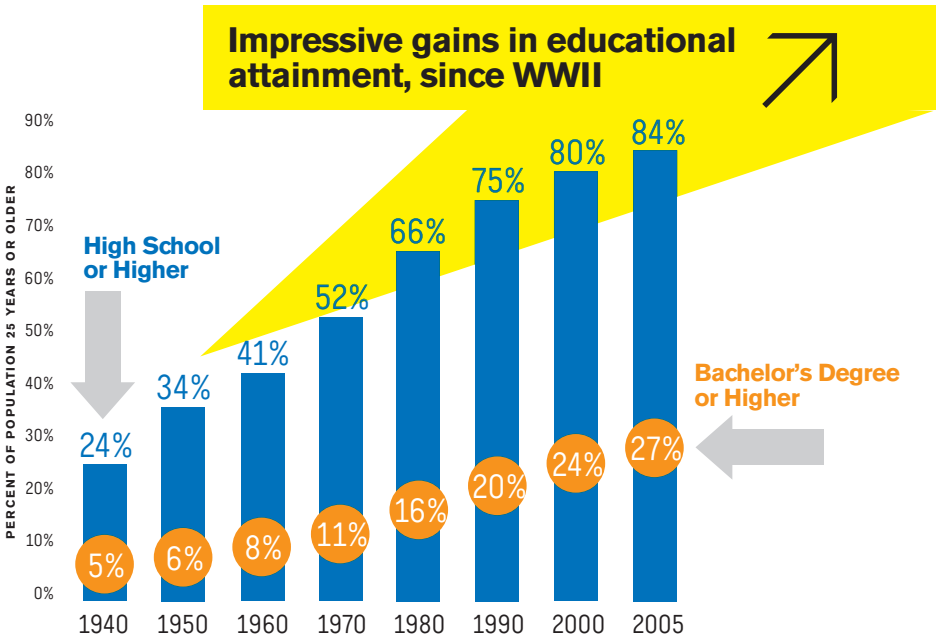
While the importance of science and technology to our economy has increased, American students have performed poorly on international tests of science and mathematics. And other nations have pulled ahead both in terms of high school graduation rates (the United States ranks 17th) and college graduation rates (the United States ranks 14th). Many young workers in other nations are now better educated than their peers in the United States.

The Changing Nature of Skills in a Global Economy The rapid pace of technological change, the restructuring of companies and entire industries, and increasing global competition have changed what people do on the job and the skills they need. All of the highest-paying and fastest-growing jobs of the next 10 years will require at least some college education. And workers of all educational backgrounds will need to do more than just master the basics. Success will require developing higher order cognitive skills and continually upgrading those skills through lifelong learning.

The United States Has Led the World in Expanding Access to High School and College

4.21 Levels of Educational Attainment Grew Rapidly After World War II

Source: U.S. Census



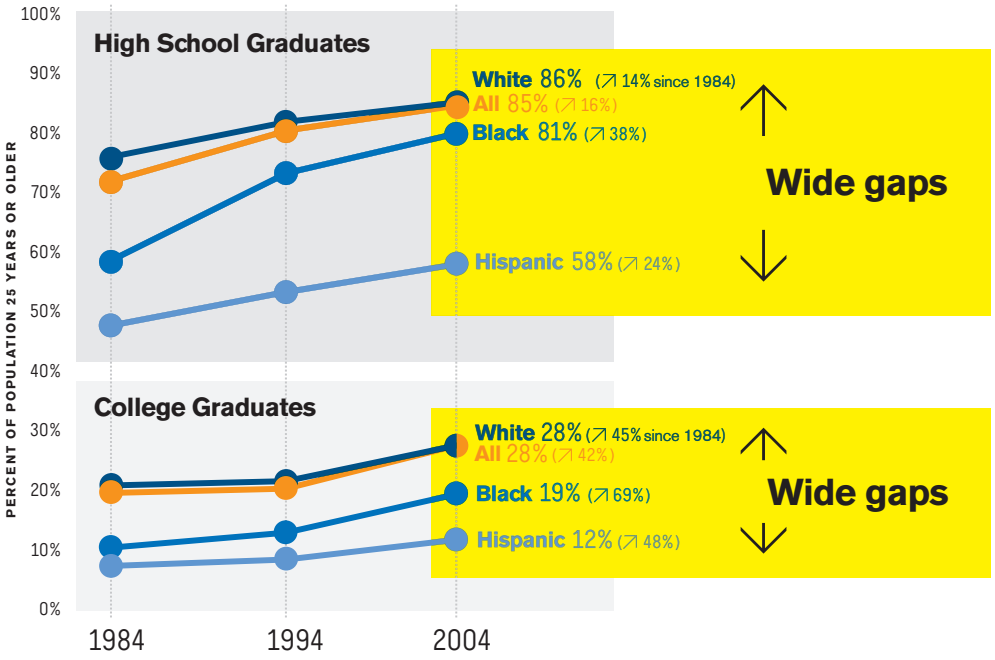
Increasing levels of formal education have played a key role in raising the skill levels of the U.S. workforce and boosting productivity. Coming out of World War II, only 34 percent of adults had completed high school, and only 6 percent had completed college. By 2005, 84 percent of the adult population had completed high school and 27 percent had a bachelor's degree or higher. The United States was one of the first countries in the world to push for the rapid expansion of access to education, especially higher education. The result is that the United States ranks fourth in the world in terms of average level of education (in years of schooling).[132]

Progress in U.S. Education

High School and College Graduation Rates Have Increased for All Americans, But Gaps Persist

4.22 All Racial and Ethnic Groups Have Improved High School and College Attainment

Source: U.S. Census



Every racial and ethnic group in the United States has made progress in high school and college completion over the past two decades. While only 59 percent of the Black population had completed high school in 1984, by 2004 that figure had risen to 81 percent – only 5 percentage points behind Whites. Hispanics have also made progress (rising from 47 percent to 58 percent) but still lag significantly behind Whites and Blacks.

College completion has also shown impressive gains. In 2004, 18 percent of the Black population had completed college, compared to only 10 percent in 1984. Hispanics completing college have increased from 8 percent to 12 percent. Both groups, however, are still far behind Whites, whose college completion rate rose from 20 percent in 1984 to 28 percent in 2004.

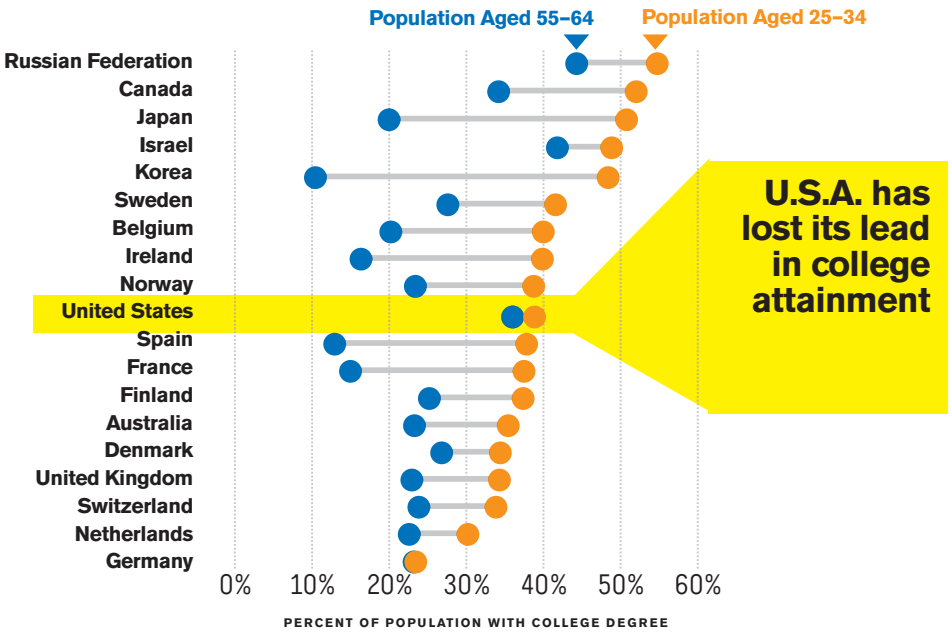
High school graduation rates in the United States have been the subject of much debate recently. The No Child Left Behind Act of 2002 includes on-time graduation as one of its important objectives, but experts disagree on exactly what the graduation rate is.

According to one analysis, the overall high school graduation rate with a regular diploma is between 80 and 83 percent.[133] Estimates of the high school graduation rate for Black students with a regular diploma range between 69 and 75 percent. The dropout rate for Black students, therefore, is about 25 percent with roughly half of those dropouts obtaining a GED. The Hispanic high school graduation rate ranges from 61 to 74 percent, and an additional 9 to 12 percent of Hispanics earn a GED. Other analysts find significantly lower graduation rates.[134] They estimate that the overall national public high school graduation rate for the class of 2003 was 70 percent: 78 percent for Whites, 72 percent for Asians, 55 percent for African-Americans and 53 percent for Hispanics. There were also significant differences between genders: 72 percent of females graduated from high school compared to 65 percent of males; 59 percent of African-American females, but only 48 percent of African American males; and 58 percent of Hispanic females graduated compared to 49 percent of Hispanic males. Regardless of the precise numbers, significant numbers of Americans – particularly those from racial and ethnic minorities – are not being adequately served by our high schools.

