The Race for Global Innovation Advantage

The so-called Great Recession that convulsed the U.S. economy from the end of 2007 to the middle of 2009 has been officially over for several years, but for most Americans it certainly doesn't feel that way. The official unemployment rate still hovers around 8.5 percent, and if the part-time workers who would rather be working full-time were included, the rate would be almost double.[1] In fact, the Congressional Budget Office reported in February 2012 that after three years with unemployment topping 8 percent, the United States has seen the longest period of high unemployment since the Great Depression, yet it still expects that unemployment will remain above 8 percent through 2014.[2] Less than two-thirds of adults are in the labor force, a twenty-five-year low.[3] Worse, from 2000 to 2010, the United States did not add a single net new job.[4] Both the federal budget and trade deficits remain unsustainably high. U.S. companies are sitting on, rather than investing, close to $2 trillion in cash reserves. And some regions remain mired in recession, with many cities, towns, and even states on the brink of bankruptcy.

By most accounts, this is all the result of an uncommonly severe but ultimately survivable financial crisis, akin to the destruction wrought by a

category 5 hurricane—immense, more or less random, but with rebuilding and recovery largely assured. Economic pundits tell us that we can expect things to get back to "normal," eventually. Housing prices will go back up, unemployment will go down, and economic confidence will return, if slowly.

But neither the recession nor the slow recovery can be attributed simply to a random financial crisis caused by the burst housing bubble. Rather, we argue that a major contributing factor has been the United States falling behind in the race for global innovation advantage. Indeed, since the late 1990s especially, the United States has been losing out to other nations with respect to competitiveness and innovation, the result of too few resources going to wealth-creating investments like research and factories and too many resources going to a housing-market Ponzi scheme. America lost almost one-third of its manufacturing jobs from 2000 to 2011, while it ranked forty-third out of forty-four nations in the rate of progress in innovation-based competitiveness.[5] Until U.S. policymakers grasp and act on this fundamental reality, we can expect recovery to be anemic and the United States to continue to lose ground relative to most other nations. Recovery will depend on two mutually reinforcing factors: a faith that America will once again lead in the global innovation economy and sufficient private and public investments in research, plant and equipment, skills, and infrastructure to realize that vision.

It's not that America hasn't faced competition before. It has. But this time it's different. Since the mid-1990s, nations around the world have accelerated their efforts to lead in innovation-based economic development (e.g., by gaining jobs in key sectors like computers and software, aviation, pharmaceuticals and biotechnology, machine tools, medical devices, instruments, and clean energy). Ever since World War II (WWII), when America's arsenal of democracy helped defeat the Axis powers, high-tech sectors had been America's sweet spot. While America might lose textile jobs or call centers, it was still the dominant technology leader. Indeed, as late as the 1960s, U.S. government funding of research and development (R&D) exceeded that of all other nations' R&D funding—business and government—combined.

But starting in the 1980s and accelerating rapidly in the new century, that all began to change. While other nations were now setting their sights on winning the race for global innovation advantage, America was asleep,

convinced of its own innate economic superiority and preoccupied by the challenge of the "War on Terror" and conflicts between "Red" and "Blue" states over a range of hot-button social issues. Losing this race will have profound implications for the future of the American economy and society. This book examines how America is losing the race for global innovation advantage and what it needs to do to come from behind and lead once again.

From Rust Belt to Rust Nation

To understand what's happened to the American economy, we need to look back forty years to the early 1970s. People were driving Gran Torinos, listening to eight-track tapes, and wearing long sideburns. But the United States was enjoying the fruits of a twenty-five-year postwar economic boom during which real per capita gross domestic product (GDP) exploded, jobs were plentiful, and tens of millions of American households were vaulted into the middle class. But starting with the recession of 1969 (the longest since 1949) and then the much longer and deeper recession of 1974 (the longest since the Great Depression), that robust economic performance began to falter, leading many to question if the good times were over.

