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Creating a Robust Global Innovation System

We want to end this book the way we started it, with a vision. We envision the global race for innovation advantage as one in which virtually all nations win, with higher productivity and per capita incomes, new and better products and services, and a better quality of life for all. We picture a world in which potentially catastrophic problems of hunger, disease, and environmental degradation are effectively tackled, reducing the risks of wars over scarce resources. In our vision, transformative technological and scientific advances help unite nations and people in common pursuits. And finally, we see old global institutions upgraded and redesigned for a global marketplace characterized by cooperation and fair play. The old-age Washington Consensus, designed sixty years ago for a postwar world, would be replaced with a newly minted Innovation Consensus designed for today's geopolitical and economic arrangements. It sounds too good to be true. But it doesn't have to be.

Why can't the world enjoy much higher rates of innovation and productivity? Why can't major, pressing global challenges be solved, such as curtailing climate change and curing major chronic diseases? And why can't we do so in ways that benefit both individual nations and the world as a

whole? The pessimists will proffer their usual rebuttals, such as: the environment can't handle humankind getting richer; too many nations are corrupt or inept; corporations and the wealthy will capture the benefits of innovation;[1] the markets will get us there in their own sweet time, while any effort to push the envelope is doomed to failure; and innovation only ends up creating winners and losers.

While it's not clear that we can achieve this vision, there is really no compelling reason why not. Even if there is an inherent "speed limit" for innovation that we can't exceed, we are not anywhere close to approaching it. At the end of the day, maximizing innovation requires the will and the resources to do the right thing. Unfortunately, too few nations are organized in ways to maximize innovation. Nations underinvest in innovation because many of its benefits spill over to the rest of the world. Too many nations are focused on innovation mercantilism, which sometimes boosts innovation within their borders, but reduces innovation elsewhere. And the de facto system of global governance is not designed to spur nations to do the right thing or to deter nations from doing the wrong thing. As a result, the world produces significantly less innovation than is possible and is needed. The major challenge for the community of nations, therefore, is to create a robust global innovation system with considerably higher rates of win-win innovation and considerably lower rates of win-lose innovation.

The Failure of Global Economic Institutions

The international economic system is governed by institutions and norms rooted in a past era. The years after World War II (WWII) were characterized by the paramount leadership and power of the United States, the advent of the cold war, and chronic poverty and underdevelopment in what came to be known as the third world. In essence, the global trading and financial system was a closed club. The Communist and developing world, a majority of countries, were not integrated into that system. Now that they are largely integrated, the international order has failed to produce a sustainable globalization system, in part because it is still organized to deal with finances and the flow of commodity goods across borders, not with innovation, and because many of the nations that have joined have not

embraced market-based globalization. As such, the global system does little to promote innovation policies and even less to pressure countries engaged in innovation mercantilism to play fairly. In essence, there is no one in charge of supporting and refereeing the global innovation competition. Not only are the three major international economic organizations—the International Monetary Fund (IMF), the World Bank, and the World Trade Organization (WTO)—not designed to play this role, but to the extent that they try, they act largely as if they were in charge of a soccer game and getting paid by the teams they referee.

Let's start with the IMF. Established after WWII, the IMF was charged with overseeing the international monetary system—the system of exchange rates and international payments that enables countries and their citizens to buy goods and services from one another. The new global entity was designed to ensure exchange rate stability and encourage member countries to eliminate exchange restrictions that hindered trade. This was critical, for according to the IMF, "During the Great Depression of the 1930s, countries attempted to shore up their failing economies by sharply raising barriers to foreign trade, devaluing their currencies to compete against each other for export markets, and curtailing their citizens' freedom to hold foreign exchange. These attempts proved to be self-defeating."[2]

As a result, under rules established by the IMF, each member country has agreed not to engage in "protracted, large-scale intervention in one direction in the exchange market." These are nice words, but it's too bad they are largely meaningless. The IMF has proven unwilling to take action to curtail currency manipulation or to create a sustainable global innovation system. Case in point, the IMF's Executive Board concluded its 2010 Article IV consultations with China mostly by praising the Chinese authorities. The board stated that their "quick, determined, and effective policy response [to the global financial crisis] has helped mitigate the impact on the economy and ensured that China has led the global recovery."[3] Yes, China led the global recovery, but by massively subsidizing its export industries, thereby cranking up its mercantilist export machine, which in turn slowed the recovery in other nations. Amazingly, the IMF's directors "welcomed China's recent decision to return to the managed floating exchange rate regime," even while they "agreed that the exchange rate is undervalued."

Moreover, they noted, "In the twelve months to May, the nominal effective exchange rate has depreciated by 1.25 percent while the real effective exchange rate has depreciated by 0.1 percent." Thus, the IMF praised China for moving toward a more freely floating exchange rate regime, even as Chinese currency rates actually depreciated because China was committed to manipulating its currency to beggar thy neighbor—exactly what the IMF said helped extend the Great Depression.

To the extent that the IMF even views mercantilism as a problem, it sees it as being caused by the nations that are hurt by it, not by those engaged in it. As stated on the IMF Web site: "IMF policy advice called for countries that ran excessively high external deficits before the crisis to put in place plans to consolidate their public finances to maintain investor confidence, again in ways that were as growth-friendly as possible. The onus would then fall on those countries that ran excessive current account surpluses to power global demand by shifting from export-propelled growth toward domestic demand. As the currencies of economies with excessive deficits depreciated, then it would follow that those of surplus countries must appreciate."[4] In other words, the IMF is advising nations whose economies are damaged by innovation mercantilists to cut government spending (the standard IMF answer to virtually any problem), in order to devalue their currency and reduce demand for imports. This would then reduce innovation mercantilists' exports and maybe help them see the error of their ways. Ah, a devious and subtle plan. Talk about blaming the victim.

One key reason why the IMF is unwilling to enforce its own guidelines is that it's dominated by neoclassical economists. They look at China and argue that Chinese growth has spurred growth in the rest of the world because it imports more than it used to and provides low-cost exports.[5] But they fail to examine the negative impact of currency manipulation on global growth (for example, as we discuss in chapter 7, it results in a substitution of labor for capital and lowers global productivity growth). But perhaps more to the point, above all else the IMF does not want to make waves. It recently hired Min Zhu as special advisor to the IMF's managing director. Zhu was most recently deputy governor of the People's Bank of China, China's central bank. Now he is advising the IMF on what to do. Does he urge the IMF to force nations, including China, to

start playing by the rules? Of course not. Rather, his advice is for the IMF to press the United States to give up on manufacturing. As he states, "You see most advanced economies are service-oriented, and emerging economies are manufacturing-oriented, partly reflecting the division of labor . . . [this] complementarity will make the world more productive and more sustainable, and the IMF should play a central role in this process."[6] This is akin to having the head of the Soviet Union's central bank being appointed to the IMF in the 1960s and advising America to stop spending money on defense. But what's worse is that in the 1960s, the IMF would have rejected Zhu's recommendation that advanced economies give up on manufacturing, but now the IMF considers it sage advice.