The Pace of Progress in Attainment Is As Fast — If Not Faster — Around the World

4.23 Other Countries Have Surpassed the United States in College Attainment Rates

Source: OECD, Education at a Glance (2006)



While Americans are among the world leaders in average educational attainment, other countries have passed the United States in graduation rates. The United States currently ranks 17th in high school graduation rates and 14th in college graduation rates.[135]

America's earlier lead is reflected in the educational levels of older Americans. Thirty-six percent of Americans aged 55 to 64 have college degrees — a significantly higher share for this age group than all except two other countries (Russia and Israel). And U.S. college graduation rates have improved; among Americans ages 25 to 34, 39 percent have completed college. But other countries have made even more rapid improvements. Nine countries now have higher rates of college completion among those ages 25 to 34.

The differences are even starker for high school completion. Americans 55 to 64 years old lead the world for their age group; 86 percent have completed high school compared to 65 percent in Japan, 59 percent in the United Kingdom, and only 34 percent in South Korea. But among Americans ages 25 to 34, 87 percent have completed high school, ranking 12th in the OECD. For young Koreans, 97 percent have completed high school as have 94 percent of Japanese.

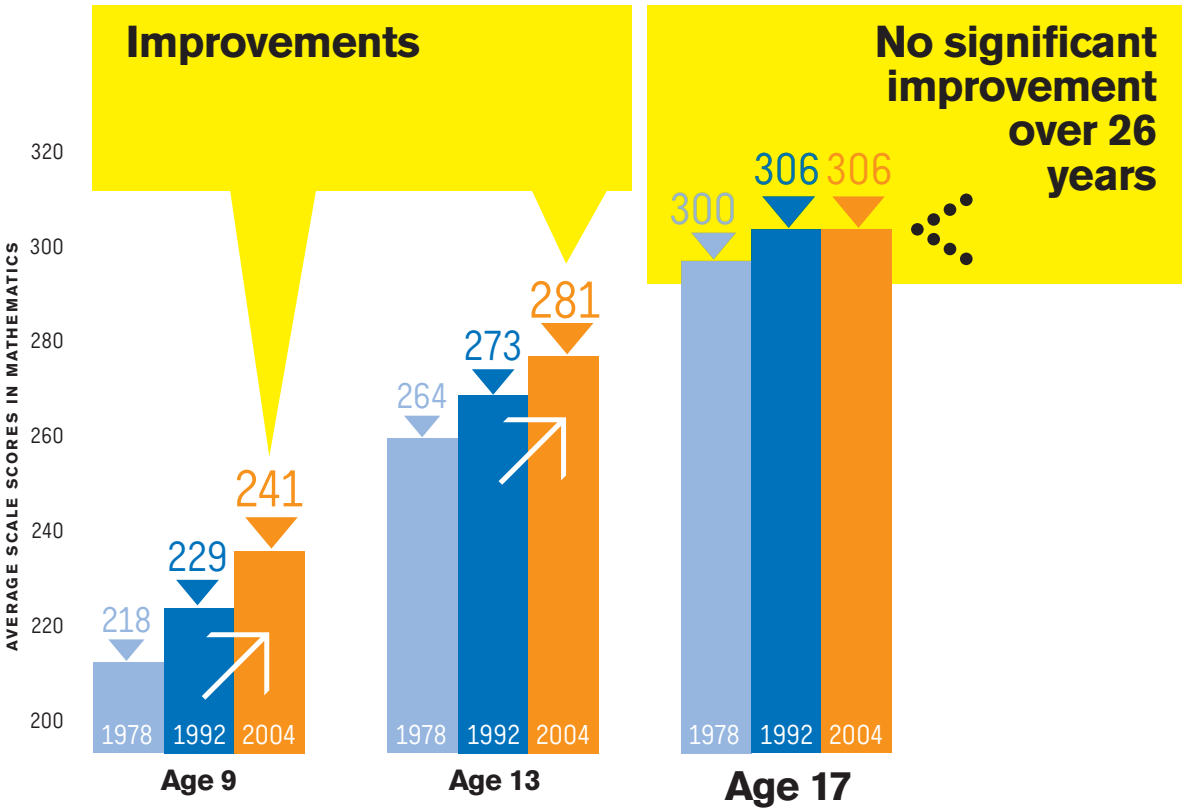
The rapid improvement in access to high school and college education in other countries means that children in the United States are expected to receive fewer years of education than many of their peers from other countries. In other words, our current lead in educational attainment is a legacy of stronger access to education during the "baby boom" years. As the baby boomers leave the workforce, and as other countries bring more young people into education, our lead in educational attainment will rapidly disappear.

Performance Gaps – Domestic and International

Education Investments in the United States Continue to Produce Mixed Results

4.24 Younger Students Have Made Gains, but U.S. 17 Year-Olds Have Seen Little Improvement

Source: U.S. Department of Education, National Center for Education Statistics



Even among those Americans who do complete high school, many still fail to achieve adequate levels of learning. In 1983, *A Nation At Risk* identified the poor performance of America's K-12 education system as a serious risk to national prosperity and national security. More than two decades later, after massive investments, progress has been limited. Test scores for 9-year-olds and 13-year-olds have shown improvement, but 17-year-olds show almost no improvement over the past two decades. For the 2003-04 school year, local, state and federal spending on elementary and secondary education totaled $500 billion. Despite this investment, reading scores have remained essentially flat over the past 20 years.[136]

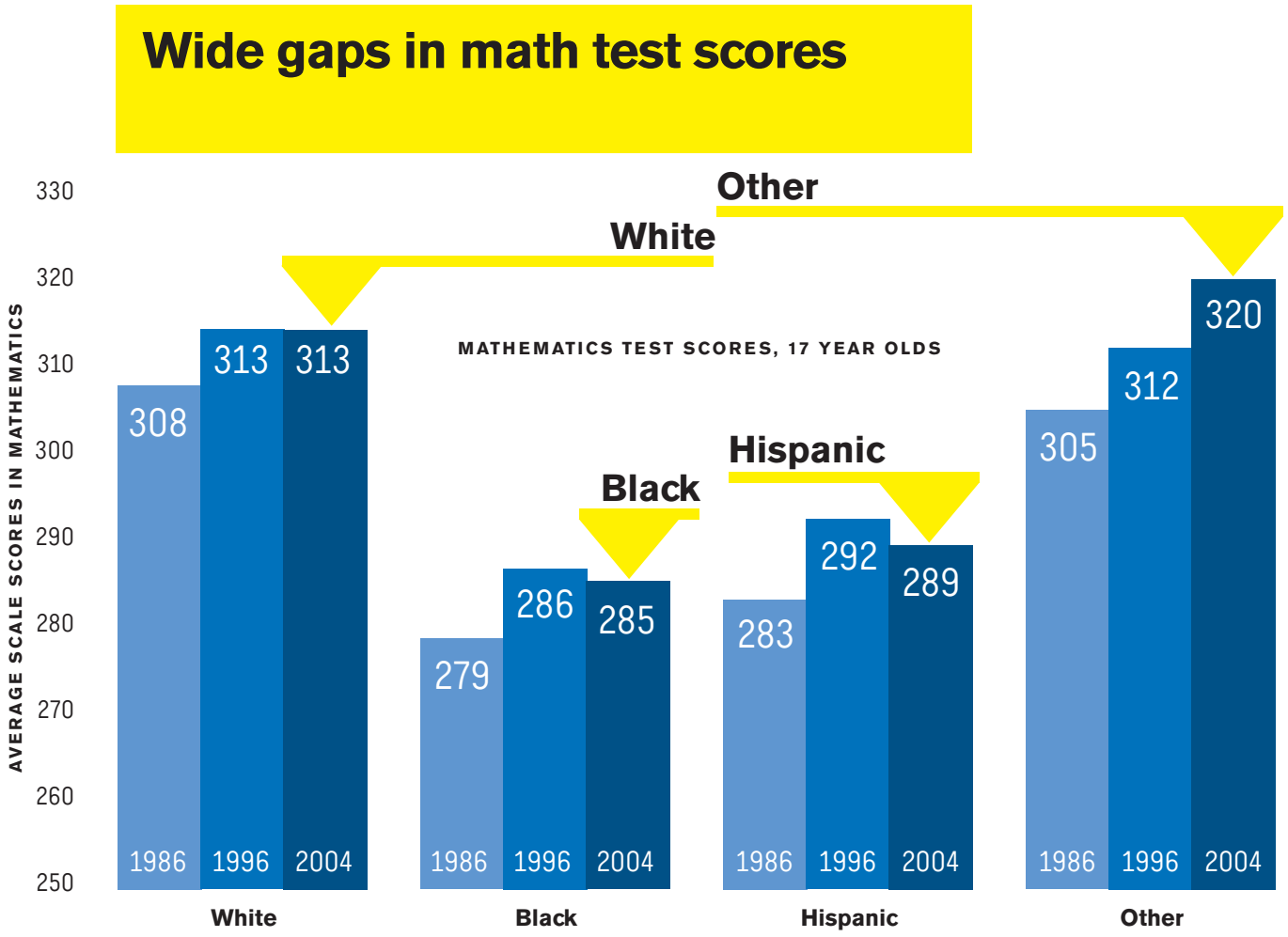
A report by the American College Testing Program (ACT) found that only about half of 2005 high school graduates have the reading skills they need to succeed in college and that students are no better prepared for college than they were 10 years ago.[137] And based on a recent study from the American Institute of Research, many U.S. college students do not have the skills necessary to perform complex and challenging literacy activities. This suggests that improvements are needed in areas such as analytical and critical thinking, synthesis and quantitative skills — the foundations of the conceptual economy.[138]

Surveys of employers perennially indicate dissatisfaction with the skills of new graduates. A recent survey by the Conference Board found that employers perceive more than half of new high school graduates to be deficiently prepared in important skills: oral and written communications, professionalism, work ethic, critical thinking and problem solving.[139] College graduates are better prepared, but only one-quarter are perceived to be excellent in many of the most important skills. The World Economic Forum's *Global Competitiveness Report* 2006-2007 found that the two most problematic factors for doing business in the United States are the quality of math and science education and the quality of public schools.[140]

Differences By Race and Ethnicity Persist in the United States

4.25 Minorities Continue to Underperform on Standardized Tests

Source: U.S. Department of Education, National Center for Education Statistics



There are large differences in academic performance between different racial and ethnic groups. Given demographic trends that will increase the percentage of minorities in schools and the workforce, the persistence of this performance gap will mean a falling level of educational attainment for the population as a whole.