For America as a whole, the answer was an emphatic no. Things did keep getting better. Indeed, growth even accelerated from 1975 to 1985. But underneath this apparently healthy national growth was a troubling phenomenon—the emergence of two quite different economies: a slower-growing industrial Midwest and Northeast and a faster-growing South and West. After WWII and until the end of the 1960s, these regions grew at about the same rate.[6] But starting in the 1970s and through the mid-1980s, the former areas downshifted into slow growth, with a struggling industrial belt from western Massachusetts to northern Wisconsin and down to St. Louis.[7] Portrayed in rock ballads like Billy Joel's "Allentown" or Bruce Springsteen's "My Hometown," places that had grown in the twentieth century to become industrial powerhouses, providing a path to the American Dream for millions of workers, now faced shuttered factories, boarded-up homes, and shattered lives. But while these areas struggled, regions like the Rocky Mountains and the West boomed, growing 37 percent and 27 percent faster than the nation, respectively.[8]

Cities that had once powered America's Industrial Revolution were now struggling for their economic lives. Take Buffalo, New York, for example. Buffeted by factories moving to the South and West, Buffalo's total income grew at less than half the rate of Brownsville, Texas, from 1969 to 1986. While Brownsville saw its jobs grow by 75 percent, Buffalo saw its jobs decline by 1 percent. Likewise, Syracuse, New York, home in the early twentieth century to companies that manufactured more diverse products than New York City, saw its income grow just 53 percent as fast as that of Santa Fe, New Mexico, with jobs growing just 28 percent compared to Santa Fe's 124 percent.

In short, entire regions never again experienced the robust growth rates they enjoyed in the century following the Civil War; they suffered deindustrialization, job loss, and fiscal crises. So if you were in Buffalo, Syracuse, or similar places, things probably weren't so good. But if you were in Brownsville, Santa Fe, or other growing places, things were likely good and getting better. Indeed, if the South had won the Civil War, economic historians might be writing about the economic decline of the United States after the 1960s and the boom of the Confederate States of America. Instead, they talk about overall modest U.S. growth.

There was a variety of reasons for the emergence of these two American economies, but a key one was that it *could* happen. With the completion of the Interstate Highway System in the 1970s, the emergence of jet travel, and nationwide electrification and telephone access, companies in traded sectors now had the freedom to locate almost anywhere in the United States. And they did so, with factories migrating away from the Northeast and Midwest to the South and the West. Combined with this was the emergence of new high-growth industries (e.g., electronics, aviation, and instruments) that didn't need to be located at the ports or rail spurs in the Midwest and East. Couple this with the high costs and lack of competitiveness of the "rust belt" region, and the implications were clear.

This process has played out once again in the 2000s, but on the global level. This time, it's the United States that has become the Great Lakes from a geoeconomic perspective. "Rust belt" is now "rust nation." Santa Fe has become the Syracuse of its day, with Shanghai the Santa Fe. Brownsville has become the Buffalo of its day and Bangalore, India, the Brownsville.

Places like North Carolina and Georgia, which benefited from the shift of manufacturing from the North from the 1940s to the 1970s, have seen their own textile, furniture, and other traditional factories move to lower-wage nations. Today, container ships, air freight, the development of the Internet, and undersea fiber-optic cables have linked together not just state economies but also national ones. In essence, what was once a set of separate national economies in the 1970s has evolved into a single integrated global economy in the twenty-first century. And other parts of the world are now the economic engines, growing much faster than the United States (or Europe or Japan).

When Northeast and Midwest states realized their factories could relocate anywhere in the country, they began to compete fiercely with each other to attract those "smokestacks." Emblematic of efforts of the day, a 1954 issue of *Fortune* magazine included a full-page ad from the state of Indiana that touted its benefits as a location of corporate investment, including attractors such as "no government debt," a labor force that was "97 percent native" (with the implication that native-born workers were less likely to strike than immigrants), low taxes, and ample supplies of raw materials, calling itself "the clay capital of the world." By the 1970s, virtually every state had established an economic development agency whose mission was to go out and compete with an arsenal of tools ranging from tax breaks, to free land, to workforce training programs.

In today's global economy, nations must compete fiercely to retain and attract mobile investment. But in contrast to states competing by "smokestack chasing" forty years ago, most nations now compete by "innovation chasing," trying to grow and attract the highest-value-added economic activity they can: the high-wage, knowledge-intensive manufacturing, research, software, information technology (IT), and services jobs that power today's global, innovation-based economy. Indiana is a case in point. It no longer touts its abundant clay, but now markets itself as a place "where innovation, discovery, and success are nurtured," and "that provides a pipeline of bright minds and new thinking."

