

The Chain of Logic to Get to a Robust National Innovation and Competitiveness Policy

BY ROBERT D. ATKINSON | APRIL 2011

To support a comprehensive national innovation and competition policy, few policymakers and even fewer economic pundits and analysts envision U.S. competitiveness and innovation problems and solutions in a way that would logically lead to support for such a policy.

The United States is one of the few developed nations without a comprehensive national innovation and competitiveness policy. And while factors like a hyper-partisan political environment and stakeholder resistance play some role in explaining this anomaly, the real culprit resides in the mind: few policymakers and even fewer economic pundits and analysts envision U.S. competitiveness and innovation problems and solutions in a way that would logically lead to support for such a policy. Getting this logic chain right is the single most important step to creating the needed support for policies to boost U.S. innovation and competitiveness.

THE CASE FOR ACTION

Before describing the needed chain of logic, it's important to first lay out the case for action. Over the last decade, the United States economy has lost its innovative and competitiveness edge. Perhaps the most obvious sign of U.S. economic decline has been the decimation of the country's manufacturing base. Since 2001, the United States has lost 42,400 factories (three-quarters of which employed at least 500 workers while in operation), 32 percent of its manufacturing jobs, and much of its technical edge.¹ And while GDP expanded 18 percent, manufacturing output, when measured properly, actually contracted approximately 10 percent.²

But even if we are losing manufacturing, surely we still have the lead in innovation, so goes the thinking (as if manufacturing is not innovative). But we have lost that lead as well. ITIF's *The Atlantic Century* report benchmarked 36 nations and four regions on 16 indicators of innovation-based competitiveness over the previous decade, including

researchers per capita, levels of government and corporate R&D, entrepreneurship, and productivity. Based on data from around a decade ago, the United States stood out as the clear leader, far ahead of then-number two Sweden. But in ten short years, the United States lost its top perch, slipping to number six. It lost ground because it ranked dead last on its rate of change in innovation capacity (that is, the rate of improvement on the indicators cited above). In other words, all of the other 39 nations or regions made faster progress at bolstering their innovation competitiveness. Continued loss of manufacturing and innovation capacity will make it harder for the United States to ultimately regain its competitive edge, even if we eventually enact the right policies. Harvard Business School's Willy Shih and Gary Pisano argue that we don't have much time left.³

This decline has two underlying causes. The first is domestic: a failure to keep up with other nations on putting in place the best policies to spur manufacturing and innovation, including a competitive corporate tax system, education and training policies, support for infrastructure, and science and technology policies. The second is that foreign countries are competing more fiercely (and often unfairly) to attract and grow traded industries (e.g., manufacturing, software, traded services).

America has the ability to turn this around and regain our innovation and competitiveness lead, but only if we put in place a national innovation and competitiveness policy.

This policy should have four major components, what we call the Four Ts: tax, trade, tech, and talent. It would lower effective corporate tax rates by putting in place robust incentives for companies to invest in U.S.-based building blocks of growth and competitiveness (R&D, workforce training, capital equipment and software). It would go on the offensive on trade and confront with resolve the rampant innovation mercantilism practiced by some of our trading partners. It would significantly increase funding for a wide array of technology initiatives, including significantly more funding for early-stage, applied, and industry-university research; programs to help small and mid-sized manufacturers be more innovative and productive; partnership programs with states to spur technology-based economic development; and programs to spur digital transformation in sectors like health care, transportation, smart grid and others. It would increase funding and drive institutional innovation in our K-12 and college and university systems to produce more and better STEM graduates while at the same time enabling more high-skill immigration.

Unfortunately, the odds of the federal government enacting all of these changes in the near term are lower than those of the Washington Redskins winning the Super bowl next year. But Washington (the capital, not the team) could do these things and more if the willingness to get them done was there. Why is that willingness not there? First, too many policymakers, pundits, and policy experts don't believe there is a problem requiring government action. And second, even among those who believe that action is warranted, most view the problem and solutions in a way that precludes the needed array of actions from being adopted.

