Executive Summary

Beyond the hyperbole of the technology boom of the 1990s, a strong and steady undercurrent of transformation is sweeping through firms, workplaces, and markets in the United States and, to a lesser degree, the global economy. Technological innovation lies at the heart of these changes, but they are enhanced by the policy and business environment, and by globalization, particularly of information technology (IT) and communications networks. The forces of innovation and globalization affect more than just the technologically advanced sectors. The globalization of IT and innovation promotes increased investment in, and the pervasive use of, networked IT throughout the US economy. This widespread use of IT and communications in the United States, along with the embrace by other countries of the possibilities created by these technologies, have accelerated America's overall global engagement, economic growth, and consequent labor adjustments.

Limiting or otherwise slowing down technological change and globalization means forgoing real and large gains such as productivity growth, job creation, and higher living standards. The absence of innovation and globalization constrains a country's economic potential. On the other hand, failure to address the adjustment costs that can be a consequence of such globalized technological change also hampers efforts to achieve those potential gains, to the extent that business capital and workers are not well matched to rapidly evolving economic needs. These mismatches generate macroeconomic sluggishness, as well as anxiety for the people affected, thus shrinking the economic pie inside a country's potential frontier. Therefore, policy must promote innovation and technological change while also facilitating adjustment to that change, rather than limiting or avoiding change or ignoring redistribution. Such policies will ensure that all resources of the economy are used efficiently and effectively.

IT is an uncommon product—it is called a "general-purpose technology." Given the right economic and institutional environments, it generates broad-based investment demand throughout the economy. Investment in IT and communications products is price elastic, so lower prices induce a more than one-for-one increase in investment demand. The resulting investment in IT and communications by nontechnology sectors raises productivity growth through two channels: first, the investment itself, through capital deepening; and second (particularly evident in the United States), by boosting total factor productivity (TFP), which increases when firms network together and use IT and communications effectively to change their business strategies and workplace practices. IT and communications in the workplace yield key changes in the demand for skills: The return to cognitive and problem-solving skills rises, but the return to step-by-step routine activities falls. The ensuing labor restructuring also is part of TFP.

All told, IT and communications are productivity-enhancing tools and intermediate activities that change the nature of what a business does, how it does it, and whom it employs. Regarding the US economy, against a backdrop of higher productivity growth at the macroeconomic level, there is substantial variation in the impact of IT and communications on individual sectors and occupations. This variation may point to areas for future productivity gains and occupational changes as technological innovation and globalization proceed.

What is the role for globalization in this process? IT and communications constitute a rapidly changing global industry. While the United States is the leader in the use and diffusion of IT products into the economy, other countries are rapidly increasing production, and a growing number are using the tools of IT and communications networks to engage in global trade as well as to induce domestic transformation. Fragmented and globalized production by both US and foreign IT firms—through cross-border investment, production, and sales—reduce IT and communications prices further. Given the linkage between prices and widespread investment and organizational transformation, the globalization of the IT industry accelerates, broadens, and deepens the globalization of America.

Globalization and technological change are altering the business strategy of US IT firms, with implications for the balance of payments. The United States remains the largest market for spending on IT products (hardware, software, and services). However, foreign markets are growing more quickly, particularly for commodity hardware, which can be produced more cheaply in those markets both for those markets and for the home market as well. At the same time, around the world but particularly in industrial countries, there is a shift toward relatively more spending on IT services and software—tools that make the hardware work for the customer. These two factors—faster global demand growth and the shift toward IT services and software—are reflected in the production, hiring,

and trade patterns of US multinational IT firms. These firms buy cheaper intermediate products and develop high-value-added hardware for sale to global markets. They increasingly emphasize IT services and software, which are developed and delivered in the destination markets.

Globalization of IT and communications networks goes beyond firms in the IT sector to facilitate more tradable business and professional services. Nontechnology sectors (such as finance) that are leaders in investment in IT and networks as well as in productivity performance are also leaders in international trade in business and professional services. Going forward, enhanced use of globalized IT by more service sectors could usher in a new wave of productivity growth as this globalization reduces the prices of IT services and software, enabling IT adoption by more service activities, as well as more two-way trade in services.