It is this intense race for global innovation advantage that most clearly distinguishes today's global economy from the collection of regional and national economies that competed to attract "smokestacks" a generation

ago. As a February 2012 *Washington Post* article noted, "Europe, as well as Asia and Latin America, is offering ever stronger competition to the United States, even in its strongest sectors, such as Internet technology, aerospace, and pharmaceuticals."[9] And it's not a competition for the faint of heart. In fact, it makes the World Cup look like a kids' playground game, for the struggle for innovation advantage is being fought with all the tools at a nation's disposal. Nations around the world are establishing national innovation strategies, restructuring their tax and regulatory systems to become more competitive, expanding support for science and technology, improving their education systems, spurring investments in broadband and other IT areas, and taking a myriad of other pro-innovation steps. But unlike the old competition between the U.S. states, where they generally played by national rules established in the Constitution, a new approach, "innovation mercantilism"—which can entail stealing intellectual property (IP), discriminating against foreign technology firms, requiring foreign firms to transfer technology for market access, or manipulating currency—has become a mainstay of many nations' game plans in the new global competition.

Yet, notwithstanding the intensity of this new competition, as recently as fifteen years ago, many nations did not even think they were competing. And if they did acknowledge a contest, they thought they were in last century's quest for smokestack industries like steel mills, shipbuilding, textiles, and other labor- and/or capital-intensive industries. Today, however, most nations recognize that they have to be intense competitors if they are to be successful, as more and more firms can now produce goods and services virtually anywhere on the globe. And most nations also realize that high-wage innovation- and knowledge-based industries play a key role in driving prosperity. There are now only a few nations still blind to these new realities, and unfortunately the United States is one. A bit like the old car rental commercial from the 1970s, the United States still thinks of itself as Hertz ("We're number one"), while most other nations think they are Avis, and as number two, they must try harder.

So where does this leave the United States and, for that matter, older industrial regions like Europe and Japan? Looking back to the United States of the mid-1970s, it's important to note that not all Northeast-Midwest regions were fated to relative decline. Some, in fact, transformed themselves and thrived. A case in point is Boston, which like Buffalo lost much of its industry to the South, especially textile and shoe firms in search of cheap labor. Boston looked like it was on the same path to decline as Buffalo. But unlike Buffalo, Boston reinvented itself. With the growth of the cold war and defense spending, Boston's early success in electronics (much of it a spin-off from the Massachusetts Institute of Technology) enabled a thriving tech industry. Its long-standing strength in financial services provided a base for expansion. But by the mid-1980s, Boston's future again looked troubled. Much of the region's computer industry had placed its bets on the minicomputer, and firms like Data General, Digital Equipment Corporation (DEC), and Wang all went into bankruptcy with the emergence of the California-based personal computer (PC) industry, centered in the more dynamic Silicon Valley. But Boston would rebound again around its three long-standing pillars: leading-edge research universities, a large number of talented and well-educated residents, and a venture capital industry willing to invest in the future. By the 2000s, the region's IT industry had reinvented itself. Boston also became one of the world's leading hubs of biotechnology. And it retained a strong financial services sector. Indeed, if Massachusetts were a nation, it would be the most innovative nation on earth, according to the Information Technology and Innovation Foundation's (ITIF's) *Atlantic Century II* report.

So if Boston could rebound to win the race, can the United States? Indeed, perhaps the single most important question confronting the United States (as well as Europe and Japan) is whether over the course of the next quarter century it will become Boston and rise from its decline through innovation and economic transformation, or Buffalo and sink further into relative economic decline.