Changed policies require first and foremost changed minds. What follows are the most important nine flawed concepts from across the political spectrum that keep us from action, divided into two groups: those ideas that limit recognition of the need to act; and

those ideas that limit the right response, even among those who acknowledge the need for action.

SHOULD WE DO ANYTHING TO ADDRESS INNOVATION AND COMPETITIVENESS?

Before we act we have to recognize that there is a problem and that there is a role for innovation policy in solving it. Too many in Washington don't recognize this.

Flawed Concept #1: Houston, We Don't Have a Problem.

Just as Alcoholics Anonymous states that the first step to overcoming alcoholism is to admit that one is an alcoholic, the first step to reversing America's slide in the race for global innovation advantage is to admit that we are slipping. Unfortunately, too many in Washington argue that all is well, even in the face of disturbing evidence to the contrary. Indeed, the consensus view among many U.S. elites is that America has been number one, is number one, and will continue to be number one. In his attack on so-called "declinists," Rand Corporation Fellow Charles Wolf cites as proof that all is well the fact that U.S. GDP, population growth, and defense spending all were up over the last decade.⁴ If high fertility rates, fighting two wars overseas, and being in recession for only two of ten years are a sign of success, we would hate to see what "failure is." Former Undersecretary of Commerce Rob Shapiro redefines U.S. economic success to mean the success of U.S. multinationals, arguing that "the data do not show that the United States is losing its technological edge, but rather that its technology companies are fully globalized."⁵ Even the Council on Competitiveness, the organization one would presume would be at the forefront in sounding the alarm does the opposite, telling us that "America is better positioned than perhaps any other country to benefit from the forces that are reshaping the global economy."⁶

In short, America is exceptional. From the time of Alexis de Tocqueville to the present day, there is a long strand of thinking that holds that America is qualitatively different from other nations, and for many this means qualitatively better. To acknowledge that the U.S. economy is no longer the innovation leader directly challenges this deeply held American belief. Indeed, presenting evidence from *The Atlantic Century* report elicits a range of responses, among them "We are still the biggest innovator," "We may be losing this round, but we will out-innovate them in the next round," and "Other nations may be the assemblers, but we will be the orchestrators."

Some argue that the reason for this denial is that, as for the proverbial frog in the boiling water, the temperature of economic decline has been rising too gradually for most to notice. These advocates invoke the need for a "Sputnik moment" that they hope will finally serve as a wake-up call. When the Russians launched a satellite that orbited our skies, it was clear that America had been trumped. But another Sputnik moment for competitiveness is unlikely and if we cannot act without such an impetus, we won't act. (In fact, we don't even notice Sputnik moments anymore when they do occur, such as China's recent announcement that it had built the world's fastest supercomputer, taking that crown from the United States.⁷) Moreover, when President Obama invoked the Sputnik challenge in

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his January 2011 State of the Union address to argue for increased investments in science and education, the response was muted at best, dismissive at worst.

The investment in denial remains strong. If the 2008-2010 economic near-death experience was that Sputnik moment we needed, our political system and many in the elite class seemed to have missed it. Why the dogged resistance to looking our challenges squarely in the face? One reason is that acknowledging that there is a problem opens the political door to solutions that would make things worse, not better, such as raising taxes on U.S. multinationals or requiring that U.S. companies be controlled by their workers.⁸ But accepting that there is a crisis also means accepting that while what America has been doing and believing in once worked, is no longer working and that new ways of doing and believing are needed. It is easier to keep doing and believing as before and to just deny the existence of the problem. As T.S. Eliot wrote, “Humankind cannot bear very much reality.”

Flawed Concept #2: The Massive U.S. Trade Deficit is Our Fault (We Don’t Save Enough).