These gains from IT could accrue more widely throughout the world, but various policy, business, environmental, and international factors hamper the domestic uptake of IT abroad. It is crucial that other countries ultimately use IT to promote domestic economic development, rather than focus only on producing IT products for export. First, this technology applied to local needs promotes domestic development and productivity gains, which encourages more balanced domestic growth. Second, the liberalization of services and sectors that have newly opened to the possibility of international trade because of IT creates the possibility of two-way trade in services. This trade benefits both the US and foreign economies and facilitates more balanced global and domestic growth patterns.

As technology becomes more integral to all facets of business organization and activity, and as more foreign countries embrace its possibilities, a greater share of the US and global economies becomes exposed to international economic forces. This expansion and deepening of globalization on the back of increased use of networked IT highlights long-standing policy challenges and creates new challenges as well.

First, to maintain technological leadership, the United States must keep the engine of innovation stoked. Some innovation is keyed to local market needs, some comes from globally integrated teams, and some is "blue-sky." Maintaining a pipeline of new products, services, and ideas that meet the known (and unknown) needs of US businesses, consumers, and government requires sufficient home-grown researchers, discerning buyers, and adequate public and private funding for innovation.

The second policy challenge involves the domestic and global diffusion of this productivity-enhancing, general-purpose technology. To keep the prices of technology and technology-enabled activities declining, and to facilitate an even greater uptake of IT in the domestic economy, the United States needs to work harder to negotiate deeper global engagement, particularly in newly created international markets for services. Enhanced productivity growth through the use and diffusion of IT abroad comes in part from more liberalized trade in services.

Finally, as a consequence of both faster technological change and deeper global engagement, a larger segment of the economy will have global opportunities and face global competition, which raises the stakes for incumbent as well as new workers. A new policy agenda and compact is needed for workforce preparation and participation.

Maximizing the benefits of technological innovation and transformation, which go hand-in-hand with deeper globalization, is key to ensuring the continued positive impact of IT on the US economy and beyond. But so too is ensuring that the benefits of those innovations are more widely obtainable and shared. Innovations not implemented because resources cannot adjust forfeit some of the potential of the economy.

These changes are appearing fast and furiously. Agile businesses respond to the opportunities and challenges, and workers feel the effects. So policymakers also must respond to the new environment of globalization and technological change. The United States needs to develop optimal policies to prepare new workers and support current ones as they face the joint challenges of technological change and globalization.

If the United States fails in this policy leadership, the greater promise of globalization and technological change will be muted not only here but also around the world as other countries similarly may be unable to galvanize the policy changes they need to reap the gains. As the world's technological and market leader the United States stands to gain more, or lose more, if other countries limit the internal changes to their economies that technology entails. The pace and economywide scope of technological change and globalization are quickening and broadening. Urgent attention to policy leadership is crucial.

Chapter Overviews

Chapter 1 of this book discusses why an analysis of accelerating globalization starts with the more narrow focus on IT products and the IT and communications industries. Investment in IT, and its pervasive use throughout the economy, is probably the most important single factor precipitating dramatic and rapid changes that are affecting firms and workers economywide. Just as scientists use the petri dish to accelerate the production of bacteria for study, so too does a study that starts with IT inform how technological and global forces accelerate change in the US economy. The chapter's findings include the following:

- IT is income and price elastic. Income elastic means that as GDP grows, the demand for IT products increases more than one-for-one with it. Price elastic means that as prices decline, the investment demand for IT products increases more than one-for-one with the declines in price.

These elasticities are a reflection of the general-purpose nature of IT and are crucial factors underlying the role that IT has played in enhancing economywide productivity growth, particularly in the United States.

- Data for foreign markets reflect the income elasticity. In markets with rapidly growing income—regardless of the level of that income—expenditures on IT products increase even faster. For example, during the 1990s, real GDP growth for Singapore, Korea, Poland, Malaysia, China, and India—countries with very disparate levels of GDP per capita—was greater than 4 percent, while the increase in IT spending was more than double that.
- Responsiveness to price changes—that is, price elasticity—is a second important ingredient in considering how the globalization of IT accelerates US productivity growth. To the extent that the globalization of IT production reduces the price of the IT product below what it otherwise would have been in the absence of globalization, then price declines are greater, and demand for IT products increases further, which feeds into higher productivity growth. Considered another way, relatively lower prices for IT products due to the globalization of production raises the rate of return to IT investment, and more projects achieve internal benchmarks that firms use to decide whether to invest.