The World Bank is even worse, if this were possible. It not only does almost nothing to pressure innovation mercantilists to shape up, but actively supports their policies. We see this with regard to the Bank's support for China. While it might have made sense for the Bank to support China in the 1970s and the 1980s, it certainly doesn't now. China has been growing at more than 10 percent annually, in large part by engaging in innovation mercantilism that takes jobs from other nations. But this, however, has not deterred the Bank.

In 2008, the World Bank provided more than $2.4 billion in loans to China, which by 2009 was supporting seventy-five active projects. This pretty much says it all: a nation that has the largest current account surplus in world history, accrued through innovation mercantilism, can go to the World Bank to borrow money (much of it from the United States) to finance development projects to increase their exports to the United States even more. For example, the Bank funds highway and freight rail projects enabling Chinese manufacturers to more easily move their products to ports for export and to help open the interior of the country (and the hundreds of millions of untapped low-wage laborers there) to global supply chains. It provided a loan to the Chinese government to help it become more effective in economic policy (it appears to have worked, given China's massive trade surplus). A part of that loan went to support "enhanced governance in power sector." Apparently, the governance didn't include the commitment to unbiased government procurement, for the Chinese government mandated in 2005 that Chinese electric utilities buy only Chinese-made wind turbines, and not foreign ones.[7]

But it gets worse. The World Bank funded the development of a project to assess the viability of China developing high-tech research parks (that would directly compete with U.S. innovation leadership) and one to support the development of the Yangling Agricultural Hi-tech Industries Demonstration Zone, which includes twenty-two foreign companies.[8] At the same time, China actually lent more money than the World Bank to developing countries during 2009–2010. China signed at least $110 billion of loans to other developing country governments and companies in 2009 and 2010, while the World Bank made loan commitments of $100.3 billion to such countries from mid-2008 to mid-2010.[9] And Chinese loans came with strings attached to buy Chinese-made products. So, China desperately needs development assistance from the World Bank, but can loan out more money than the Bank does to others? In essence, China is using the West's own capital to curry favor and influence with developing countries.

In response to criticisms such as this, the Bank might point to projects that helped improve how the Chinese government operates as evidence that they were pushing reform. For example, the Bank made a loan to the Chinese government so it could establish a "regulatory mechanism for improving the balance of payments." The Bank initiated this project because China had a "large surplus pattern . . . shown in the balance of payments." In other words, it ran chronic trade surpluses. The project's goal was to make "recommendations on improving the balance of payments." So far, so good. At its conclusion in late 2007, the Bank noted that the project had achieved its goals, having trained more than two hundred Chinese officials on why they shouldn't run big trade surpluses and having its recommendations "adopted by the Communist Party of China Committee, the National People's Congress and the concerned government agencies. . . . For example, the Seventeenth Congress of the Communist Party of China called explicitly for 'adopting comprehensive measures to improve the balance of payments.'"[10] Maybe the Bank actually thought that when China said "improve the balance of payments" it meant reduce its massive trade surplus, rather than expand it. The Bank declared mission accomplished just six months after China's trade surplus with the world had set a record. And for the next three

years, Chinese trade surpluses continued at record levels, while the Chinese government continued its staunch refusal to stop manipulating its currency. And the Bank said and did virtually nothing. Mission accomplished.

In fact, this was such a "success" that the World Bank decided to have another go at it, giving the Chinese government $20 million for a second "China Economic Reform Implementation Project." This time the Bank supported a number of studies, including ones on "the external debt status in China against the backdrop of global capital flows," and "the statistics of external debt denominated in local currencies."[11] But this wasn't the end of it. Not content to fund a study to help the Chinese manage their huge foreign currency surpluses and get higher returns from them, it helped the Chinese increase them.[12] It provided the Chinese Export-Import Bank (Eximbank) funding in 2006 to "formulate a medium-and-long-term development strategy . . . including the strategic guiding ideology, the choosing of the medium-and-long-term development strategy together with feasibility analysis, the guidelines, policies and measures for the implementation of the strategic goals." The project funded experts to consult with the Bank as well as the travel of Chinese Eximbank officials overseas to study best practices, "such as export credit, trade financing, ship financing, ODA [overseas development assistance] loan and financing for small and medium sized enterprises."[13]

Keep in mind that the main purpose of the Chinese Export-Import Bank is to fund Chinese companies so they can export, including to the United States. And they have been doing so with gusto. The Bank reports: "With China Eximbank credit support, China First Heavy Industries has seen enhanced market competitiveness and facilitated its exports of complete sets of large equipment . . . to regions worldwide," including America, to take market share away from Peoria-based Caterpillar.[14] It also provided the Aviation Industry Corporation of China with $15 billion to help China's aviation industry "achieve leaps and bounds development and seek further integration into the international aviation industry." The World Bank's actions are nothing short of extraordinary. The United States provides the World Bank with U.S. taxpayer dollars so they can fund a Chinese government agency that, in turn, can fund Chinese government corporations whose mission is to take away some of the best and highest-paid U.S. jobs.

Nor has the World Bank stopped there. In February 2012, the World Bank issued a report called *China 2030* aimed at helping the country find new growth drivers. For example, the report noted that "new technological opportunities make green development not just a realistic possibility but a potential driver of economic growth. If successful, green development will create new business opportunities, stimulate innovations in technology, and potentially make China globally competitive in sunrise industries."[15] Again, U.S. taxpayer dollars are funding an international agency seeking to directly bolster the competitiveness of an international competitor in emerging technologies and industries. It's not as if the World Bank could not have made recommendations to ensure robust Chinese growth without encouraging them to ramp up high-tech exports.

At no time according to Bank documents did the Bank in any way pressure China to stop stealing foreign intellectual property (IP), stop manipulating its currency, end subsidies to its state-owned enterprises (SOEs), or cease procurement and tax policies that discriminate against foreign-owned firms. It's not because the Bank personnel are incompetent. It's that their overriding mission is to help lower-income countries grow (even ones that need no help, like China), and they don't differentiate between legitimate policies and innovation mercantilist policies. This is because the World Bank isn't really the "world" bank; it's a collection of country desks (for example, the China desk or the Zimbabwe desk). Its development professionals appear to be evaluated primarily on one question: Did they support projects that spurred economic growth in the respective countries for which they are responsible? And if the China desk can get China to export more earthmovers, routers, biotech products, and airplanes to the United States, they get rewarded. It doesn't matter if the result is fewer U.S. workers employed making earthmovers, routers, biotech products, or airplanes. It doesn't matter if they did it through mercantilist means. It doesn't matter that by doing this they completely ignored boosting innovation and productivity in the domestic-serving parts of countries' economies.