"Becoming Boston" means moving aggressively into next-generation industries, including advanced IT, biotechnology, nanotechnology, robotics, and high-level business services, while at the same time maintaining a share of highly efficient and competitive traditional industries (such as autos, machine tools, chemicals, and so forth), and continually raising productivity in "nontraded" sectors such as retail and health care. "Becoming Buffalo" implies losing out in the competition for new, globally

traded industries, continuing to lose shares in existing manufacturing industries, and experiencing slow productivity growth in nontraded sectors. Becoming Boston means putting in place an aggressive national innovation-based economic strategy, which includes both increased government investment in innovation and lower taxes on corporate investment in innovation. Becoming Buffalo implies doing what we've been doing: cutting government investment in innovation while seeing our overall corporate tax system become less competitive compared to other nations as each year goes by. Becoming Boston means waking up to the crisis, becoming full-throated advocates—indeed, zealots—for innovation, and embracing a new kind of economics ("innovation economics"), which puts advancing innovation and competitiveness at the forefront of economic policy. Becoming Buffalo means continuing in our somnolence about the nature of the global race for innovation, erecting barriers to innovation, and placing our faith in a neoclassical economics dogma that holds that countries don't compete, that innovation is "manna from heaven," and that government action to spur innovation only makes things worse. To be sure, Boston's academic infrastructure made the region ripe for innovation, but the fact remains that Boston and Buffalo took very different approaches and this has made all the difference. And the United States can do the same; or not.

Outline of the Book

This book takes up the central questions and critical issues of the new race for global innovation advantage: who is winning and why; who is losing and why; and what the United States, other nations, and indeed the world community need to do to maximize innovation and economic growth (see www.globalinnovationrace.com).

Because innovation is our theme, it's important to describe up front what we mean and do not mean by innovation. We are not just referring to some kind of esoteric activity to develop the latest electronic apparatus in a place like Silicon Valley. Innovation is that, of course, but it is much, much more. By innovation we mean the development and widespread adoption of new kinds of products, production processes, services, and business and

organizational models. It is a new John Deere cotton harvester that is chock-full of computing power and a precision GPS location system that is accurate to several inches. It is a small factory that uses advanced computer-controlled machining cells that are twice as productive as the ones they replaced. It is the travel industry relying much more on the Internet and kiosks for self-service. In other words, innovation is bringing to production, to the marketplace, and to society new products, processes, services, and functionalities that consumers and organizations find useful and valuable. It is this kind of innovation that is at the heart of national and global economic prosperity.

And it is in this kind of innovation that the United States is increasingly falling behind. As we document in chapter 2, after at least a fifty-year run, the United States is no longer the global innovation leader. Whether it's the rapid and precipitous decline of manufacturing, the more rapid growth of R&D overseas, or the relative decline in the number of scientists and engineers, the United States is getting left behind in the new race for global innovation advantage. And, as we describe, it's this lackluster performance, particularly since 2000, that led Wall Street—an industry stuck on an autopilot that refused to downsize, even when the need for its services had contracted—to think it could make money issuing mortgages to people who couldn't afford them, as "real" investment opportunities dried up. Wall Street's massive misallocation of investment capital was both a key contributing factor and cause as the United States experienced a relative decline during this period that only one other medium- to large-sized nation—Great Britain in the 1960s and 1970s—has ever before encountered in modern times.

As we discuss in chapter 3, America is not the first country to experience rapid industrial decline; the United Kingdom did so a generation ago. And the similarities in the nature and causes of the decline experienced by both the United States and the United Kingdom are truly striking. Both nations failed to enact the right innovation-supporting policies, and both have paid the price with industrial decline. Remarkably, virtually all the factors that historians and economists attribute to the causes of British industrial decline match the U.S. experience. Despite the fact that the two nations experienced decline in wholly different time periods, the same

suite of twenty major causes operated in each case. This suggests that industrial decline (and industrial success) is perhaps not all that much of a mystery, a topic we readdress in chapter 8.

But while the evidence of relative industrial decline is crystal clear to anyone who chooses to look, most U.S. economic pundits, policymakers, and academic economists remain in denial. In chapter 4, we discuss the myths, nostrums, and dogmas that all too often pass for reasoned economic analysis, including the top eight reasons why the Alfred E. Neuman–like deniers say, "What, me worry?" and why in each case they are wrong. This speaks to a central challenge facing the United States and, for that matter, all nations: success for any organization, whether a company or a nation, depends first and foremost on an ability to challenge status quo thinking, for "groupthink" leads individuals to believe that they know what the problem is (or worse, that there is no problem in the first place). As Henry Ford once said, "Thinking is the hardest work there is, which is probably the reason why so few engage in it." For any nation to win in the race for innovation advantage, it has to start with thinking and, where necessary, challenging the prevailing thinking.