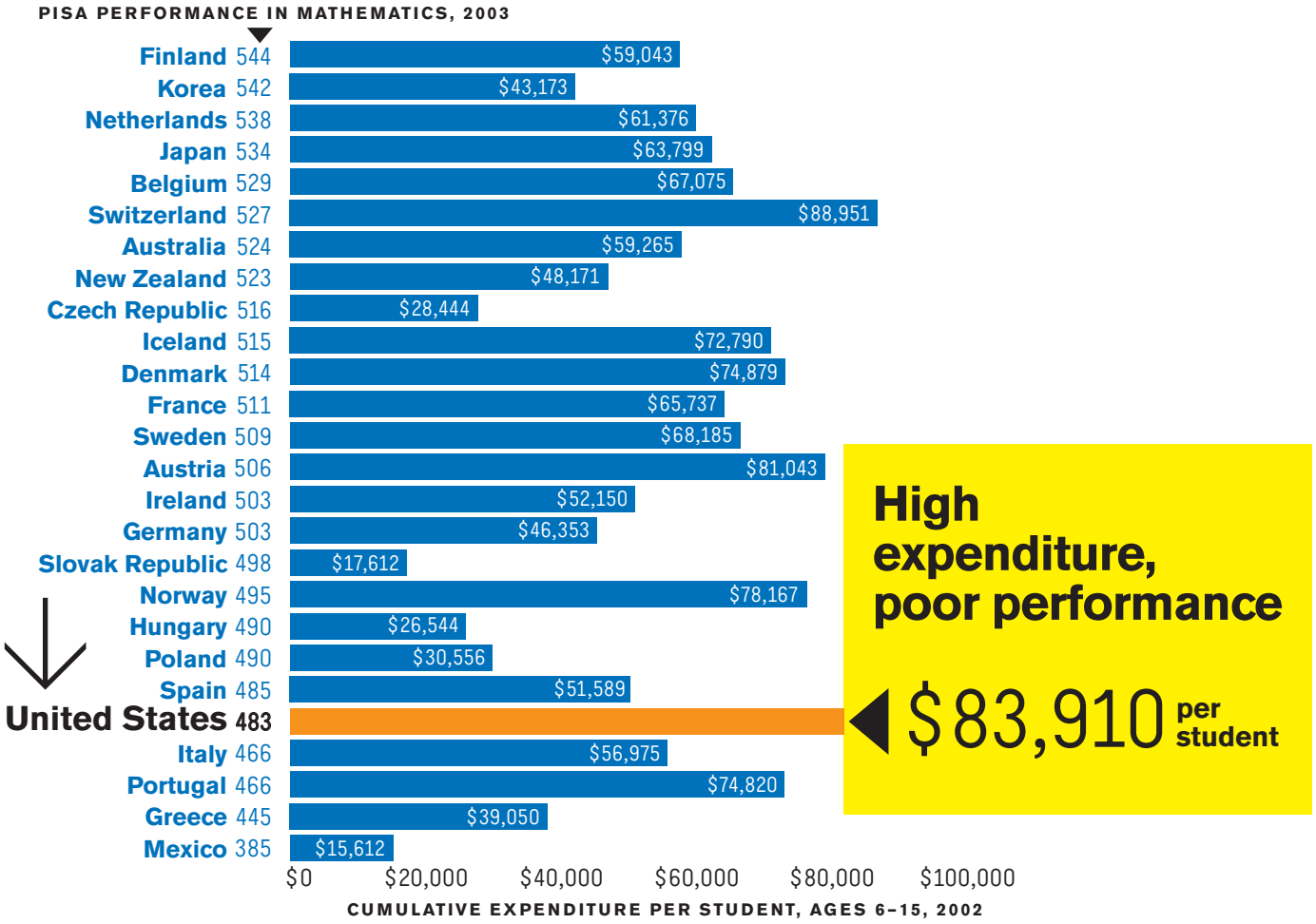
According to the National Assessment of Educational Progress (NAEP), more than 85 percent of African-Americans, Hispanic and Native Americans are not proficient in reading in the 4th grade, while 90 percent of African-American students are not proficient in mathematics.[141] By 12th grade, only 3 percent of African-Americans are proficient in mathematics compared to 4 percent of Hispanics, 10 percent of Native Americans, 20 percent of whites, and 34 percent of Asian-Americans.[142]

In 1980, the U.S. workforce was 82 percent white; by 2020, it will be just 63 percent White. Over these forty years, the share of minorities will double to 37 percent, while the share of Hispanics will triple to 17 percent. If the performance gap between Hispanics, African-Americans and Whites persists, the number of Americans ages 26 to 64 who do not have a high school degree could soar.[143]

In General, U.S. Students Perform Poorly by International Standards

4.26 The United States Invests Significantly More in Education, Yet Test Scores Are Low Compared to Other Nations

Source: OECD, Education at a Glance (2006)



Other countries perform better on international standardized tests, despite the fact that the United States spends more per student on education than any other country except for Switzerland. South Korea, the country with the second highest score in mathematics, spends about half as much per student as the United States.

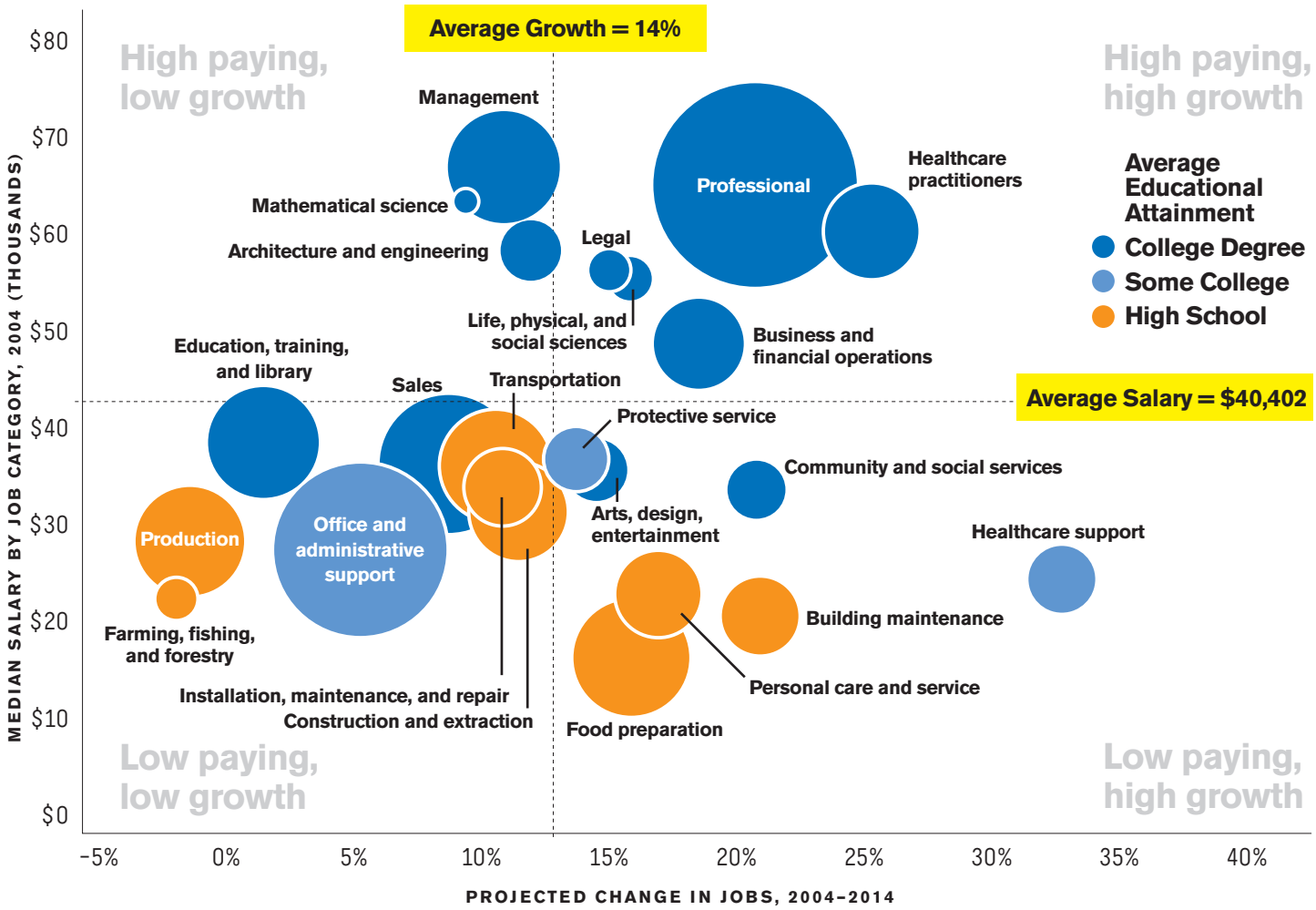
The chart shows scores on the OECD's Programme for International Student Assessment (PISA), an international test given to 15-year-olds in 41 countries that covers mathematics, reading, science and problem-solving.[144] In mathematics, students in 23 countries performed better on average than American students (only the major countries are shown above). In science, 16 countries scored higher. American students also perform relatively poorly overall on the Trends in International Mathematics and Science Study (TIMSS) examination.[145] For 12th-graders no country scored significantly lower than the United States in mathematics, and only one country scored lower in physics.