The World Bank has become an agent and enabler of innovation mercantilists, as a function of the incentives that the Bank's organizational structure and mission dictate. We asked a World Bank official why the Bank

doesn't press innovation mercantilists to change their ways. She responded with incredulity: "But countries don't want to be told what to do" (with the implication that if the Bank told countries what to do, they wouldn't want to use Bank services). And if they didn't want their services, the Bank would have to lay off Bank workers. Of course countries don't want to be told what to do. But they also don't like paying back World Bank loans, and the World Bank requires them to do that. Besides, if a country doesn't want to be told what to do, the Bank should focus even more resources on nations that will allow themselves to be told what to do. In other words, don't engage in innovation mercantilism if you want our help.

Even if the IMF and the World Bank have chosen not to make the most important global economic task—globally sustainable innovation—their mission, one might think that the WTO would. After all, the primary purpose of the WTO is "to open trade for the benefit of all." But, like the other two bodies, the WTO also has largely abdicated its role in fighting innovation mercantilism. Unfortunately, the WTO views what is actually systemic innovation mercantilism on the part of many countries as being merely occasional and random infractions of certain trade provisions that should be handled on a case-by-case basis. For them, we're all occasional mercantilist sinners and those without sin should be the ones to cast the first stone. In reality, the dominant logic toward trade in many nations, including many WTO members, is thoroughly predicated on export-led growth through mercantilist practices.

The explanation for the WTO's lassitude is that it's populated by free-trade absolutists who favor trade and even more trade, even if it's based on innovation mercantilism. Let's be clear here. This is not an argument for a return to national economies or a call for protectionism. In fact, the exact opposite is needed: the breaking down of systemic innovation mercantilism that distorts trade and innovation today. But for the WTO, this means risking a reduction in trade, since likely the only way to fight innovation mercantilism, at least in the short run, is to limit exports from mercantilist nations. The organization is loath to do that since facilitating trade is its cardinal goal.

In fact, like the IMF, rather than attack innovation mercantilist policies, the WTO would rather blame the nations hurt by those policies. Pascal

Lamy, head of the WTO, reflects the neoclassical consensus when he opines: "Current account imbalances between countries are primarily a macroeconomic phenomenon, a sign of international differences in aggregate savings and investment behaviour and have little to do with trade policy. A current account deficit of a country reflects dissaving by domestic residents—an excess of total expenditures, both private and public, over national income. A current account surplus, on the other hand, represents savings by domestic residents with national income exceeding total expenditures."[16] He even goes on to praise "imbalances," stating that they are a sign that savings in one country are being deployed or used in another country: "If investment prospects are plentiful in a country, but its residents are unable to generate a sufficient amount of saving to exploit them, foreign savings can fill the gap."[17] He doesn't seem to stop to consider that investment prospects are not in fact plentiful (the Chinese invest in low-yield U.S. Treasury bills) or that foreign savings come at the expense of domestic savings because of mercantilist-generated trade surpluses.

The reality is that the global trading system is so distorted by mercantilists that many people in many nations have lost faith in it. But rather than understand why, Lamy laments that people don't understand the benefits of free trade. It's a bit like asking why people aren't going out shopping, when every third time they go out they get mugged. Maybe they like shopping but don't like getting mugged. Lamy's answer would be to run ads saying "go shopping, it's good for you." Maybe the answer is to arrest the muggers (e.g., crack down on the systemic mercantilist violators) instead of asking, "What's the matter with you people? Why are you opposed to shopping (e.g., trade)?"

But why do these organizations, charged with making the global economy function, either sit on the sidelines or actively support nations engaged in destructive innovation mercantilism? As with most policy questions, the simplest explanation is most likely the correct one (the Occam's razor principle). Thus, the IMF, the World Bank, and the WTO don't work to support sustainable global innovation because it is either not their mission or not thought to be important. For the World Bank, two goals are most important: responding to individual national economic fiscal crises and ensuring robust international capital and trade flows. It doesn't ask if the robust

international capital and trade flows are the result of deeply dysfunctional, high-tech mercantilist policies. For the World Bank, helping poor countries get richer is paramount, regardless of how this is done and who else it hurts. For the WTO, trade flow is all that matters. Going after systematic mercantilism might disrupt those flows. And overriding all of this, getting tough on mercantilism and mercantilists would rock the boat, exposing all three bureaucratic agencies to unwelcome conflict. It's easier to just go along to get along.

A Bretton Woods for the Innovation Economy?

In 1945, representatives from forty-four nations met in the small resort town of Bretton Woods, New Hampshire, during the height of WWII to make financial arrangements for the postwar world after the expected defeat of Germany and Japan. It was then that the plans for the World Bank and the IMF were created, with the General Agreements on Trade and Tariffs (GATT), precursor to the WTO, created two years later. And the global trading system more or less worked for about forty years. But as the commodity-based manufacturing system evolved into the specialized global innovation economy, the strains on the Bretton Woods framework have become ever more pronounced.

If we are to create a robust global innovation economy, the most important place to start is with the recognition that we need an international innovation policy framework. Just as the Washington Consensus rejects the need for a national innovation policy in the United States, the Geneva Consensus (the consensus of global governance institutions like the IMF, the World Bank, the WTO, and others) rejects the need for an international innovation framework. Instead, finance and trade ("capital and goods flows") are considered the key to global allocation efficiency. The notion is premised in two-hundred-year-old economic theory, which holds that each nation has a "comparative," not absolute, advantage in some things. Originally developed in the late 1800s by economist David Ricardo, the theory of comparative advantage postulates that even if one country is superior to another in the production of two different goods, if that country focuses production on the good for which it has the highest *relative advantage*, and

the other country focuses on the second good, both countries will benefit from trade. For example, England may produce cloth 40 percent more efficiently and wine 20 percent more efficiently than Portugal, but if England specializes in cloth production and Portugal in wine, aggregate output will be higher and both countries will benefit.