Challenging prevailing, out-of-date thinking is innovation in its own right, but innovation is more than that. Chapter 5 discusses and defines innovation, and how it has now become the key factor in determining most nations' economic success. While organizations (and entrepreneurial individuals) drive innovation, it is nations that enable, support, and spur it on, or restrict, hinder, and retard it. Because of that, innovation policy—the constellation of government policies from tax, to trade, to talent, to technology that support a nation's innovation ecosystem—has become the single most important factor nations need to get right if they are to thrive in the globally competitive economy. Thus, chapter 5 also defines and describes innovation policy, countering the conventional neoclassical economists who assert that "markets always get it right" by explaining the myriad ways that markets acting alone underproduce innovation and, by extension, economic welfare. Innovation is not producing "widgets" (what most economists study). It's vastly more complex and subject to such a large array of market failures that it makes more sense to talk about how policy can maximize the performance of innovation systems, rather than remedy an occasional "market

failure." Chapter 6 follows on this discussion of the need for innovation policy by examining the innovation strategies that scores of countries have implemented to strengthen their nations' innovation ecosystems.

Given how important innovation policy is, it is perhaps surprising how many nations get it wrong. As nations struggle for innovation advantage, a growing number have adopted what we call "innovation mercantilism." These are zero-sum, beggar-thy-neighbor innovation policies that seek to attract or to grow high-wage industries and jobs at the expense of other nations and in violation of the spirit and/or letter of the law of the global trading system, thus making the global economy less prosperous and more fragile in the process. Whereas chapter 6 discusses the best examples from around the world of nations' constructive or "good" innovation policies, chapter 7 chronicles the worst "bad" innovation policies that an increasing number of nations, led by China, are relying on.

As the discussion of nations' good innovation policies in chapter 6 suggests, there are a number of innovation-supporting policies countries can implement. However, the United States has not been doing what it should. Based on these insights and on the particular challenges facing the United States, chapter 8 lays out a detailed innovation policy road map explaining how the United States can regain the lead in the race for global innovation advantage and, in so doing, turn around its economy both in the long term and the short term. This road map is based on what we term the eight "I's" of innovation policy: Inspiration, Intention, Insight, Incentives, Institutions, Investment, Information Technology, and International.

It's one thing to lay out a road map for renewal and recovery and quite another for the United States or any nation to follow it, for the political economy of innovation and innovation policy is a difficult one, chock-full of barriers, roadblocks, and pitfalls. Chapter 9 explores these challenges, and chapters 10 and 11, respectively, lay out a path forward, for nations and for the world as a whole. As chapter 9 explains, incumbents at risk of becoming tomorrow's "buggy whip" industries raise many of the obstacles to innovation and innovation policy. But in many nations these barriers also increasingly come from ideological resistors: "neo-Luddites" who fear change, prefer the stability of the past, and actively seek laws and regulations to impede innovation. This is a futile and counterproductive endeavor. As noted urbanist

Lewis Mumford once observed, "Traditionalists are pessimists about the future and optimists about the past."[10] Unfortunately, in too many nations, including the United States, the traditionalists have come to dominate.

And, of course, any discussion of innovation and innovation policy would not be complete without a discussion of economics and economists. More than any other intellectual force today, at least in the United States and most other Anglo-Saxon nations, conventional economists (known as neoclassical economists) remain the most powerful intellectual force working against robust innovation policies. Fundamentally, the neoclassical economics guild (and it is just that, for the majority of their claims are not science in the sense of physics or biology) neither understands nor appreciates innovation. To the extent that neoclassicists even consider innovation, most believe it is "manna from heaven" that government cannot influence.[11] But they go even further and argue that most government policy to get more innovation will likely do more harm than good by distorting "allocation efficiency" (the process by which markets use prices to efficiently allocate goods, services, labor, and other factors). This twentieth-century conceptualization of the economy has been overthrown in many nations by a new "innovation economics" that understands innovation and the role of organizations, including government, in spurring it and gets that letting market forces alone prevail will lead to innovation underperformance. Yet the economists who dominate economic policy thinking in Anglo-Saxon nations remain wedded to an old economy, not the new twenty-first-century one, and so cannot be relied upon to guide economic policy if the goal is to win the race for global innovation advantage and maximize economic growth. Finally, innovation policy is a subset of economic policy, and economic policy is made in the context of politics. At least in the United States, the politics of innovation policy are difficult, for one political party distrusts business and the other government, while both have vocal and powerful constituencies pressing for government to redistribute wealth rather than to grow it through innovation.