In trying to understand these trends, it is important to note that the U.S. system of local funding and management contrasts sharply with many other countries, and performance varies widely from school district to school district. In many cases, the best performing schools in the United States are equal to their international peers. Eighth-graders in high-achieving states have scores in mathematics that are equal to those in the highest-achieving foreign countries.[146] Students who passed the AP Calculus and AP Physics examinations score well above the international average.

Education Is the Key to the Best Jobs

4.27 High-Wage, Fast-Growth Occupations Require Higher Levels of Education

Source: U.S. Bureau of Labor Statistics



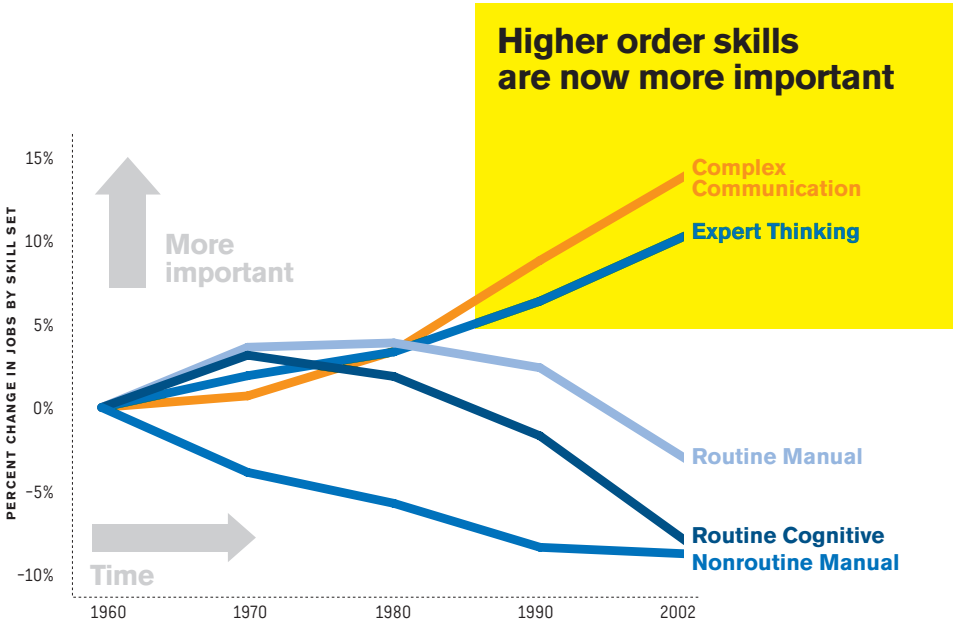
The education level required by the workforce has increased substantially as technology and competition drive the demand for skills. In 1950, 80 percent of jobs were classified as "unskilled." Today an estimated 85 percent of jobs are classified as "skilled"—requiring education or training beyond high school.[147] In 1973, nearly a third of all workers had not completed high school. For factory workers, more than half were high school dropouts. Now more than a third of factory workers have some college, while the percentage without a high school diploma has fallen below 20 percent. Overall, the largest share (about 72 percent) of the increase in postsecondary education requirements comes from "upskilling"—higher skills demanded by employers for jobs that previously did not require any college.[148] For example, many factory workers today are responsible for scheduling production activities, interfacing with suppliers and customers, and working with statistical process and quality control systems. A significant but smaller share (about 28 percent) comes from occupational shifts toward jobs that have always required postsecondary education.

Projections from the Bureau of Labor Statistics indicate that all of the fast-growing, high-paying occupations over the next decade will require a college degree while the fastest growing occupations that require only a high school diploma (personal care and service, food preparation and building maintenance) have the lowest average wages.

Prosperity in an Innovation-Based Economy Requires Different Skills

4.28 Higher-Order Skills Have Grown in Importance, Driven by Technological Change and Globalization

Source: Updated version of Figure 1 in David H. Autor, Frank Levy, and Richard J. Murnane, "The Skill Content Of Recent Technological Change: An Empirical Exploration," Quarterly Journal of Economics, 118(4), November 2003. See also Frank Levy and Richard J. Murnane, "How Computerized Work and Globalization Shape Human Skill Demands," (May 31, 2006)



The forces that have reshaped the U.S. economy and driven growth and wealth creation have also fundamentally changed the nature of the skills that workers need to succeed. The growing use of information technology drove the productivity acceleration of the late-1990s and, at the same time, fundamentally changed the ways in which vast numbers of Americans work. Global competition, now evident in service industries as well as manufacturing, has also contributed to the changing nature of work. To put it simply, the returns to workers with higher skill levels have increased.

The greatest gains have come in jobs that require complex communication — interacting with other people to acquire information, to explain it or to persuade others of its implications for action. Jobs that depend on expert thinking — solving problems for which there is no rule-based solution — have also increased in importance. But those jobs that emphasize routine manual or cognitive tasks, or required primarily non-routine manual skills, have declined.

One sector in which this effect is visible is the IT sector. IT workers, in general, are highly educated. But many still face the possibility that their skills will be commoditized. Lower-wage workers who use IT (telemarketers, switchboard operators, telephone operators, computer operators and data-entry keyers) lost 711,000 jobs from 1999 to 2004. But jobs held by high-skilled, judgment-oriented and problem-solving IT workers (researchers, applications and systems software engineers, database administrators and network systems engineers) increased by 513,000.[149] Generally, if a problem can be solved by a rule or a straight forward process, a computer (or someone using a computer in a developing economy) will be able to do it. Call center work, for example, is heavily scripted, and jobs in this area are being lost not only to facilities in India and elsewhere, but also to speech recognition software.

The implications for America's education system are profound. Formal education has traditionally focused on problems with rule-based solutions (mathematics, science, grammar, dates in history). These subjects represent basic knowledge that all workers need — a mastery of such skills is necessary, but it is not sufficient to compete in a global innovation economy.

A Commitment to Lifelong Learning Is Essential

4.29 The United States Lags in Support for Job Training

Source: OECD, Education at a Glance (2006), Chart C5.2

While improving K-12 and college education will play a critical role in boosting U.S. competitiveness, the vast majority of the people who will be in the workforce in 2026 are already in the workforce now. The needs of these incumbent workers are increasing as the demand for new and better skills increases rapidly. The United States is among the leaders in participation in job training, with more than 35 percent of the population between 25 and 64 years of age having participated in some type of informal job-related continuing education and training over the course of a given year. But as the chart shows, other countries offer more hours of job training than the United States. In every country, those with the most education receive the most hours of job training. In the United States, employees earning more than $25,000 make up half of the workforce but receive 72 percent of all employer provided formal training.[150] Job training is also dominated by large firms. Thirty-six percent of all workers in the United States work for small companies with less than 100 employees, but these companies account for just 12 percent of the total corporate investment in training.[151]

The Bottom Line for the United States

This section highlights the fundamental point that prosperity in the 21st century conceptual economy is coupled tightly to educational attainment and mastery of competencies that emphasize complex communication and creative thinking skills over manual and routine cognitive skills. Nonetheless, despite calls dating back to the 1983's seminal report, *A Nation At Risk,* for concerted moves to counter mediocre educational performance, the U.S. educational system still fails to meet many of the needs of a globally competitive economy.

Many Americans still leave high school unprepared for future education, the workforce or ongoing training. This is particularly troublesome as data clearly indicate that all of the highest-paying and fastest-growing jobs over the next decade will require at least some college education.

The words from *A Nation At Risk* are even more true today than 20 years ago: "History is not kind to idlers… We live among determined, well-educated and strongly motivated competitors… America's position in the world may once have been reasonably secure with only a few exceptionally well-trained men and women. It is no longer." One of our great challenges and opportunities going forward is to build upon the nation's impressive record of expanding access to higher education – the fundamental ticket for prosperity in the 21st century. And we must act now – our current global lead in education attainment is a legacy of the "baby boom" years. As the baby boomers leave the workforce and as other nations bring more of their young people into higher and higher levels of education, our lead in attainment may fade.

ENERGY

Energy has again risen to the top of the economic policy debate, in the United States as well as around the world. Leading this debate with a view toward long-term trends in energy supply, demand and use — and not reacting to every short-term change in the price of oil or electricity — is critical.