This has become economic religion for the holders of the Geneva Consensus. The problem with the Geneva Consensus is not so much that free-trade theory is necessarily wrong (although as new trade theory has shown, it can be),[18] but that ensuring the removal of all remaining trade barriers (principally seen as tariffs) should no longer be seen as the world's foremost economic objective—promoting global innovation should be. To be sure, enabling further global integration of product and capital markets would help boost global gross domestic product (GDP), but actually not by that much, especially when compared to policies that would boost innovation. One way to see this is to examine how much reducing existing trade barriers would benefit the U.S. economy. At the high end, the Peterson Institute—a subscriber to both the Washington and Geneva consensuses—claims that elimination of remaining global barriers to trade flows would add another $500 billion to annual U.S. GDP.[19] Other studies, however, suggest that this figure is significantly overstated. The U.S. International Trade Commission estimated that removing all remaining barriers to imports into the United States would add just $3.7 billion to U.S. GDP. The World Bank's LINKAGE model estimates that the United States would gain about $16.2 billion from the removal of these barriers. But let's assume for argument's sake that the number is in fact $500 billion. This is roughly 3.5 percent of U.S. GDP. If we can instead boost productivity through innovation just one percentage point faster, the U.S. economy would grow by 3.5 percent of GDP by year four and by double that amount by year seven, far exceeding the benefits of removing barriers to trade flows.

Again, this is not to say that more integrated global markets are not useful or that unilateral "protectionism" cannot be harmful. It is to say that innovation is vastly more important. Put another way, designing a global economic system to maximize trade and capital flows (to in turn maximize allocation efficiency) is like trying to get the global economic car to go faster by replacing the spark plugs rather than by installing a souped-up

engine. Just as neoclassical economists promote allocation efficiency at home, they see it as the goal globally. But dynamic efficiency (innovation) and productive efficiency (productivity) are much more important, domestically and globally.

As such, the first and central task of global economic policy should be to encourage all nations to put boosting innovation and productivity as their top economic priority. Doing this means working to develop a new Geneva Consensus that puts the promotion of sustainable innovation at the top of the list. And by sustainable innovation, we mean innovation in the "good" category (as we define in chapter 6), especially innovation focused on boosting productivity and adding to the global stock of knowledge. This means focusing more on issues of IP protection, enactment of voluntary, industry-led global standards, reduction of discriminatory indigenous innovation policies, and other similar actions.

The second step is to revamp the mission of existing international bodies, not only to better support sustainable global innovation but also to fight against innovation mercantilism. This means stronger enforcement by global bodies like the WTO against beggar-thy-neighbor mercantilist strategies. It means organizations like the World Bank and the IMF, along with regional and national development organizations, including the U.S. Agency for International Development, the Inter-American Development Bank, and the European Development Bank, no longer promoting export-led growth as a key solution to development. Such institutions need to begin tying their assistance to steps taken by developing nations to move away from such negative-sum mercantilist policies. They should instead reward countries whose policies are focused on spurring domestic productivity instead of protecting the status quo or growing solely by exporting (or limiting imports).

The IMF should start by calling out nations that are chronic currency manipulators. The fact that the IMF has not yet formally declared China a currency manipulator suggests that the IMF is a paper tiger. After getting tough with currency manipulators like China, the IMF should tie any future financial assistance not to whether nations adhere to the Geneva Consensus (cutting government spending to get budgets under control), but to whether they follow what should become a global innovation consensus (putting in place policies to drive domestic innovation and productivity).

Enacting these true innovation policies risks the opposition of powerful interests: unions and workers who may be displaced; domestic producers, including small businesses, who enjoy cozy relationships and low levels of competition; able-bodied individuals who are paid for not working; and government bureaucrats whose top-down control is challenged. But it is only by spurring competition, allowing new business models to take hold (e.g., allowing big-box retailers to displace inefficient mom-and-pop retailers), and deploying the best production tools—often by increasing the use of information technology (IT)—that these nations will see fast increases in standard of living. But without carrots and sticks to move in this direction, these nations will continue to take the easy way out: innovation mercantilism. Nations that work in the direction of sustainable innovation should be rewarded with support; nations that do not should be left to fend for themselves.

For its part, the World Bank should make a firm commitment that it will stop encouraging policies designed to support countries' export-led growth strategies. Indeed, the World Bank should place a moratorium on all such policies. If countries insist on pursuing innovation mercantilist practices, the World Bank should cut off its support. At the same time, the World Bank sorely needs institutional innovation to begin seeing its mandate as achieving a more globally balanced international economic system. The G-20 countries, as the primary sponsors of the World Bank, must tackle this issue head-on. Specifically, the G-20 should demand from the World Bank, within a year, a new strategic plan for completely revamping its approach with a focus on win-win innovation policy.

To be sure, the innovation strategy that the World Bank crafts for truly lagging developing countries, notably in Africa, should be distinct from those for more developed nations. And exports are certainly part of any nation's economic growth strategy. But an export-focused strategy must be revised to reflect today's world. Innovation-based growth in Africa will be much more about adopting and leveraging information technologies, such as by improving access to broadband Internet and improving education, health care, and public infrastructure.

Indeed, IT has played a vital role in raising productivity and contributing to more efficient markets in many developing countries. For example,

a 10 percent increase in broadband penetration increases per capita GDP growth in low- to middle-income countries by 1.38 percent.[20] Likewise, a 10 percent increase in mobile phone penetration in low- and middle-income economies adds 0.81 percent to annual per capita GDP growth.[21] And a survey of twenty thousand businesses in low- and middle-income countries found that firms using IT have faster sales and employment growth and also higher productivity.[22] Accordingly, a recent World Bank study urged nations to adopt more balanced policies regarding IT adoption and use, arguing that doing so could lead to stronger economic growth.[23] These are the ways the global community should be supporting economic growth in developing countries, not by encouraging businesses to decamp from the developed world to relocate to the developing world.

For its part, the WTO needs to worry less about preserving the myth that the current global trading system is based on free trade, and more about aggressively attacking innovation mercantilism. In addition, the WTO, a hidden, Geneva-based institution, whose workings are opaque at best, is long overdue to become more transparent and open. For example, the WTO routinely classifies documents as internal "JOB" documents, not "official WTO documents," allowing them to remain hidden to the public.[24]

The third step toward an innovation-oriented global economic policy is that developed countries will need to work alongside international development organizations to reformulate foreign-aid policies as carrot and stick tools to draw and prod countries toward the right kinds of innovation policies. Two economic principles should guide developed countries' foreign-aid policies. First, foreign aid should be geared to enhancing the productivity of developing countries' domestic, nontraded sectors, not to helping their export sectors become more competitive in global markets. Second, countries that impose significant barriers to trade and blatantly engage in IP theft, currency manipulation, and other mercantilist policies should have their foreign-aid privileges withdrawn. And countries running up huge trade surpluses should simply not be receiving any foreign aid, regardless of how poor they are. The message to these countries should be that if they want to engage the global community for development assistance, mercantilist practices cannot constitute the "dominant logic" of their innovation and economic growth strategies.