Chapter 2 presents data and analysis on the linkages between US firms and global marketplaces for IT production and demand. The US market for IT products is, by far, the largest in the world. However, both production and demand for these products are expanding rapidly abroad, particularly in the developing world. In addition, spending is shifting from hardware to software and IT services—tools that make the hardware work—particularly in the industrial economies. These patterns of global demand, along with the technological capabilities to increasingly fragment IT production, influence US producers' business strategies. The chapter's findings include the following:

- IT spending can be decomposed into spending on hardware, software, and IT services. Although spending on all categories has risen in all countries, the composition has changed over time and differs in a systematic way across the level of economic development. The growth rate of global spending on IT hardware, which is fastest in the developing world, is now exceeded by the growth rates of spending on IT services and software.
- Within the global market, the US market is still the largest, accounting for 40 percent of global spending in 2003. But new markets and pro-

ducers have emerged, particularly in the developing world, which did not, in general, experience the technology crash of 2001. Global exports of IT hardware have become less concentrated among producers in industrial countries.

- Trends within the US marketplace and for US multinational firms are a microcosm of what is happening in the overall global marketplace. US multinational IT firms are expanding sales abroad and shifting toward production of IT services and software. Increasing global competition in the hardware industry has accelerated the trend that sees US firms increasingly producing IT services (including software). IT services sales and employment increased from less than 10 percent of total global activities of US IT firms in 1989 to 42 percent of sales and 57 percent of employment in 2003.
- Patterns of production and sales of US multinationals reflect technology, cost, and demand patterns. Hardware production is more globally integrated with significant cross-border sales of intermediate products (both from the US parents and from their foreign affiliates to other foreign affiliates). IT services are almost exclusively final sales in the destination market. As a result, US hardware multinationals have production facilities around the world, increasingly in low-wage countries where labor-cost differentials are 2.7 to 1. In contrast, IT service production facilities are principally in the industrial markets where labor costs are similar to the United States.
- As US multinationals have focused on producing high-value-added hardware for export and have emphasized IT services and software, foreign firms have played an increasingly important role in the US marketplace as producers, and particularly as importers, of IT hardware, particularly commodity hardware. The resulting overall trade deficit in IT hardware, which contributes through lower prices to higher productivity growth overall in the US economy, comes from imports from unaffiliated foreign producers.

Chapter 3 traces how the globalization of the IT industry and the widespread diffusion of IT products have affected the US economy. Even taking the results of innovation as the most important factor, the globalization of IT production has large, specific, and quantifiable effects on the US economy because lower prices increase the diffusion of IT investment and promote a broader transformation of business and the workplace. This broad transformation of business and the workplace underpins the acceleration of productivity enjoyed by the US economy. The chapter's findings include the following:

- There are two categories of IT hardware for which there is sufficient information to do a structured analysis of the impact of globalization

on IT prices: dynamic random access memory chips (DRAMs) and personal computers (PCs). These products are a paradigm for understanding more generally the forces linking the globalization of IT production and the prices of IT products for US buyers. The bulk of the overall trend decline in DRAM prices is almost surely due to innovation in production technology. But new global production facilities and changes in global production and demand as reflected in price-cost margins also significantly affect the prices of DRAMs for US buyers. For PCs, an increase in net imports of computers, peripherals, and parts accelerates the decline in prices due to an increased net supply of PCs in the US market. New foreign producers and importers of PCs and laptops play a large role in these price dynamics.

- Globalization of IT services and software is just beginning and has taken hold only in certain segments of commodity- or network-oriented products. In the more competitive and globalized market for computer games and prepackaged software, price declines are significant, although still less than for IT hardware. For the more tailored custom software, less globalization has taken place, and prices have not fallen.

- Trends in the use of IT in the US economy can be measured via input-output tables. The share of IT hardware in total intermediates fell from 3.4 to 2.4 percent between 1998 and 2004, but the share of IT services in total intermediates rose from 1.5 to 2 percent. The drop in hardware is consistent with its lower prices, and the two trends together are consistent with the movement away from hardware as well as with the growing importance of IT services (including software) for making IT useful to firms.

- The first key aspect of the relationship between IT capital and productivity growth is the complementary relationships between IT investments within the plant, IT investments to network plants, and IT use by workers. To the extent that globalization of IT reduces the price of investments and aids or hinders IT uptake (including the training needed by workers to use it effectively), productivity growth likely is enhanced or dampened. Two additional links between productivity and international trade are that trade in technologically sophisticated products is associated with higher productivity and that industries that have invested heavily in IT have a greater propensity to export.