One key indicator of our competitiveness challenge is the chronic trade deficit. While the U.S. trade balance has been in deficit for more than three decades, it has grown considerably worse since 2000. Over the last decade, the United States has accumulated an astounding aggregate \$5.5 trillion negative trade balance in goods and services.⁹ The U.S. share of world exports has declined from 17 percent to 11 percent, even as the European Union’s share held steady at 17 percent.¹⁰

Yet, the story most conventional (neoclassical) economists tell is that the trade deficit is a simple accounting function: low U.S. savings requires overseas borrowing, which by definition requires running a trade deficit. Greg Mankiw reflects this conventional view when he writes, “My view is that the trade deficit is not a problem in itself but is a symptom of a problem. The problem is low national saving.”¹¹ The Council on Competitiveness agrees, stating, “These threats [e.g., the trade deficit] stem from global financial imbalances rather than from the inability of American companies or American workers to compete in global marketplaces.”¹²

We now have among the highest corporate tax rate in the world, fail to match many foreign nations in investment in research, and have deteriorating infrastructure but by definition these factors can have no effect on the ability of business establishments in the United States to thrive in international markets. Because that is determined by our savings rate.

But as non-neoclassical economist Robert Blecker states, “This identity does not prove causality, and is consistent with other causal stories about the trade deficit.”¹³ In other words, what the conventional story fails to recognize is that savings is a function of national competitiveness. If, for example, the Chinese stopped manipulating their currency (amongst other egregious mercantilist practices) the U.S. trade deficit would fall and the Chinese would buy less of our government debt. The result would be a rise in both U.S. exports and interest rates. And both would spur more savings. Higher interest rates would

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lead more Americans to save. More exports (and relatively fewer imports) would boost U.S. corporate savings. And more jobs and higher wages through exports would boost individual savings and reduce the budget deficit. In fact, jobs in exporting firms pay 9.1 percent more than jobs in firms that export less.¹⁴ So rather than look at the trade deficit as the result of low national savings, it's more accurate to look at low savings as a function of trade deficit.

Flawed Concept #3: The U.S. is Not in Competition With Other Nations, Only U.S. Companies Are.

Countries put in place innovation and competitiveness policies in order to better compete with other nations. But if you don't believe that the U.S. economy is in competition, a competitiveness policy has as much use as an inflatable dartboard. Remarkably, a large share of elites do not believe that the United States is in global economic—and innovation—competition with other nations.

In large part, this perspective results from misguided advice from neoclassical economists. Indeed, Paul Krugman reflects the Washington Consensus, writing, "The notion that nations compete is incorrect... countries are not to any important degree in competition with each other."¹⁵ Congressional Research Service economist Jane Gravelle agrees, stating that international competitiveness is a "term without rigorous meaning."¹⁶

Krugman and Gravelle reason that while companies sell products that compete with each other, the companies and consumers in these nations are also simultaneously each others' main export markets and suppliers of useful imports. In Krugman's view, if other nations gain a larger share of high-value-added production, this benefits the United States by providing us with larger export markets and access to superior goods at a lower price. In other words, even if the United States lost most of its high-value-added traded sectors (e.g., aerospace, pharmaceuticals, software, semiconductors, etc.), we would benefit because consumers would have access to cheaper products and the producers that still remain would have access to larger export markets.

But the reality is that if we were to lose high-value-added sectors, by definition sectors with lower value-added would take their place. And by definition this would mean lower productivity and U.S. wages. And since the vast majority of U.S. consumers are also U.S. workers, they would consequently have less purchasing power to purchase these imports.

Flawed Concept #4: Potato Chips, Computer Chips: What's the Difference (e.g., Manufacturing Doesn't Matter)?

Related to the notion that we don't compete with other nations is the notion that we can be indifferent to our national sectoral mix. Indeed, perhaps no canard has been more damaging to the process of putting in place a national innovation and competitiveness strategy than the notion that America can not only afford to be, but actually should be, indifferent to what industries comprise the U.S. economy.