Developed countries should start by withdrawing foreign aid to countries fielding egregious mercantilist practices. For example, Japan gave China $1.66 billion in official bilateral development assistance in 2005.[25] It was not until the end of 2009 that Germany stopped giving foreign-aid assistance to China. Germany had given China €67.5 million ($91 million) in 2007 and India €64 million ($86 million) in 2008. Amazingly, German left-wing opposition parties denounced the decision to suspend foreign aid to the world's second-largest economy as a "bad joke" and an "arrogant first move in office" by Dirk Niebel, Germany's development minister, predicting the move would have "disastrous consequences."[26] And the United States gave China $120 million in foreign-aid assistance from 2005 to 2008, even as China continued to accrue huge trade surpluses with America.[27]

Another astounding example is the Global Fund to Fight AIDS, Tuberculosis, and Malaria, which pools countries' donations to fight these pernicious diseases into one coordinated fund. Resource-strapped countries receive grants to purchase medicines, build health programs, and prevent these diseases from spreading. The fund's founders envisioned the resources going to places like Lesotho, Haiti, and Uganda, where these diseases have reached crisis levels.[28] But during the eight years since the fund was launched, China, a country with more than $3 trillion in foreign currency reserves, has become the fourth-largest recipient of funds, having been awarded nearly $1 billion, or almost three times more than South Africa, one of the countries most affected by these diseases. While the United States has committed $5.5 billion and France $2.5 billion to the fund during the past eight years, China has donated a paltry $16 million, and recouped this spending by a factor of sixty. While China has legitimate health concerns, its needs stack up poorly against the expensive opportunity costs exacted on poorer countries; indeed, China was able to afford a $586 billion stimulus package that included new health and education spending of $27 billion. As Jack Chow, chief U.S. negotiator at the talks that established the fund, contends, "It is audacious for China to assert that it needs international health assistance on par with the world's poorest countries."[29] Yet no one in Washington has raised concerns that an amount equivalent to President Barack Obama's entire fiscal 2011 Global Fund budget request of $1 billion has gone to a country that not only can afford to pay

its own way, but that also unrepentantly uses mercantilist practices to rack up enormous current account surpluses. Unfortunately, in November 2011, the Global Fund announced that it would not be able to fund new programs until 2014, in part because of global financial woes, but also because countries like China continue to insist on being net recipients rather than net contributors to the program.[30]

Developed nations also need to stop directly enabling innovation mercantilism on the part of the nations they assist. There are many examples of this. For instance, the Overseas Private Investment Corporation (OPIC), a U.S. governmental corporation whose mission is to help American companies invest overseas, funded a venture investment bank that made high-tech investments in India in technology companies that were competing directly against U.S. companies. OPIC's Web site, which is targeted to American businesses, has included links to organizations such as the Indian Investment Center—a government agency that seeks to induce American companies to move jobs to India—and the Federation of Indian Chambers of Commerce and Industry. OPIC also has guaranteed investments in overseas venture capital funds, many of which invest in high-tech ventures that potentially compete with U.S. companies. For example, the OPIC India Private Equity Fund, administered by CIBC World Markets (a Canadian company), has made investments in Indian companies in banking, computer, and other industries.[31]

In an even more stunning example, during George W. Bush's presidency, the U.S. Department of Commerce's International Trade Administration actually hosted conferences for U.S. companies that were designed to help them invest in foreign nations such as China, even if these companies were closing their U.S. plants and opening up plants in China to sell into the U.S. market.[32] U.S. businesses signing up to attend one such conference could list among their interests "opening up an office, warehouse/distribution center, [or] manufacturing facility."[33] They could find information on "How to Select Locations for Your Businesses and Who to Partner with in China" and learn about "China's Taxation for Foreign Companies and Joint Ventures post-WTO." The logic behind the Bush administration's actions was that if U.S. companies were manufacturing in China, they would be more likely to be competitive in a global marketplace. But the result was to contribute to the loss of 5.5 million manufacturing jobs in the 2000s.

It has been only modestly different with the Obama administration, which, as noted, has promised to help China develop commercial jetliners—despite commercial jet aircraft being one of the preciously few manufacturing industries in which the United States is a strong exporter.[34] During the same visit to China at which President Obama made that announcement, General Electric (GE) announced it was joint venturing its entire avionics business with China's state-owned avionics company, which could not have happened without U.S. government participation because of national security considerations and export license requirements. It's one thing for the United States to help companies make investments overseas that help struggling domestic economies with things like water and electricity supply, energy extraction, or enhancing medical care, but it's quite another to subsidize investment in foreign countries' high-tech industries that compete directly with ours.

The notion of a rising tide lifting all boats has merit, and we do not suggest that international efforts to boost economic development are inherently bad or are part of a zero-sum game. To the contrary, developed nations should be doing more, not less, to help poor countries get richer. But, economic development policies should not reward and encourage mercantilist and distorting policies. The aid examples cited above are tantamount to the governor of Michigan setting up meetings to host delegations from Alabama to come and meet with manufacturers in Michigan to see if they could compete and produce more effectively in Alabama. Now, if U.S. manufacturers decide that they can compete more productively offshore than in the United States, they should be free to make that decision, but they don't need assistance from the U.S. government to offshore U.S. jobs.

Just as the United States exerted leadership to reshape the postwar global manufacturing economy, it will need to exert leadership, along with key allies, to reshape the twenty-first-century innovation economy. To do this, America must work with the Australians, Canadians, Europeans, and whomever else will come aboard to lay out a renewed vision for globalization grounded in the perspective that markets should drive global trade; that countries should adhere to their trade agreements; that genuine, value-added innovation drives economic growth; and that fair competition forces countries to ratchet up their game by putting in place constructive

innovation policies that leave all countries better off. This task won't be easy, but it should be the top foreign economic policy goal of these nations. But even if these nations will not join with the United States, America can't afford not to act on its own.

For the United States, the tendency will be to let global political and national security concerns trump concerns about economic competitiveness, as chapter 4 discusses. All that has to happen is for North Korea to threaten making a nuclear weapon, and the United States will likely cease to place any economic pressure on China. But the attitude that the United States has had since WWII—that it can afford to put economic competitiveness second—is no longer tenable, especially because a weak U.S. economy increasingly imperils both our defense industrial base and our national security and foreign policy priorities.