What then are the prospects for global innovation and the race for global innovation advantage for individual nations? Winning the race requires an entrepreneurial and competent business community willing to make investments in innovation that may not pay off in the next quarter or year. But it also requires a government willing to craft and implement effective

innovation policies. As chapter 10 explains, for nations to succeed at innovation, they must master the "Innovation Triangle," which means getting the factors right to support a robust business environment, regulatory environment, and innovation policy environment. Some nations do well on one or even two of these factors, but no nation yet gets all three right.

And, ultimately, whether nations can engender a robust innovation economy or not hinges on whether they can balance the innovation "yin and yang" between: individual freedom versus collective action; the interests of the current generation versus those of the next; and the desire for stability and security versus the dynamic change that innovation brings. Nations that can find balance between these competing interests are likely to excel. But today neither of the two heavyweights on the global scene—the United States and China—get it right. For the United States, the pendulum has shifted dramatically to the individual freedom and current generation side. Indeed, as the United States has become a society focused on "Me, now!" crafting a politics of collective sacrifice for future innovation and competitiveness is exceedingly difficult, whether it's to drive down the value of the dollar, to reduce government spending, to raise personal taxes in order to lower corporate taxes, or to increase investment in science, technology, and infrastructure. This, more than any other factor, may be at the heart of America's economic failure. After all, the United States was able to dominate the world economically after WWII precisely because it had found a way to balance "me" and "us," and "today" and "the future."

China, in contrast, faces the opposite challenge. If it's to ultimately thrive in the global innovation economy, it must enable individual freedom, creativity, and entrepreneurship, and get out from under the yoke of overly centralized state direction. At the same time, it needs to focus more on the needs of the present generation, instead of depriving it as China does for the sake of some distant future generation. Running massive trade surpluses but failing to invest those surpluses in domestic innovation and more vibrant consumer markets ironically risks not only reducing China's long-term innovation but also its short-term prosperity. Given these factors, chapter 10 assesses the prospects for major regions of the world—North America, Europe, Japan, China, India, and Latin America—in the race for innovation advantage.

Finally, any race, whether in sports or economics, is more enjoyable to watch and participate in if there are rules that participants must abide by, in particular, rules that make contenders work harder and perform better. But as we argue in chapter 11, the rules guiding the global economy and the economic interactions between nations today are woefully outmoded, having been created for a postwar world of commodity trade, not a twenty-first-century world driven by the race for global innovation advantage. The leading international economic organizations established after WWII—the International Monetary Fund (IMF), the World Bank, and the World Trade Organization (WTO; previously the General Agreement on Tariffs and Trade)—have failed to create the conditions and frameworks needed to maximize global innovation and productivity. As a result, the outmoded and inadequate rules governing this competition put some nations, including the United States, at an unfair disadvantage, and constrain overall global innovation and productivity growth. Innovation is now too linked together globally for the world to approach it with national frameworks alone. If we are to maximize global prosperity and innovation, we will need to collectively develop and abide by a new global innovation framework that provides real incentives for nations to pursue win-win innovation strategies. To date, the major multilateral organizations have failed in the task.