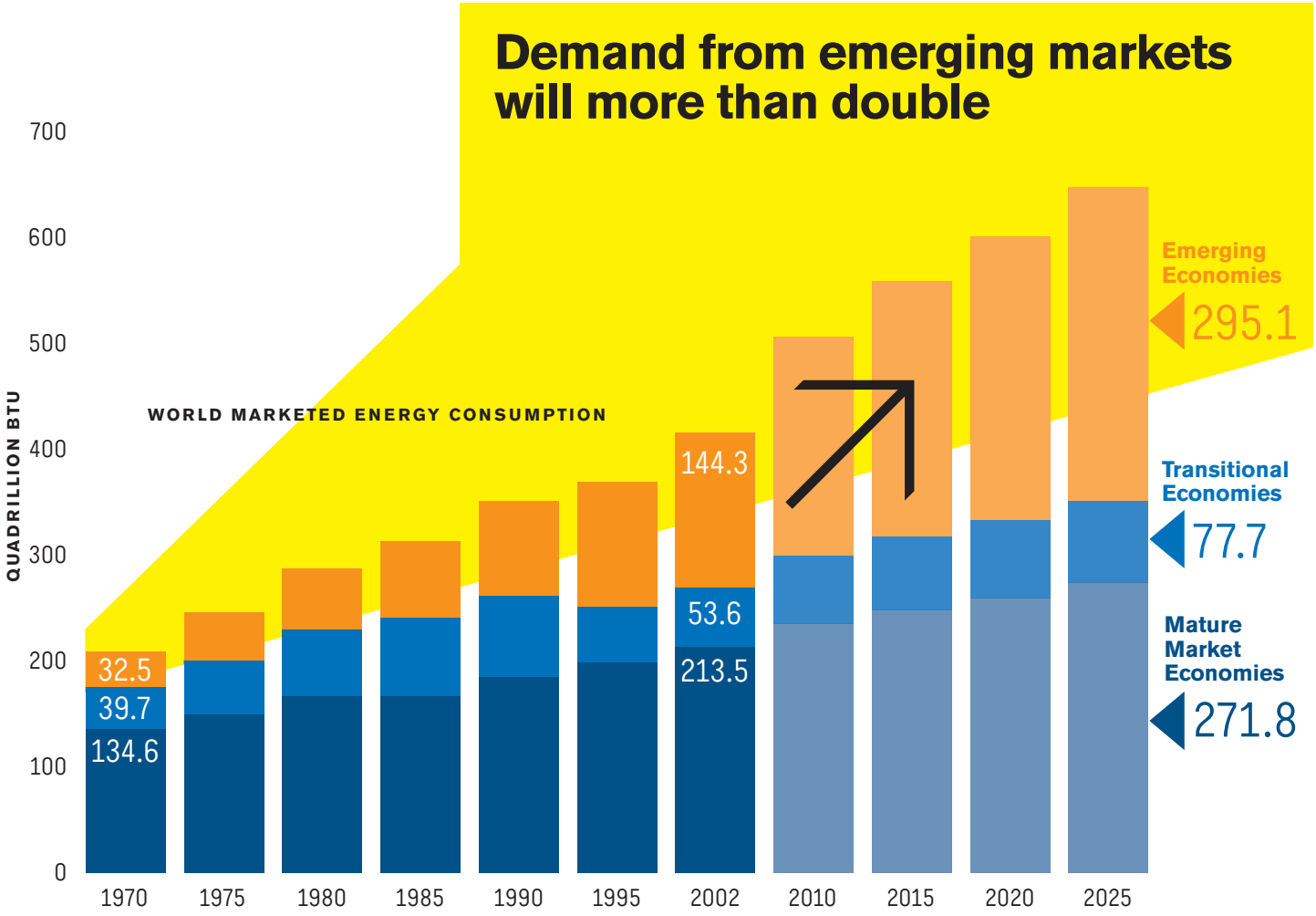
Energy in the Global Economy Energy remains a catalyst for global growth. Globalization has increased the demand for energy, both through a large increase in transportation services to support burgeoning international trade and through the economic growth of countries entering the global economy. Without a reliable energy supply, countries cannot take advantage of all the opportunities that the increasingly dynamic, open and competitive global economic environment provides.

Energy in the Global Economy

Emerging Economies Are Reshaping World Energy Markets

4.30 Energy Prices Are Not Expected to Come Down as Global Demand Rises

Source: EIA, International Energy Outlook 2006, Report #:DOE/EIA-0484 (2006)



Although rising demand from rapidly growing emerging economies will drive increases in global energy use, the share held by mature market economies is predicted to remain high, contributing to over 40 percent of total energy consumption in 2025.

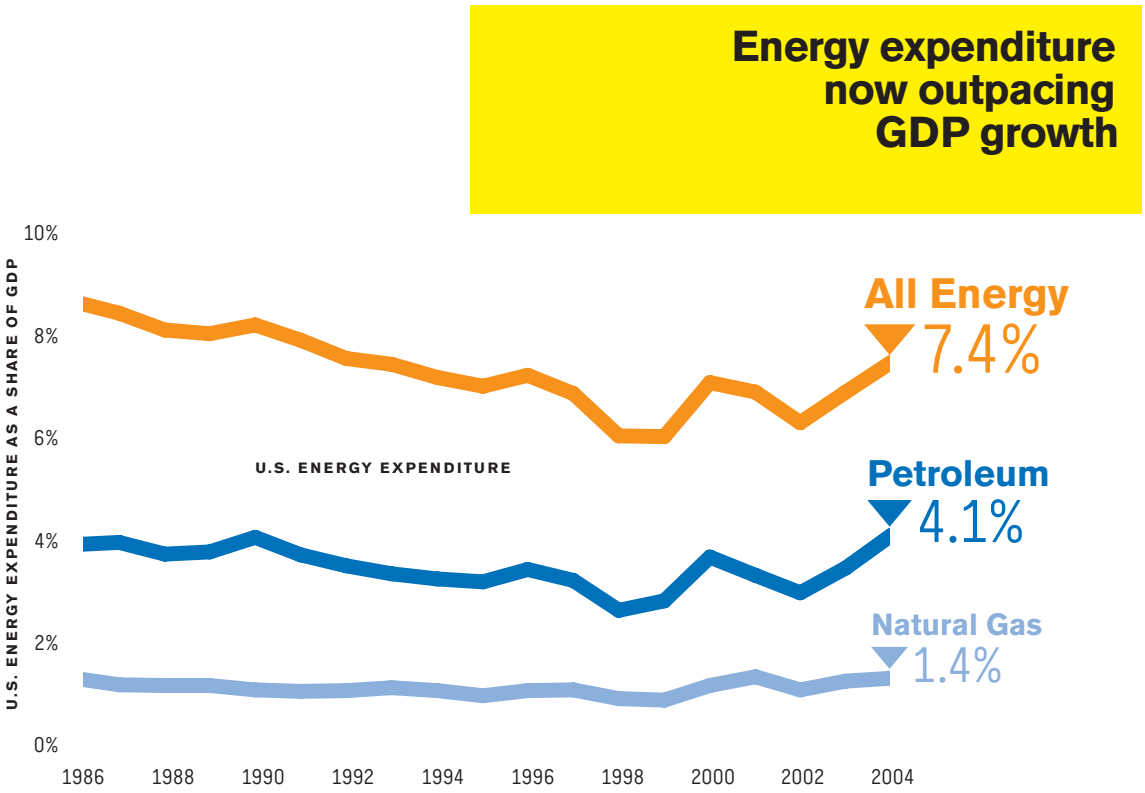
Since the oil crisis of the 1970s, energy efficiency has increased significantly in the world economy. Efforts to increase productivity have also helped to reduce the waste of energy, often a sign of inefficiencies elsewhere in production processes. Consumer preferences, government regulations, and increasing energy prices have added to the pressure for more energy-efficient products and processes — and have made such offerings an attractive value proposition in many markets.

Reliable energy depends on many factors: stable conditions in the countries that are home to natural energy resources; predictable regulatory conditions, governing property rights and market access along the different stages of the value chain; investments in new technology to find, transport and process energy; and many more. The supply of energy is not only a function of the resources in the ground. Shortages in pipeline or refinery capacity are as important as the regulatory and market environments.

Energy Expenditures Are on the Rise

4.31 Energy Expenditures Are a Growing Share of U.S. Economic Output

Source: International Energy Agency, Annual Energy Outlook 2006 with Projections to 2030, Annual Energy Outlook 2006, DOE/EIA-0383, February 2006, p. 63



The United States has traditionally enjoyed an energy advantage relative to many other economies. It could, for many years, rely on its own resources. And it has a very dynamic energy sector that has driven innovation in technology and business models. The United States has also relied on a diversified mix of energy sources and suppliers, and it has invested in a strong production and distribution infrastructure. All of these factors have enabled total U.S. energy costs to remain relatively low when compared to many other countries.