For Europe, the problem is twofold. First, both the European Union (EU) and its individual states have been loath to stand up to innovation mercantilists for the simple reason that they hope to benefit from their practices. Perversely, by playing "the good cop" against America's "bad cop," European leaders hope that the mercantilists will punish American companies, not theirs, and that for once Europe will be on top of the innovation economy. While we have shown that the United States is lagging behind many European countries in several measurements of innovation progress, Europe still sees the United States as a formidable competitor that needs to be checked. As one British scholar explained to us after a private roundtable on innovation policy held at 10 Downing Street: "We Europeans would like to see you Yanks taken down a notch. Then we could be the innovation leaders." But there is no reason to think that mercantilists won't turn their sights on European leadership, just as they have done on American supremacy. Countries like China play the "divide and conquer" game all too well.

Finally, innovation mercantilist nations like China, Brazil, and others will likely oppose any efforts to create a new global innovation framework. China will likely claim that what they do in their own economy is no one's business but theirs. That claim is completely without justification when their activity affects the global economy unfairly and violates the spirit if not the letter of the WTO. If they want to be left alone, they should pull out of the WTO and all other international economic agreements—and stop

receiving any and all foreign aid, including from the World Bank. Brazil and its fellow travelers in the developing world will likely rely on guilt to make their case: "We're just a poor Southern Hemisphere nation oppressed by you northern developed nation imperialists." In fact, the North-South divide that was a central theme for many years has begun to give way to a more complex system marked by the arrival of advanced developing countries and global supply chains that transcend the geographic location of a country. The reality is that without innovations like computers, the Internet, and biotechnology— which were introduced by developed nations that invested hundreds of billions of dollars to create them—developing nations would be significantly worse off. Even leaving this aside, the fact that nations are developing simply does not give them the moral standing to steal intellectual property or engage in a host of other mercantilist practices.

If developed countries can muster the will and the ability to cooperate, a first priority should be to reformulate their trade and aid agendas. One of the biggest challenges for the United States and European nations is that their trade policies are structured to play "whack a mole." They expend enormous resources to identify, respond to, and combat particular instances of foreign countries' contravening international trade agreements to the detriment of their businesses (the actual harms from which must also be legally established). U.S. or European trade policy rarely rises to the level of broader principles, such as insisting that other countries "desist with this generalized practice." Because U.S. and European trade policies are organized in a legalistic framework to combat unfair trade practices on a case-by-case basis, it becomes difficult for them to put in place a comprehensive trade strategy designed to stimulate competitiveness and innovation.

At the end of the day, developed countries are going to have to abandon the notion that unrepentant mercantilist nations are somehow going to play by the rules if we just play nice with them. Accordingly, the United States, Europe, the Commonwealth nations, and perhaps Japan should create a new global trade zone, involving those countries genuinely committed to adhering to the principles of open, free, and fair trade. Countries that insist on pursuing mercantilist strategies would not be welcomed into this new arrangement. The Trans-Pacific Partnership (TPP) could provide a model for how to organize such a new trade zone. The TPP represents a

vehicle for economic integration and collaboration across like-minded Asia-Pacific region countries—including Australia, Brunei, Chile, Malaysia, New Zealand, Peru, Singapore, Vietnam, and the United States—that have come together voluntarily to craft a platform for a comprehensive, high-standard trade agreement.[35] But it's unlikely that the TPP will work out this way, since a number of the nations involved have extensive mercantilist policies.[36]

Countries that would like to participate in such expanded trade partnerships, whether the Trans-Pacific Partnership or a potential Trans-Atlantic Partnership, must abandon wholesale their mercantilist practices. This proposal is not meant to be Pollyannaish; to be sure, every country, including the United States, has at least some mercantilist policies, often as a result of internal political forces. It's not to say that only perfect countries with unblemished trade records can participate. The point is that countries whose dominant logic toward trade is predicated on export-led growth and the use of beggar-thy-neighbor mercantilist practices would simply not be invited to participate. If countries want the benefits of participating in a global trade system, then they must play by the rules of that system.

Finally, we need more capable international institutions to support global science and innovation. Now more than ever, the benefits of research flow throughout the world. As a result, nations that set aside some of their current consumption to invest in science and research are helping not just themselves but the entire world. But there is less investment in science and research than is globally optimal because some countries free ride off of others' investments in research. We see this in Europe, for example, where most science investment is the responsibility of individual nations, not the European Commission. As a result, the EU as a whole invests less in research as a share of GDP than does the United States. Moreover, there is less investment than warranted on challenges that are global in nature. We see this in particular on research that could produce noncarbon energy sources or address future potentially pandemic diseases. Leading nations should therefore establish a Global Science and Innovation Foundation (GSIF). The mission of the GSIF would be to fund scientific research around the globe on key global challenges and in particular support internationally collaborative research. For any nation to be eligible to receive funds, it would have to commit one-tenth of 1 percent of its GDP in funding and be certified by the GSIF (with guidance from the IMF) as a nation not committed to innovation mercantilism.

Moving from Resistance and Indifference to U.S. Innovation Policy Leadership

In the sixty-five years following WWII, most nations looked to the United States to lead the process of global economic governance. And given that the United States renounces innovation mercantilism, it should also play a leadership role in ensuring that the global economy is structured in a way that maximizes innovation. But as discussed above, this means developing a new understanding that global action should be designed not to maximize flows of goods across borders, as important as that is, but to maximize global innovation.

Ensuring that the community of nations moves to a more sustainable, nonmercantilist global innovation system will certainly be important in enabling the United States to more effectively compete in the race. It's difficult to win a race when one's opponents are engaged in systemic mercantilism. But this isn't just about U.S. interests. The United States was right that moving to a more integrated global trading system after WWII was good, not just for the United States but also for the entire world. And the United States would be right today to insist that moving to a system that maximizes global innovation is in everyone's interest.

But for the United States to reassert its leadership, it's critical that it regain its innovation lead. America needs to want to win the race. And to exert new global leadership, it will need to see fighting global innovation mercantilism and supporting global innovation policy as the most important international economic challenge of this era. Achieving such aspirations will not be easy. There are three substantial prerequisites.

The first, as we describe in chapter 8, is for the Washington Consensus to acknowledge that the United States has fallen behind in the race for global innovation advantage—both because some countries are using innovation mercantilist practices and others are using good innovation-promoting practices. But, good or bad, they're all doing something to try to win the

innovation race. Second, it will have to then acknowledge that losing the race has had and will continue to have serious economic consequences for the nation, including higher unemployment, reduced income growth, and a hollowed out defense industrial base. Third, the Washington Consensus will have to recognize that government has a key role in helping America win the race. Yet the Left will not acknowledge that to win the race we need to help U.S. companies, including U.S. multinationals, while the Right argues against government intervention.