As Michael Boskin memorably quipped, reflecting this view, "Potato chips, computer chips, what's the difference? A hundred dollars of one or a hundred dollars of the other is still a hundred dollars."¹⁷ But there is a difference, and it is profound. First, some

industries, such as semiconductor microprocessors (computer chips) can experience very rapid growth and reductions in cost, spark the development of related industries, and increase the productivity of other sectors of the economy. In essence, spillover effects from computer chips make potato chip manufacturers more efficient. Moreover, jobs producing computer chips have higher productivity and require a higher skill level and thus pay more than jobs producing potato chips.

Even if some will buy into the notion that some industries are more important than others, many believe that manufacturing itself is not important. They make this claim because, like the “potato chips—computer chips” view, they believe in the “car manufacturing—car rental” what’s the difference view? Columbia University’s Jagdish Bhagwati goes so far as to dismiss anyone who says manufacturing is important as suffering from a “manufacturing fetish.”¹⁸ Kenneth Green, a scholar at the American Enterprise Institute, writes that, “As long as China is selling us the products we need, the location of manufacturing isn’t really that critical for the economy.”¹⁹

But why should the Chinese continue to sell us the products we need if they are getting nothing in return except pieces of paper? The only reason they are doing so now is so that they can gain competitive advantage in these sectors later. Without a healthy manufacturing base it will be virtually impossible for the United States to balance its trade account. If Americans are going to continue to import large volumes of HDTVs, T-shirts, and sports cars, eventually we must have something that other nations want to buy in exchange—that’s why it’s called “trading” and not “borrowing.” The bill we run up every year by buying more imports than selling exports will have to be paid eventually as foreign nations demand payment in real goods and services. But the longer we wait to revitalize high-value-added manufacturing the larger grows the national debt that we are passing on to our children.

Flawed Concept #5: Free Markets and Unshackled Entrepreneurs Are Enough.

It’s one thing to acknowledge the problem and that the United States is in stiff competition, it’s quite another to argue that a proactive strategy is needed to do something about it. For while some acknowledge the problem, they think the solution is for government to largely get out of the way. Gary Shapiro’s book, *The Comeback: How Innovation Will Restore the American Dream*, reflects this view. Shapiro rightly raises alarm on the state of U.S. innovation-based competitiveness. But rather than acknowledge that one of the reasons we are losing our competitive position is because we are one of the few nations that has not put in place a robust national innovation and competitiveness policy, Shapiro mostly counsels government to step aside and let the magic of the market and Yankee ingenuity do the trick.

Shapiro is taking a page out of the neoclassical playbook, which holds that when it comes to innovation market failures are few and that the most important thing government can do is to let markets allocate goods, services, and knowledge. The de facto assumption is that the market is working, and it is the responsibility of the advocate to make the case as to why individuals and organizations don’t automatically act in their own interest; why that

action doesn't maximize growth and innovation; and why government action doesn't automatically make things worse.

Moreover, many assume that government is always bad at supporting innovation, either because of political manipulation or bureaucratic failure. But historically the federal government's strategic support for new technologies such as the Internet, 4G wireless, GPS, relational databases, Internet search technology, aviation, computing, gas turbines, wind power, and many other technologies has been a critical feature that enabled enterprising entrepreneurs and enterprises to take these technologies to market commercialization.²⁰

In short, creating and implementing a competitiveness strategy is not a nod to big government, for having a strategy is simply a way for the United States to understand what it needs to do, whether it's to cut the effective corporate tax rate, reduce regulatory red tape, expand research funding, target clean energy innovation, or help small manufacturers become more productive and innovative. Indeed, since the mid-twentieth century, most state governors, regardless of their party affiliation, have put in place policies to tilt the playing field so that corporations create higher-value-added jobs in their states. These governors, Republicans and Democrats alike, recognize that markets generally create prosperity, but that in nationally, and now internationally, competitive markets, prosperity will not automatically occur within their state's borders. They understand the necessity of going beyond letting firms alone determine the location of high-value-added economic activities; that's why they "intervene" in their economies with activist economic policies such as workforce development programs, industry-university research centers, R&D tax incentives, and favorable regulatory climates. The fact that many state economies are in trouble is not a reflection of the effectiveness of these policies, but rather a reflection of the lack of these policies at the national level.