- Substantial sectoral variation underlies the macroeconomic relationship between productivity growth and IT investment. Service sectors both lead and lag in the use of IT and in contributions to productivity acceleration. The leading service sectors account for 31 percent of GDP and include wholesale trade, securities and commodity brokers, depository institutions, and communications. These activities evidence strong network externalities from forward linkages to customers. Lagging sec-

tors, such as health care, construction, and some business services, exhibit low IT intensity and a below-average contribution to productivity acceleration. These may lag because of the less "codifiable" information content of the activities of the sector, the lesser degree to which firms in the sector are organized in or around IT networks, the greater number of small and medium-sized enterprises in the sector, the greater extent of sector-specific regulation, and less exposure to international market forces.

- Widespread use of IT and the ensuing productivity experience of the United States are relatively rare. Research on industrial countries suggests that differences in outcomes relate to differences in patterns of investment and responsiveness of domestic markets to economic signals, as well as to patterns of international trade. In particular, detailed data comparing the United States and Europe point to differential productivity growth in service activities as the source of differential overall performance. Analysis of developing countries reveals that the emphasis on production and export of IT products, rather than domestic investment and use, does not fully exploit the potential gains from IT. This is because the declining prices for IT products in global markets mean that the terms of trade (export prices compared with prices of imported products) are moving against these producers.

Chapter 4 first considers international trade in IT products and then examines how deeper globalization of IT, as well as policy reforms and the development of strategies in key countries, means that a wide range of services—heretofore "nontraded" business and professional services ranging from finance to back-office accounting—may now be traded internationally or have the potential to be internationally tradable in the near future. The chapter's findings include the following:

- International trade in IT products comprises both intrafirm trade by multinationals and what is called arm's-length trade between unaffiliated firms. The behavior of such relationships differs across IT hardware and software and IT services. For hardware, intrafirm trade of US-parent IT hardware multinationals is a positive contributor to the balance of payments, but it is becoming a smaller proportion of IT hardware trade. Imports of intermediate products from affiliates appear to support increases in foreign sales of higher-value-added hardware products. But these foreign affiliates of US parents increasingly meet foreign demand from their own production facilities abroad. So the overall balance of payments deficit in IT hardware comes from growing imports from unaffiliated firms, as well as from foreign producers (the new global entrants). In contrast, in IT services

(including software), the overall trade balance is positive, but the figures for intrafirm trade are negative. The higher (and increasing) affiliated import share as well as the rising pace of two-way trade may be evidence of increased fragmentation of the software and IT service production process to new affiliates abroad.

- International trade in a wide range of business and professional services is an increasingly important part of the global economic landscape. Increased use of IT and international communications networks both in the United States and abroad are key factors underpinning the globalization of this broad range of services. Technological change, as well as changes in customer and business attitudes over time, has eroded the attributes of services—transactions costs and functional integration—that heretofore made them "nontradable."
- The United States is the global leader in international trade in services, but there is also substantial two-way trade. For the United States, international trade in services such as finance and many components of business, professional, and technical services is growing despite relatively lackluster GDP growth in the major industrial markets for these exports, and the US services trade balance remains solidly in surplus. The competitive advantage of the US environment in business and professional and technical services is corroborated by data on where multinational corporations conduct their "headquarters" services. US multinationals expanding overseas and integrating their operations globally has not been associated with a deterioration of the US services trade balance. In addition, foreign multinationals with subsidiaries in the United States also are increasingly doing their internal service transactions in this country.
- There are "natural" as well as policy-induced limits on the globalization of services. Natural limits come from the interface between the global marketplace and the local jurisdiction with regard to policy and regulation, as well as heterogeneity with regard to "face-to-face" needs for some buyers and sellers of services. For example, professional licensure and regulatory standards vary across domestic as well as international jurisdictions, and mutual recognition agreements do not yet exist. Policy-induced limits include the fact that international trade negotiations have made little headway in agreeing on a more liberalized trade regime for many of the services that can be done internationally. Much greater attention to such negotiations is warranted. Trade liberalization scenarios find that for many economies, the gains from service-sector liberalization alone could be about one-half of the total gain from liberalizing agriculture, manufacturing, and services together. This is because services are an input to the international trade of all other products.