We suggest that the principal reason why Washington elites deny American innovation decline and ignore foreign innovation mercantilism is that they fear admitting such problems would open up the floodgates of reactionary xenophobic and protectionist forces. On the verge of the French Revolution, Madame de Pompadour famously said: "After us, the deluge." Washington elites somewhat similarly fear that "after us" there could be a surge of Populist fever. And, unfortunately, they may be right. In particular, the American Left reacts to any business failure, real or perceived, by calling not for government support of private-sector success, but for regulation of private-sector action. We can see this by looking at two recent high-profile cases: the U.S. fall in broadband rankings and U.S. offshoring of service-sector jobs.

When reports began to emerge after about 2005 documenting the falling U.S. rank in international broadband adoption, most liberal groups, led by the advocacy group Free Press, argued that the U.S. rank was falling because of too little competition and Big Broadband's sole focus on profits. Now they had real ammunition for their anti-private-sector policy agenda. Rather than call for policies to address the real causes of slippage in the rankings (the fact that too few Americans own computers and possess digital literacy and that there are too many places where connecting broadband has not been economically viable without subsidies), the broadband Left pressed for extreme policies. Like the Populists of the late 1800s, who wanted to nationalize the telegraph and the railroads, these new Populists abhorred the notion that broadband should be provided by for-profit companies and wanted a government takeover. And if it was not to be, then at least government should heavily regulate broadband providers, including requiring them to treat all bits alike (the notion of "net neutrality"), even if

some bits (like those traveling on Skype) needed to travel to users' computers much faster (with less latency) than other bits (like those in an e-mail). Free Press and their fellow travelers even went so far as to argue, against any shred of logic, that "net neutrality" legislation was needed if the United States was to avoid continuing to fall in the broadband rankings.

Free Press and the broadband Left were vociferously opposed to doing what virtually every other leading broadband nation did, which was to provide subsidies to for-profit telecommunications providers to deploy broadband to low-income individuals and high-cost areas. When, in crafting the 2009 American Recovery and Reinvestment Act, some senators proposed that in addition to providing $7.2 billion in grants for broadband deployment, government should give tax credits for high-speed broadband investments made in 2009, Free Press came out with guns blazing. The incentives would have spurred billions of dollars of new capital investment, employed tens of thousands of workers and gotten broadband to areas without it, and all in 2009, when the economy most needed a shot in the arm. But Free Press, despite their claim to be for more broadband, would have no truck with any policy that helped Big Broadband capitalists, and played a key role in killing the provision, including by running ads attacking the incentives as "corporate welfare."

The Left's broadband innovation message struck other parties as an extreme call for more regulation/government ownership. Thus, instead of acknowledging that the United States was falling behind in the broadband rankings and supporting government policies to help companies deploy broadband and individuals become digitally literate and adopt broadband, most conservatives spent much of their time denying the reality that the United States was behind. Not surprisingly, the result has been that virtually none of the proactive broadband policies that enabled many other nations to become broadband leaders have been implemented in the United States, while our broadband rank continues to languish (largely because America has a much higher percentage of its households who don't own a personal computer).[37]

This brings us to the second prerequisite for change, recognizing the need for government to help the United States win the innovation race. When many U.S. companies began to offshore jobs more extensively in the

early 2000s in part because IT networks and systems now enabled doing so, we saw a similar dynamic between political factions. Former Clinton economic adviser Alan Blinder wrote a widely read article in *Foreign Affairs* entitled "Offshoring: The Next Industrial Revolution," which argued (incorrectly) that the offshoring of service-sector jobs was not just a routine extension of international trade, but a "third industrial revolution," likely to lead to one out of every three American jobs being shipped overseas. He warned: "We have so far barely seen the tip of the offshoring iceberg, the eventual dimensions of which may be staggering."[38] In response, many on the Left called for measures to limit trade, including "Buy American" provisions and a moratorium on new trade agreements, among other measures.[39] It wasn't just that they called for measures to limit globalization; they attacked the companies themselves. During his 2004 presidential campaign, Senator John Kerry called U.S. CEOs who moved jobs offshore "Benedict Arnolds." Lou Dobbs accused U.S. corporations of fighting a "War on the Middle Class." Russell Shaw, a technology writer and *Huffington Post* blogger, even went so far as to call CEOs who move jobs offshore "evil."[40] Not callous. Not greedy. Evil.

And just as with broadband, industry and conservative groups spent most of their energy denying that offshoring was even a problem. Perhaps the crescendo came when Tom Donohue, the president of the U.S. Chamber of Commerce, declared at a conference in 2008 that for every dollar of work U.S. companies offshored, the U.S. economy received $42 of benefit![41] The highest estimate from any credible study up to that time was $1.46 of benefit for every dollar of offshored work, and even this estimate was viewed by many as too high.[42] But if we really believe Donohue, we should offshore every job in America, stop working, and overnight become forty-two times richer! What a deal.

As debate over the race for global innovation advantage intensifies, this type of bifurcated narrative will play out again and again. Just as the Left used America's falling broadband rank to push for public ownership and regulation of broadband companies, the Left will also use America's falling innovation and competitiveness rank as an opportunity to push their true goal: "economic democracy." Economic democracy first began to gain currency among the Left when the U.S. economy began to struggle in international competition in the late 1970s and early 1980s. Then, Martin Carnoy, a liberal economist, and Derek Schearer, a community activist, wrote a book titled *Economic Democracy: The Challenge of the 1980s* that called for "greater democratization of economic decision making [and] an economy with diverse, diffused, pluralist and heterogeneous patterns of ownership."[43] Diverse means some enterprises were owned by the government, some by workers, some by the community, and some by women and minorities. Fast-forward to 2011. Harold Meyerson, a liberal columnist for the *Washington Post*, wrote: "Our economic woes, then, are not simply cyclical or structural. They are also—chiefly—institutional, the consequence of U.S. corporate behavior that has plunged us into a downward cycle of underinvestment, underemployment, and under-consumption."[44] While his analysis is right, his solution is not to do what other nations have done—enter the race on the side of your establishments to help them win the race and structure market incentives to align corporate interests with national interests—but to call for economic democracy. As Meyerson states, "Our solutions must be similarly institutional, requiring, for starters, the seating of public and worker representatives on corporate boards. Short of that, there will be no real prospects for reversing America's downward mobility." The thinking goes: "If *we* could just control corporations, rather than leaving it up to the managers and by extension, shareholders, *we'd* be fine."