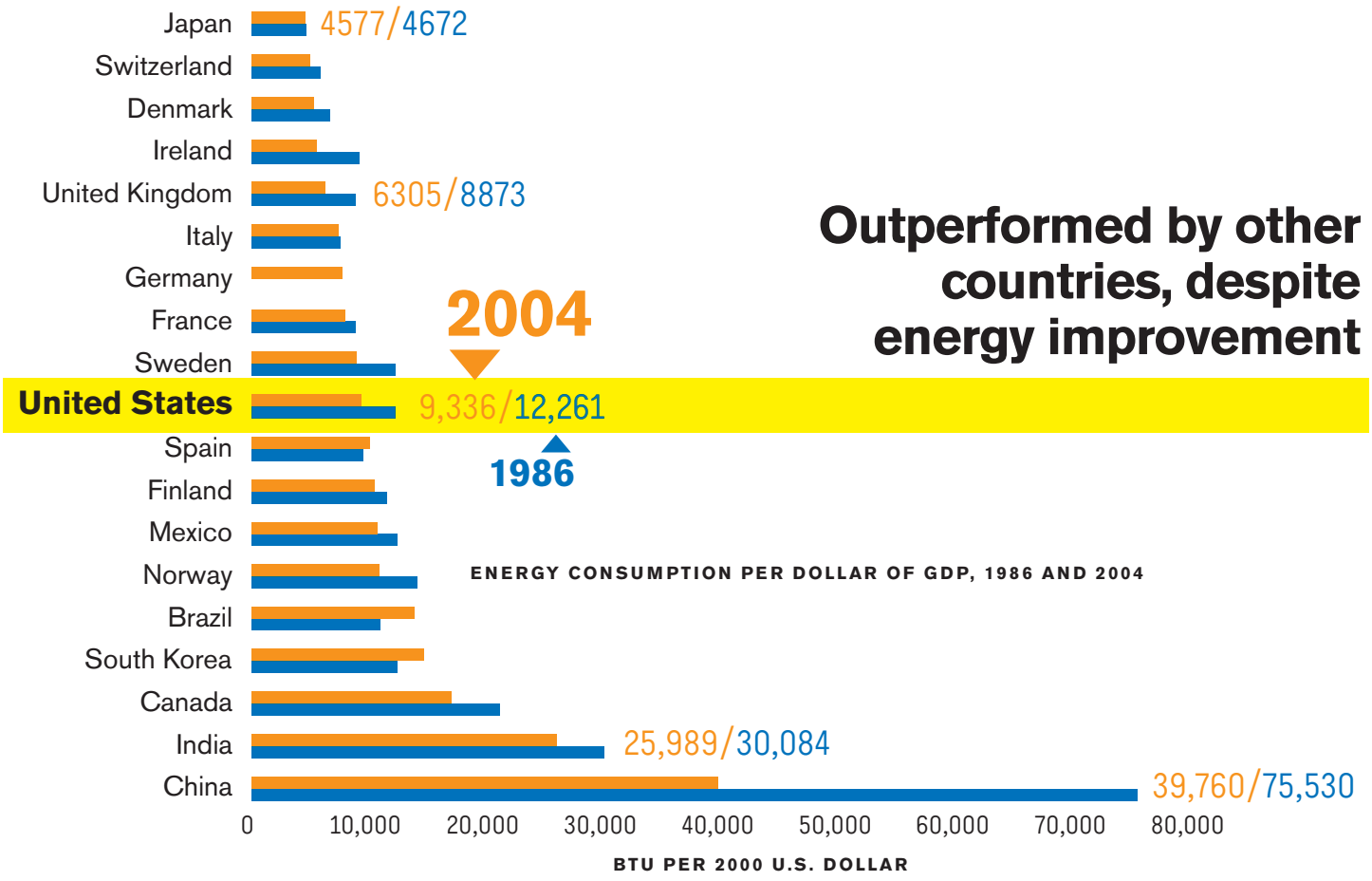
Yet America consumes one quarter of the world's oil production but possesses only 3 percent of the known reserves. Consequently, the United States is a major oil importer. Imports accounted for 37 percent of America's total oil consumption in 1980, and 55 percent by 2005. According to the U.S. Department of Energy, oil imports will account for 60 percent of the total U.S. petroleum supply by 2025. More than half of that supply is expected to come from the OPEC suppliers.[152] U.S. demand for imported natural gas will also continue to grow, and imports of liquefied natural gas are projected to experience the fastest level of growth — increasing nearly six-fold, from 0.6 trillion cubic feet in 2004 to 4.1 trillion cubic feet in 2025.

Over the past few years, some challenges facing the U.S. energy system have become apparent. The capacity of the electricity grid and of oil refineries seems close to full consumption levels, creating instability in times of peak demand. The nation's own native resources meet an ever-decreasing share of overall U.S. energy demand, and the dependence on a few foreign suppliers, some with complicated relations with the United States, is increasing. At the same time, energy demand has been growing quickly in many parts of the world outside of the United States, while global energy production, including processing capacity, have failed to keep pace with this level of growth. Energy prices have risen, increasing the share of U.S. GDP devoted to energy. But it is noteworthy that on average energy accounted for a higher share of U.S. economic output in the entire decade between 1986 and 1996. The efforts to find new energy sources and new deposits of fossil energy have been accelerated by innovations such as high performance computing.

The United States Has Made Gains in Energy Efficiency, But Opportunities for Improvement Remain

4.32 The United States Is Making Gains in Energy Efficiency — But Not as Fast as Some Other Countries

Source: International Energy Agency, International Energy Annual 2004, Table E.1p



Energy efficiency in the United States has improved over time and is at a level roughly comparable to other advanced economies. Unlike many other countries, the United States faces two challenges that drive high energy consumption: the nation's geographic expanse, and a historic emphasis on personal mobility. But more can and needs to be done to decouple GDP growth from growth in energy consumption.

The Bottom Line for the United States

The convergence of several critical trends — rising energy prices, rapidly growing global demand, increasing U.S. dependence on foreign oil, and rapid climate change due in large part to the burning of fossil fuels — are changing America's perceptions around energy. This creates a huge opportunity if the nation can avoid the mistake of basing long-term policy decisions on short-term fluctuations in the oil price.

One key area to address is energy efficiency. The United States has the technological capacity and the entrepreneurial dynamism to pursue the market opportunities that exist in more energy-efficient products and operating practices. These forces should be encouraged to motivate companies to develop market offerings that give them a lead at home as well as overseas.

Another key area is the stability of the market environment. Energy supplies will only be stable if companies face a predictable market environment along all stages of the energy industry value chain. Sudden changes in the downstream market structures can be as harmful to long-term investments in energy infrastructure as can political insecurity in countries that control energy supplies.

The domestic and global energy situation need not be a threat to U.S. competitiveness if the nation proactively creates a long-term, sustainable and diverse portfolio. Unleashing innovation in this area plays to U.S. strengths, reducing vulnerabilities to trends in the global market place.

5. Conclusion — How Can the United States Continue to Meet the Challenge of Global Competitiveness?

Competitiveness Index: Where America Stands places the United States squarely in the center of an ever-changing, increasingly innovation-driven global economy. The *Index* discusses how changes in technology, demographics and the economic policies of many countries around the world have had a profound impact on the environment in which all Americans must compete to prosper in the 21st Century.

The Impact of the New Global Economy on the United States

For the past 20 years the United States has been driving the transition to a truly global economy — and, as such, it has been as exposed to both the positive and negative effects of globalization as any other economy. In fact, the data presented in this *Index* indicate that U.S. success and prosperity have come about in large part due to an ability to adapt faster.

U.S. companies have been at the vanguard of the restructuring of global value chains — at the cutting edge of this transition to the conceptual, and from the 20th century multinational corporation to the 21st century global enterprise. U.S. firms have also dealt more quickly than their global peers with deciding which competencies and activities should remain core, which should move out of the firm, and which should move out of the United States. U.S. companies have also aggressively pursued the promise of new technologies, both by investing in R&D as a source of competitive advantage and by leveraging new technologies to change operational practices and improve efficiency. U.S. regions have in the process become more specialized around regional clusters than other regions around the world. They have created business environments that cater to the specific needs of these clusters and have achieved higher rates of productivity, innovation and new firm creation.

Taking the lead in adjusting to the new global economic environment has created a new balance of opportunity and risk to which Americans and U.S. regions are exposed. Regions that do not develop a clear competitive profile, fail to upgrade their business environments, and lack a healthy portfolio of clusters fall behind much faster than in the past. They will lose exports, and entire industries will relocate much more quickly than before. Regions that meet the demands of the new environment, however, can leverage the potential of strong clusters and business environments by serving much larger global markets in the areas in which they have created competitive advantages.

The same logic applies to individuals: Americans with high skills face an increasing array of opportunities and higher returns to their abilities. Americans with lower skills, however, face growing competition from other parts of the world: high-skill, low-wage competition — a combination that is difficult to overcome.

This new global competitive environment creates a number of challenges for the United States. Our nation is now more open to competition from foreign companies and foreign business environments. We need to address our weaknesses and upgrade the strengths that set us apart from global competitors. Our advantages — properly leveraged and deployed — offer great promise in delivering even greater future prosperity. And our nation needs to ensure that more Americans are equipped to take advantage of the opportunities that the new economic environment offers. Access to continual skill development will probably be the most important issue to address as our nation ages and as Americans live longer, want to work longer, and want to remain engaged productively and creatively in society. And the United States would face a bleak future if only the wealthy were able to access the skills and training necessary for continued and enhanced engagement in the global economy — creating a vicious cycle freezing social mobility and dampening the sense of opportunity that has characterized the United States.

Looking Forward: Does the United States Have the Capacity To Adapt? Competitiveness is a dynamic challenge. This is becoming increasingly clear as the global economy churns more and more, and the ability to adapt quickly to a new economic environment becomes a paramount driver of economic success and prosperity.

The United States has a unique asset that is too often overlooked. Our nation has a strong history and ability to act — to develop answers to new problems, and to be decisive in putting them in place. The source of this strength stems from the structure of our society that distributes responsibility widely across stakeholders and between the public and the private sector.

And yet, our continued prosperity in this new global environment is not assured. But we have the capabilities needed to succeed, creating prosperity not at the expense of others but by offering unique value in areas where others cannot match. If we fail, we have only ourselves to blame.