Chapter 5 discusses the implications of the synergies between trade and technological change for US workers. Data point to greater volatility in job prospects and to particular risks facing some low- and middle-income workers from this combination of technology and increased tradability of services. On the other hand, workers with a combination of skills flourish in the new environment. The chapter's findings include the following:

- During the boom years when IT was being incorporated widely throughout the economy, job churn increased. The very transformation and networking of businesses that generate productivity growth and macroeconomic gain have, at the same time, contributed significantly to the restructuring of labor activities.
- As IT becomes more deeply integrated throughout the economy, workers with IT skills will be more exposed to the general business cycle because they are not necessarily working in the IT sector but rather in IT occupations throughout the economy. Indeed, two-thirds of those employed in IT occupations are not in the IT-producing industries (hardware, services, and software).
- Not only do workers in IT occupations now face business-cycle risk but also some rungs on the occupation ladder face explicit technology risk. Certain occupations (such as computer programmers) face risks consistent with an increased "commoditization" of these skills. Other workers (such as computer operators) are replaced as PC use dominates mainframe computers. In addition, the fragmentation of the production process of software in conjunction with the cheaper international communications linkages changes the skills demanded in the United States and allows some of these skills to be purchased abroad.
- Factors that have reduced the price of IT and thus facilitated more investment in IT differentially affect US workers with different levels of educational attainment and who do different tasks in different sectors. Greater investment in IT in some industries has yielded higher returns to those workers with educational attainment beyond high school. Industries whose business processes have favored investment in IT have moved the task mix in favor of workers with higher skills. IT appears to play a role in the rising earnings dispersion observed in the wage data. To the extent that the globalization of IT reduces its price and promotes its diffusion, globalization and IT go hand-in-hand to exacerbate earnings inequality in America.
- Determining what service occupations might be at greater risk for international tradability is challenging. One approach considers the geographic concentration of occupations, with the most concentrated potentially more tradable. Some 30 percent of the US labor force falls into this category, and the number of jobs in these occupations is

increasing. On the one hand, workers in these occupations earn about 17 percent more than similar workers in nontradable service occupations. On the other hand, these workers also face a more volatile job environment, with higher rates of job loss. These highest-earning yet volatile occupations appear to be in the same sectors that have the highest IT intensity and make the greatest contribution to productivity growth, and where there is comparative advantage in international trade.

- Detailed data on IT-related professions are a microcosm of broader trends. Low-wage workers who use IT (telemarketers, switchboard operators, telephone operators, computer operators, and data entry keyers) appear to be particularly hurt by the combined effect of technology and international trade, with 711,000 jobs, representing some 30 percent of these jobs, disappearing during 1999–2004. On the other hand, the number of jobs held by high-skilled, judgment-oriented, and problem-solving IT workers—such as researchers, applications and systems software engineers, database administrators, and network systems engineers and administrators (but excluding programmers)—increased by 513,000 jobs, or by about 23 percent, over the same period. However, the data also show the rising skill "bar" against which domestic and foreign workers compete in the global marketplace. Between 1999 and November 2004, the number of high-wage "programming" jobs fell by 133,000, or almost 25 percent of the number of these jobs held in 1999.

- The increased globalization of services includes the cross-border movement of skilled workers via skilled-worker visa programs (L-1 and H-1B visas). Countries with close economic relations in terms of direct investments in and cross-ownership of companies, such as the United Kingdom, Japan, and Germany, top the list of countries whose citizens are admitted on L-1 visas. With regard to H1-B visas, "computer-related occupations" is by far the biggest occupational category of H-1B recipients. Indian citizens accounted for about half of all H-1B visa petitions granted in 1999–2001, but they also accounted for about 70 percent of the total decline in numbers of H-1B visa petitions granted for initial employment in 2001–02.

- Corporate users of H-1B workers include Motorola, Oracle, Cisco, Intel, Microsoft, and IBM but also the US finance industry and major educational institutions. Some large employers of H-1B workers are Indian IT service companies in the United States. The average wage paid appears to exceed the average prevailing wage for similar jobs, but with caveats. US firms show a much wider dispersion of wages offered, as well as a higher average wage, which suggests that US firms consider a wider diversity of candidates in terms of skills and specialized knowledge.