By taking such anticorporate and often antiglobalization positions, champions of the Left have done two things: First, they have made it harder for the Washington Consensus to publicly acknowledge that the United States is no longer winning the race and that globalization, as currently structured, is not an unalloyed good for U.S. companies or workers. In other words, they prompt a knee-jerk defensive reaction from the Washington establishment, making it difficult for them to rationally and publicly acknowledge America's challenges. Without this acknowledgment, mobilization of the necessary political forces in Washington to achieve decisive action is virtually impossible. Second, by putting such polarizing issues as economic democracy, Buy American provisions, efforts to halt new foreign market openings,[45] protective tariffs, and increased unionization in domestic and foreign economies at the center of their "competitiveness" strategy, they limit attention to other policies that may gain more support

from the center and from businesses that would also improve U.S. innovation and competitiveness.

In short, if the United States is going to move forward in the race for global advantage, the Left will need to abandon its reflexive, anticorporate stance and acknowledge that policies that help, not hurt, corporations are needed. They will need to start by seeing innovation, productivity, and offshoring not as something corporations do because they are greedy, or even evil, profit mongers, but as something they have to do to survive in global competition. They will need to realize that blame is not a strategy. As we note in chapter 8 in the example of the Rhode Island Senate Democratic Caucus getting the message about the importance of allowing Rhode Island to have a more competitive corporate tax structure, at least some on the Left have come to understand that a competitive corporate tax code will be a requirement, not a choice, if U.S. workers are to prosper.

But for their part, members of the libertarian Right deserve their share of the blame for refusing to acknowledge both U.S. decline and the need for innovation policy. The Right is almost hypersensitive to any perceived relative decline in America's global lead in military might, but is strangely oblivious to the deleterious impact that America's declining economic position will have on its security in general and defense capability in particular. If the United States is losing the race for global innovation advantage, members of the Left need to acknowledge that their mission of advancing social justice cannot be effectively met, and the Right needs to acknowledge that America will not be able to maintain superpower status as the arsenal of democracy. Moreover, with their commitment to American exceptionalism and market fundamentalism, the Right is unwilling or unable to acknowledge that the United States has declined in relation to nations with less of a commitment to free markets than America. How can we, that bastion of freedom, possibly lose a race to socialists, Communists, corporatists and other statists?

If the United States is to move forward, the Right will need to accept that America has fallen behind and to acknowledge that it will be virtually impossible to win the race for global innovation advantage when American companies are competing individually against foreign companies that have their government as a partner. The Right needs to abandon its strident antigovernment ideology, and acknowledge the necessary role of government in helping spur innovation and assisting U.S. establishments to win in the

global innovation race. It needs to recognize that its idealized world of yeoman entrepreneurs in the Wild West competing in untrammeled marketplaces is a world long gone. And Republicans need much more sophisticated thinking about how the government can partner with the private sector to drive economic growth rather than blindly flailing about and advocating slashing entire cabinet-level departments without even understanding what those agencies do.[46] For better or worse, U.S. businesses are competing against foreign companies supported by their states. If the Right wants to shrink the state, it should focus on the entitlement state, not the innovation state.

And it's not enough to cry as the economic ship is going down that we were pure to our free-market principles and didn't intervene. Winning should come before principle. The point, after all, is to win (albeit while playing fairly) and this means that government has to be a partner. Athletes without coaches usually lose to athletes with coaches and trainers. Winning in the new race for global innovation advantage requires both competitive athletes (that is, entrepreneurs and companies) and coaches and trainers (government policies to support innovation). To argue that nations can win in global competition without supportive governments is as much of an ideological pipe dream as the notion that the economy would be more productive with better jobs if workers ran the companies. In addition, the Right needs to recognize that not everything government does vis-à-vis innovation policy is "The Technology Pork Barrel," as two neoclassical economists called innovation policy efforts.[47] If they are worried about politicization of innovation policies, they need to push for innovation policies that are determined by objective means, including peer review of grants and requiring industry matching funds.

It is this split between liberals and conservatives, business and labor, that limits Washington from developing a national economic development coalition. Rather than fight over tired old differences, the business and labor camps need to build a coalition for innovation, with business focused more on policies to spur enterprises to invest in America and labor on giving up its protectionist calls.

In the end, the race for innovation advantage will only get more intense and heated. It's therefore critical that the United States and its free-trade allies take the needed steps now to contain and roll back the rampant

innovation mercantilism being practiced by countries like China, while ensuring that the global economy evolves in a way that favors free trade and competition based on good and not ugly innovation practices, especially as an increasing number of nations develop and expand their own innovation and competitiveness policies. But as Kennan stated in his long telegram about the rise of the Soviet Union being a test of America's greatness, we can also hope that the new race for global innovation advantage will spur America out of its slumber and divisiveness to again become the global innovation leader, not just as a front-runner in the race, but as a referee to ensure that the race is fair and that everyone benefits from the competition.

NOTES

Chapter 1: The Race for Global Innovation Advantage

1. "Gallup Daily: U.S. Employment," *Gallup*, http://www.gallup.com/poll/125639/Gallup-Daily-Workforce.aspx (accessed October 12, 2011).
2. Alex Parker, "CBO: Longest Period of High Unemployment since Great Depression," *U.S. News and World Report*, February 16, 2012, http://www.usnews.com/news/articles/2012/02/16/cbo-longest-period-of-high-unemployment-since-great-depression.
3. Tyler Durden, "Labor Force Participation Rate Drops to 25 Year Low, at 64.5%," *Zero Hedge* (blog), November 5, 2010, http://www.zerohedge.com/article/labor-force-participation-rate-drops-25-year-low-645.
4. Neil Irwin, "Aughts Were a Lost Decade for U.S. Economy, Workers," *Washington Post*, January 2, 2010, http://www.washingtonpost.com/wp-dyn/content/article/2010/01/01/AR2010010101196.html.
5. Robert D. Atkinson and Scott Andes, *The Atlantic Century II: Benchmarking EU and U.S. Innovation and Competitiveness* (Washington, DC: Information Technology and Innovation Foundation [ITIF], July 2011), http://www.itif.org/files/2011-atlantic-century.pdf.
6. For example, total personal income in the Great Lakes states grew 280 percent, almost the same rate of growth as the nation during this period.
7. From 1969 to the mid-1980s, personal income in the Great Lakes region grew 20 percent slower than it did across the nation as a whole.
8. In the postwar period, those regions grew 2 percent faster and 4 percent slower, respectively, than the nation. The divergence was even starker between particular states and cities. Between 1958 and 1969, Ohio grew 93 percent as fast as Texas, but between 1969 and 1986, it grew just 59 percent as fast. Pennsylvania grew at 80 percent of California's rate before 1969, but afterward it grew at just 31 percent of California's rate.