Notes

SECTION 1

1 "The New Titans," *The Economist* (September 14, 2006)

2 Goldman Sachs, "Dreaming with the BRICs: The Path to 2050," Global Economics Paper No: 99 (October 1, 2003)

3 Ibid.

4 Paul A. Laudicina, *World Out of Balance: Navigating Global Risks To Seize Competitive Advantage* (New York: McGraw-Hill, 2005)

5 Morgan Stanley, "Internet, Technology, Media and Telecom" (March 23, 2006)

6 McKinsey Global Institute, "The Emerging Global Labor Market: Part II – The Supply of Offshore Talent in Services" (June 2005)

7 Global Insight, Inc.

8 David Lague, "China Overtakes U.S. As Tech Supplier," *International Herald Tribune* (December 12, 2005)

9 UNCTAD, *World Investment Report* (2006)

10 U.S. Bureau of Economic Analysis, Council on Competitiveness calculation

11 McKinsey Global Institute, "A New Look at the U.S. Current Account Deficit: The Role of Multinational Companies" (December 2004)

12 U.S. Bureau of Economic Analysis, "Summary Estimate for Multinational Companies: Employment, Sales and Capital Expenditures for 2004" (April 20, 2006)

13 J. Steven Landefeld and Raymond Mataloni, "Offshore Outsourcing and Multinational Companies," U.S. Bureau of Economic Analysis, WP2004-06 (July 16, 2004)

14 U.S. Bureau of Economic Analysis, Council on Competitiveness calculation

15 U.S. International Trade Commission, "Recent Trends in U.S. Services Trade: 2006 Annual Report," Publication No. 3857 (June 2006)

16 Ibid.

17 UNCTAD, *World Investment Report* (2006)

18 Carol Corrado, Charles Hulten, and Daniel Sichel, "Intangible Capital and Economic Growth," Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C. (April 2006).

19 "Best Global Brands," *BusinessWeek* (Aug. 7, 2006)

20 U.S. Census Bureau, "U.S. Goods Trade: Imports & Exports by Related Parties, 2004" (April 12, 2005)

21 McKinsey Global Institute, "A New Look at the U.S. Current Account Deficit: The Role of Multinational Companies" (December 2004)

22 National Research Council, *Analyzing the U.S. Content of Imports and the Foreign Content of Exports* (2006)

SECTION 2

23 Global Insight, Inc.

24 OECD, *Economic Policy Reforms: Going for Growth,* 2006, Chapter 6, "Alternate Measures of Well-Being."

25 Federal Reserve Board, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," *Federal Reserve Bulletin* (2006), Table 3. Residential Property includes both primary residences and all other residential. Retirement Accounts include all tax-deferred retirement assets (such as IRAs and 401ks), but do not include Social Security or pensions (employer-sponsored defined benefit plans). Stocks, Bonds, and Investment Funds include all directly and indirectly held personal and pooled equities, excluding money market funds and savings bonds. Business Equities include both business interests in which the family has an active management role and those in which it does not, but still maintains some share of equity in a privately owned company. Other Assets include vehicle ownership, equity in nonresidential property, transaction accounts, certificates of deposit, savings bonds, cash value life insurance, and other managed and unmanaged assets.

26 Ibid., Table 6.

27 U.S. Census Bureau, *Housing Vacancies and Homeownership – Second Quarter 2005,* Table 5.

28 U.S. Census Bureau, Housing Vacancy Survey, "Table 11B. Median Asking Sales Price for the U.S. and Regions: 1988 to Present"

29 U.S. Department of Labor, Employee Benefits Security Administration, *Private Pension Plan Bulletin* Number 12, Summer 2004, Tables E5, E11. Cerulli Associates, *Retirement Markets 2005,* Exhibits 1.01, 1.09. Data exclude public and non-profit retirement plans (e.g., 457, 403(b) plans). Changes in asset levels result from market action, employee and employer contributions, and employee withdrawals.

30 Federal Reserve Board, "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," *Federal Reserve Bulletin* (2006), Table 3.

31 Arthur B. Kennickell, "Currents and Undercurrents: Changes in the Distribution of Wealth, 1989–2004," Federal Reserve Board (January 30, 2006), p. 7.

32 Ibid., Table 11a.

33 U.S. Census Bureau, *Income, Poverty and Health Insurance Coverage in the United States: 2005* (August 2006)

34 Global Insight, Inc.

35 Thomas Piketty and Emmanuel Saez, "Income Inequality in the United States: 1913-1998," *Quarterly Journal of Economics* (February 2003). The updated data series is available at http://elsa.berkeley.edu/~saez/TabFig2004prel.xls

36 Thomas Piketty and Emmanuel Saez, "The Evolution of Top Incomes: A Historical and International Perspective," National Bureau of Economic Research, Working Paper 11955 (January 2006)

37 Lawrence Mishel, Jared Bernstein and Sylvia Allegretto, *The State of Working America 2006/2007* (Economic Policy Institute, 2006), Table 8.17.

38 U.S. Census Bureau, *Income, Poverty and Health Insurance Coverage in the United States: 2005* (August 2006)

39 Michael F. Förster and Koen Vleminckx, "International Comparisons of Income Inequality and Poverty: Findings from the Luxembourg Income Study," *Socio-Economic Review* (2004) 2: 191-212.

40 U.S. Census Bureau, *Income, Poverty and Health Insurance Coverage in the United States: 2005* (August 2006)

41 Rebecca M. Blank, *It Takes a Nation: A New Agenda for Fighting Poverty* (Princeton: Princeton University Press, 1997)

42 W. Michael Cox and Richard Alms, *Myths of Rich & Poor: Why We're Better Off Than We Think* (New York: Basic Books, 1999)

43 U.S. Census Bureau, "Supplemental Measures of Material Well-Being: Expenditures, Consumption and Poverty, 1998 and 2001" (September 2003)

44 Federal Reserve Board, http://www.federalreserve.gov/releases/H15/data.htm

45 U.S. Bureau of Labor Statistics

46 IMF, *World Economic Outlook* (2006), Ch. III: "How Has Globalization Affected Inflation?"

47 Global Insight, *Measuring the Impact of Wal-Mart on the U.S. Economy* (November 4, 2005)

48 Robert Haverman and Timothy Smeeding, "The Role of Higher Education in Social Mobility" (February 15, 2006)

49 U.S. Bureau of Labor Statistics, "Employment Outlook: 2004-14, Labor Force Projections to 2014: Retiring Boomers," *Monthly Labor Review* (November 2005)

50 U.S. Bureau of Labor Statistics, "Charting the U.S. Labor Market in 2005" (2006)

51 John McMillan, "Quantifying Creative Destruction: Entrepreneurship and Productivity in New Zealand," and Ramón Gómez-Salvador, Julián Messina and Giovanna Vallanti, "Gross Job Flows and Institutions in Europe," European Central Bank Working Paper Series No. 319 (March 2004)

52 OECD, *Employment Outlook* (2006)

53 Global Insight, Inc.

54 U.S. Census Bureau, *Income, Poverty and Health Insurance Coverage in the United States: 2005* (August 2006)

55 Kaiser Family Foundation, *Trends and Indicators in the Changing Health Care Marketplace, 2004 Update,* Section 7, chart 7.15

56 The U.S. Bureau of Economic Analysis defines personal savings as the difference between after tax income and total spending. Financial and tangible assets (such as real estate), viewed by many Americans as principal vehicles for savings, do not count as part of the savings rate.

57 Jacob S. Hacker, *The Great Risk Shift: The Assault on American Jobs, Families, Health Care, and Retirement* (New York: Oxford University Press, 2006), p. 31.

SECTION 3

58 From 1985 to 2005, Ireland, Luxembourg, Spain, and Australia grew faster than the United States.

59 U.S. Department of Commerce, Economics and Statistics Administration, *Digital Economy 2003* (December 2003), Ch. 4- Industry-Level Effects of Information Technology Use on Overall Productivity

60 Catherine Mann with Jacob Funk Kirkegaard, *Accelerating the Globalization of America: The Role for Information Technology* (Institute for International Economics, June 2006)

61 Robert H. McGuckin and Bart van Ark, *Performance 2005: Productivity, Employment and Income in the World's Economies* (The Conference Board, 2005)

62 Mary O'Mahony and Bart van Ark (eds.), "EU Productivity and Competitiveness: An Industry Perspective: Can Europe Resume the Catching Up Process?" *European Commission Enterprise Publications* (2003)

63 Global Insight, Inc.

64 U.S. Bureau of Economic Analysis, "Summary Estimates for Multinational Companies: Employment, Sales, and Capital Expenditures for 2004," (April 20, 2006)

65 International Monetary Fund, World Economic Outlook Database (April 2006)

66 U.S. International Trade Commission, "Shifts in U.S. Merchandise Trade 2005," Publication No. 3874, (August 2006)

67 John P. Holdren, "The Energy Innovation Imperative: Addressing Oil Dependence, Climate Change, and Other 21st Century Energy Challenges," *Innovations* (Spring 2006), p. 7.

68 International Monetary Fund, World Economic Outlook Database (September 2006)

69 Ibid.

70 Ben S. Bernanke, "The Global Savings Glut and the U.S. Current Account Deficit," Homer Jones Lecture, St. Louis Missouri (April 14, 2005)

71 Maurice Obstfeld, "America's Deficit, the World's Problem," Keynote speech prepared for the Twelfth International Conference of the Institute for Monetary and Economic Studies, Bank of Japan, Tokyo (May 30-31, 2005)

72 Ricardo Hausmann and Federico Sturzenegger, "U.S. and Global Imbalances: Can Dark Matter Prevent a Big Bang" (November 13, 2005)

73 Mark Whitehouse, "U.S. Foreign Debt Shows Its Teeth As Rates Climb – Net Payments Remain Small But Pose Long-Term Threat To Nation's Living Standards," *The Wall Street Journal* (September 25, 2006)

74 Ibid.

SECTION 4

75 PCAST, "Sustaining the Nation's Innovation Ecosystems: Report on Information Technology Manufacturing and Competitiveness" (January 2004), p. ii.