Chapter 6 looks at the next phase of global integration—innovation itself, including research and development (R&D), venture capital funding, and the pipeline of research professionals. Data suggest both positive and sobering views on continued US technological leadership. The chapter's findings include the following:

- R&D plays an important role in US productivity performance and economic growth, accounting for between 5 and 9 percent of growth in GDP over 1996–2000 and between 3 and 10 percent over 1961–2000. However, R&D can come through several channels, including from abroad. US productivity growth is about 30 percent higher in industry sectors where there is inward foreign direct investment and high R&D intensity, suggesting positive spillovers between global and domestic technological innovation.
- Data point to a rising research intensity for the US economy overall, a much higher and rising research intensity in the IT sectors, and a dramatically lower research intensity at US IT affiliates abroad compared with their parents in the United States. The computer and electronic products sector has 2.8 times more research workers than the economy overall, while software has 5.3 times more. Within the IT sector, research-worker intensity is shifting from IT hardware to IT software and services, consistent with previous patterns noted.
- With regard to patenting activities, the US share of US Patent and Trademark Office patents granted to US-located, first-named inventors has remained relatively stable, albeit with a bit of a decline in recent years. Despite these aggregate data, individual US firms continue to lead patenting, and US IT firms are increasingly represented in the top ranks of patenting firms. No other country comes close, not Japan nor Europe as a whole.
- The intellectual property surplus in the balance of payments has continued to rise. The bulk of the increase in intellectual property receipts comes from rising net intellectual property in services, whereas net intellectual property for manufacturing has stagnated. In addition, R&D and testing services run a consistent trade surplus.
- The picture of the US workforce, which needs to be able to create, work with, and buy innovative products, is less salutary. The heart of the current US workforce (aged 45 to 64) remains the best-educated workforce among the member countries of the Organization for Economic Cooperation and Development. The younger workforce in the United States faces more rapid technological change and deeper global integration, with resulting higher stakes. Yet the generation of Americans entering the workforce today (25- to 34-year-olds) barely makes the top-10 ranking in terms of educational levels of OECD

member workforces, although those educated at the tertiary level fare substantially better against this global standard.

- Given the importance of research workers for research-intensive IT and related activities, both the "incumbent stock" as well as the "pipeline flow" of science and technology talent are important. About 40 percent of all graduate students and all science and engineering PhDs awarded at US universities (rising to more than half in mathematics/computer sciences and engineering) are non-US citizens and nonpermanent residents. With rapidly improving career and business opportunities in the home countries of many foreign students (notably India and China), an increasing proportion of these students appear to be returning home. These science and technology demographics, in conjunction with the locus of demand for technology products shifting to rapidly growing economies abroad, encourage US firms to open R&D facilities in foreign countries.
- The number of foreign countries receiving venture capital finance has increased, particularly in the last 15 years, with firms in more than 50 countries currently receiving funds. The percentage of venture funding going abroad remains quite small, although there is a rising trend in small-value seed money going abroad. There is growing interest in funding portfolio companies both in the developing world as well as in countries with key skills. The top countries and regions receiving US venture finance are the EU countries, the United Kingdom, and Canada. However, the next largest total recipient over 1999–2005 was China, with India and Israel ranked after Korea and the Nordic countries and Switzerland.

Chapter 7 puts forth a policy agenda to ensure that the benefits of technology-enhanced globalization continue and are widely shared. A proactive policy agenda will promote innovation in the United States and encourage and enable US workers and businesses to embrace and use IT to make the most of global opportunities in production, sales, and trade in both the manufacturing and service arenas. The US policy agenda can be the model for other countries. To have no policy agenda or strategy has both short- and long-term consequences. In the short term, a slowdown in productivity growth or poor matching of labor skills to evolving labor demands implies lackluster job creation and a US economy operating below its potential. In the longer term, if innovation flags and skill-building is inadequate, the United States will relinquish its technological and economic leadership.

A proactive agenda must meet global challenges as well as the challenges of innovation and transformation. Innovation creates a technological frontier, which pushes out the potential of the economy. Innovation increasingly will be global, so how will the United States retain its lead-

ership? Transformation means that businesses must be able to change products and production techniques, and workers must have the desire and skills to welcome new job opportunities. But transformation also means business turbulence and job restructuring and losses, even as there is greater growth overall, so what policies promote transformation and adjustment? Global competition comes as more countries use IT domestically for growth, rather than only as a source of export revenues. This, in turn, means that more countries could be customers and partners, if markets are open. What should the United States do to promote effective use of IT around the world? A proactive agenda by firms and policymakers centered on these themes can meet the specific challenges of new ideas, new jobs, and new competition, which can deepen the benefits of globalization of IT for the overall US economy.