At the end of the day, the new race for global innovation advantage is so different from past experience that it calls into question what passes for conventional wisdom on the economy and economic policy. This is particularly true for the United States, which still persists in seeing the world as if it is not in competition with other nations. The new race for global innovation advantage also calls into question traditional liberal and social democratic views that working-class prosperity and corporate profits are antithetical. For, unless nations design policies that make their economic environments conducive to investment in innovation by companies, and especially by multinational corporations, workers will be the ones who suffer because they are the ones who have a hard time moving. But it equally calls into question traditional conservative free market views that less government (as opposed to smarter, more strategic government) is the key to economic success. In the race for global innovation advantage, the key is for governments to be

partners with their nations' business enterprises (especially its traded-sector business enterprises) in the sense of providing the right tax, regulatory, public investment, and trade policy environment for success.

Organizing to win the race—or at least to not fall farther behind—requires that nations take a number of difficult actions. They must have the right framework to think about winning, especially because the global race for innovation limits what nations can do if they want to be successful, forcing them to behave like organizations. And the success of organizations (whether for profit or nonprofit) depends on two factors: investing for the future and continually innovating. Nations that do not organize themselves to ensure that adequate societal resources go to investing in the future—in education and skills; infrastructure, both tangible and intangible; and knowledge and technology—will be left behind in the race. Likewise, nations that do not continually adapt by developing new policies, new kinds of institutions, and new approaches to governing and governance, even though this will lead to short-term disruption, will lag.

But for all the pressures involved in training for and competing in races, the race for global innovation advantage, if structured properly, can be a race in which all of humankind wins. Winning means not just that some nations will be more prosperous than others; it means robust global income growth and dramatic poverty reduction. We should strive for a world where, in thirty years, sub-Saharan Africa is at the economic level of Latin America today; Latin America and China are where Korea is today; and Korea is where the United States is today. And if the United States, Japan, and Europe can achieve 3 percent productivity growth for twenty-five years, they can double their real per capita incomes. We should envision a world in which many pressing challenges are solved, including those related to human health and the global environment. We can be well on the way to moving to a carbon-free energy system and to a world that has made sustained progress in the battle against cancer and other chronic diseases. The world of the future should be universally connected, with digital interoperability and high levels of digital literacy. To achieve this vision, nations need to put "good" innovation policies at the center of their own economic policies, and the world as a whole needs to restructure existing global economic institutions around support for innovation.

In 1946, as the cold war was just beginning to stir, George Kennan, deputy head of the U.S. mission in Moscow, wrote his now famous "long telegram" warning the United States of the growing Soviet threat and arguing that by taking up the mantle to respond to the challenge, America could become even more secure. America did accept those responsibilities and in so doing made the world freer, more democratic, and more prosperous than it otherwise would have been.

Today, America faces a similar challenge. But this time it is not from a totalitarian nation with imperialistic ambitions. Rather, the challenge we face is, on the one hand, our own shortsightedness and selfishness, and on the other, a global economic system in which too many nations have embraced a destructive innovation mercantilism. But Kennan's words fifty-five years ago are as apt today with regard to the new global innovation challenge: "We should experience a certain gratitude to a Providence, which by providing the American people with this implacable challenge, has made their entire security as a nation dependent on their pulling themselves together and accepting the responsibilities of moral and political leadership that history plainly intended them to bear." For there is no nation better positioned today to lead the world in innovation than the United States, both through reasserting its own innovation leadership and by leading the way toward a new global framework for innovation. But before America can do that, it will need to recognize that its leadership position has been lost, at least for the time being.

2

Explaining U.S. Economic Decline

It will be many years before we truly understand the nature of the current economic downturn. Is it a typical but severe downturn caused by a financial crisis, the kind that the world has seen many times in many different nations?[1] Or should it be seen as more akin to the Great Depression, although moderated this time by better fiscal and monetary policy? Or might it be an inflection point in U.S. economic history? Looking back, will future generations point to this period and say, yes, this was when U.S. postwar economic dominance ended and the United States stood poised at the threshold of a decidedly less robust economic era?

We believe, and show in this chapter, that the latter is indeed the case—unless the United States takes dramatic steps to arrest and reverse its decline. But first, it is worth examining the nature and causes of the economic crisis more deeply. Why did the financial collapse happen? We believe that the conventional explanations (greed, incompetence, lack of regulation, and so forth) are not sufficient. Rather, a core contributing factor was the decline in the competitive performance of the U.S. economy, particularly after the mid-1990s.