76 OECD, *Main Science and Technology Indicators* 2006-1

77 Ibid.

78 For U.S. share of new U.S. patents, U.S. Patent and Trademark Office. For U.S. share of triadic patents (patents filed in the U.S., Europe and Japan), NSF, *Science and Engineering Indicators* (2006).

79 For R&D spending and researchers, OECD, *Main Science and Technology Indicators* 2006-1. For publications and Ph.D.'s, NSF, *Science and Engineering Indicators* (2006). For international students, IIE, *Open Doors 2005: Report on International Educational Exchange* (2005)

80 NSF, *Science and Engineering Indicators* (2006)

81 Diana Hicks and Deepak Hegde, "The Maturation of Global Corporate R&D: Theory and Evidence" (2005)

82 UNCTAD, "Survey on the Internationalization of R&D: Current Patterns and Prospects on the Internationalization of R&D" (December 12, 2005)

83 Jerry Thursby and Marie Thursby, "Here or There? A Survey of Factors in Multinational R&D Location – Report to the Government-University-Industry Research Roundtable" (2006)

84 See K. Walsh. *Foreign High-Tech R&D in China: Risks, Rewards, and Implications for US-China Relations* (Washington, DC: Henry L. Stimson Center, 2003) and Ernest H. Preeg, *The Emerging Chinese Advanced Technology Superstate* (Manufacturers' Alliance/ MAPI and Hudson Institute, June 2005)

85 Jerry Thursby and Marie Thursby, "Here or There? A Survey of Factors in Multinational R&D Location – Report to the Government-University-Industry Research Roundtable" (2006)

86 Ibid.

87 Joel Popkin and Kathryn Kobe, "U.S. Manufacturing Innovation at Risk," Council of Manufacturing Associations and the Manufacturing Institute (Feb. 2006). See also PCAST, "Sustaining the Nation's Innovation Ecosystems: Report on Information Technology Manufacturing and Competitiveness" (January 2004)

88 John Seely Brown and John Hagel III, "Innovation Blowback: Disruptive Management Practices from Asia," *McKinsey Quarterly* (2005), Number 1.

89 Economist Intelligence Unit, "Harnessing Innovation: R&D in a Global Growth Economy" (May 2004), p. 2.

90 White House Office of Science and Technology Policy, "American Competitiveness Initiative: Leading the World in Innovation" (February 2006), p. 8, "Impact of basic research on Innovation"

91 OECD, *Science, Technology and Innovation in the New Economy* (2000)

92 NSF, *Science and Engineering Indicators* (2006)

93 AUTM, *U.S. Licensing Survey,* FY 2004

94 Janet Bercovitz and Maryann Feldmann, "Entrepreneurial Universities and Technology Transfer: A Conceptual Framework for Understanding Knowledge-Based Economic Development," *Journal of Technology Transfer* (2006) 31: 175-88.

95 Richard K. Lester, "Universities, Innovation and the Competitiveness of Local Economies," MIT Industrial Performance Center Working Paper 05-010 (December 13, 2005)

96 Maryann Feldmann, "Where Science Comes to Life: University Bioscience, Commercial Spin-offs, and Regional Economic Development" *Journal of Comparative Policy Analysis: Research and Practice* (2000) 2: 345-361.

97 Janet Bercovitz and Maryann Feldmann, "Entrepreneurial Universities and Technology Transfer: A Conceptual Framework for Understanding Knowledge-Based Economic Development," *Journal of Technology Transfer* (2006) 31: 175-88.

98 National Science Foundation, "Where has the Money Gone? Declining Industrial Support of Academic R&D," SRS InfoBrief (September 2006)

99 OECD, *Science, Technology and Industry Scoreboard* (2005)

100 OECD, *Science, Technology and Industry Scoreboard* (2005), p. 47. Data is for 2000 or 2001.

101 OECD, *Science, Technology and Industry Scoreboard* (2005), p. 46.

102 Richard B. Freeman, "Does Globalization of the Scientific/ Engineering Workforce Threaten U.S. Economic Leadership?" NBER Working Paper 11457 (June 2005)

103 NSF, *Science and Engineering Indicators* (2006)

104 Ibid.

105 There is a significant gap between the amount of R&D budgeted by the federal government and the amount that the performers of the R&D report they actually spend. The difference in federal R&D totals was primarily in Department of Defense development funding of industry. See U.S. General Accounting Office, "Research and Development: Reported Gap Between Data From Federal Agencies and Their R&D Performers: Results From Non-comparable Data," GAO-01-512R (2001).

106 Joel Popkin and Kathryn Kobe, "U.S. Manufacturing Innovation at Risk," Council of Manufacturing Associations and the Manufacturing Institute (February 2006)

107 "Corporate R&D scorecard," *Technology Review,* (September 2005), pp. 56-61.

108 NSF, *Science and Engineering Indicators* (2006)

109 Ibid.

110 OECD, *Science, Technology and Industry Scoreboard* (2005)

111 Ibid.

112 Richard B. Freeman, "Does Globalization of the Scientific/ Engineering Workforce Threaten U.S. Economic Leadership?" NBER Working Paper 11457 (June 2005)

113 Lucia Foster, John Haltiwanger and Chad Syverson, "Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?" NBER Working Paper 11555 (August 2005)

114 Global Entrepreneurship Monitor, *High Expectation Entrepreneurship* (2005)

115 Baltic Development Forum, State of the Region Report (2006) www.bdforum.org

116 Office of Advocacy, U.S. Small Business Administration, "Employer Firm Births and Deaths by Employment Size of Firm, 1989-2002"

117 John Haltiwanger, "Entrepreneurship and Job Growth" (May 2006)

118 Global Entrepreneurship Monitor, *High Expectation Entrepreneurship* (2005), p. 29.

119 Global Insight, "Venture Impact" (2004)

120 Global Entrepreneurship Monitor defines high expectation entrepreneurs as "individuals who expected their firms to grow to more than 20 employees in 5 years."

121 Global Entrepreneurship Monitor, *High Expectation Entrepreneurship* (2005), p. 29.

122 Ibid.

123 Calculated based on Global Entrepreneurship Monitor, *High Expectation Entrepreneurship* (2005), p. 29 and Global Entrepreneurship Monitor, *Executive Report* (2004).

Notes

124 Small Business Administration, Office of Advocacy, "Women in Business: A Demographic Review of Women's Business Ownership," Small Business Research Summary (August 2006); "Census Report Shows Strong Growth with Women-Owned Businesses," *Small Business Advocate* (March 2006).

125 Kauffman Foundation, "Kauffman Index of Entrepreneurial Activity, 1996-2005," (2006)

126 Thompson Financial/National Venture Capital Association, "Private Equity Performance Strong in Q1 2006," (July 31, 2006)

127 Global Entrepreneurship Monitor, *Executive Report* (2005), p. 49.

128 Kauffman Foundation, "A Guidebook to Developing the Right Angel Organization for Your Community," (August 2004), p. 2.

129 Center for Venture Research at the University of New Hampshire, "The Angel Investor Market in 2005: The Angel Market Exhibits Modest Growth," (March 27, 2006)

130 Kauffman Foundation, "A Guidebook to Developing the Right Angel Organization for Your Community," (August 2004), p. 2. citing analysis by National Venture Capital Association and the Center for Venture Research.

131 Ibid.

132 OECD, *Education at a Glance* (2006)

133 Lawrence Mishel and Joydeep Roy, "Rethinking High School Graduation Rates and Trends" (Economic Policy Institute, 2006)

134 Jay P. Greene, "Leaving Boys Behind: Public High School Graduation Rates," Center for Civic Innovation at the Manhattan Institute, Civic Report No. 48 (April 2006)

135 OECD, *Education at a Glance* (2006)

136 U.S. Department of Education, "Toward a New Golden Age in American Education – National Education Technology Plan" (2004)

137 ACT, "2006 ACT National Score Report News Release" (August 16, 2006)

138 American Institutes for Research, "The Literacy of America's College Students" (January 2006)

139 The Conference Board, "Are They Really Ready To Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce" (October 2006)

140 World Economic Forum, *The Global Competitiveness Report, 2006-2007* (2006)

141 U.S. Department of Education, "Toward a New Golden Age in American Education – National Education Technology Plan" (2004)

142 Ibid.

143 "America The Uneducated," *BusinessWeek* (11/21/05)

144 OECD, "Learning for Tomorrow's World – First Results from PISA 2003" (2004)

145 U.S. Department of Education, National Center for Education Statistics, "Highlights from the Trends in International Mathematics and Science Study 2003" (December 2004)

146 National Academies, *Rising Above the Gathering Storm* (2005), p. 5-2

147 Business-Higher Education Forum, "Building a Nation of Learners: The Need For Changes In Teaching And Learning To Meet Global Challenges" (2003)

148 Anthony P. Carnevale and Donna M. Desrochers, "The Missing Middle: Aligning Education and the Knowledge Economy" (April 2002), p. 6.

149 Catherine Mann with Jacob Funk Kirkegaard, *Accelerating the Globalization of America: The Role for Information Technology* (Institute for International Economics, June 2006)

150 Anthony P. Carnevale and Donna M. Desrochers, "Training in the Dilbert Economy," *Training and Development* (December 1999), pp. 32-36.

151 John Lederer, "Broken Promises: Lifelong Learning, Community Colleges, and the Sad State of Incumbent Worker Training" (2003)

152 International Energy Agency, *Annual Energy Outlook 2006 with Projections to 2030,* Publication#:DOE/EIA-0383 (2006)

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