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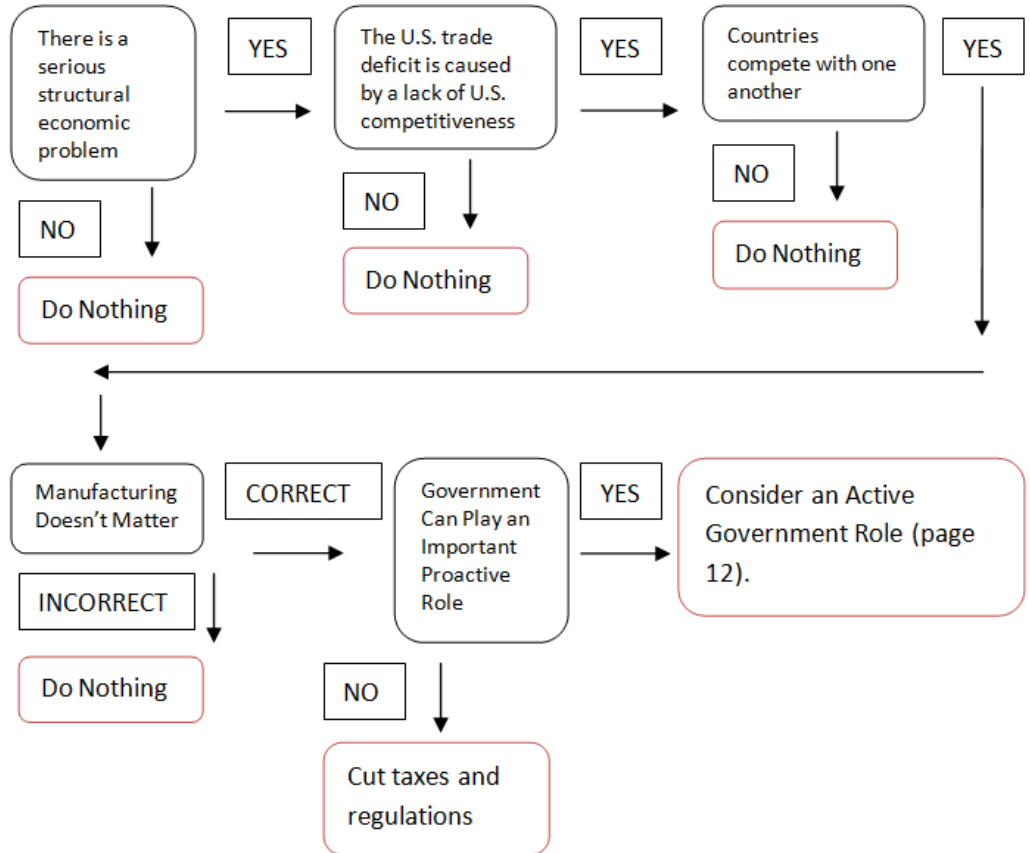


Figure 1: The Logic Chain of Action: From Current Conditions to the Need for Government Action

OK, SO WHAT DO WE DO?

Even if we could agree that the United States faces a serious competitiveness challenge and that a proactive federal policy is needed, the key question is what kind of policy. While there are many in Washington who believe that the government should act, many believe the scope of that action should be quite circumscribed.

Flawed Concept #6: Capital Accumulation is the Key.

For many economists the single most important driver of growth is what is called “capital accumulation” (e.g., higher amounts of investment) and since investment requires savings, the single most important thing government can do to spur growth is to enact policies that boost national savings. For conservatives this means boosting private savings through tax cuts on top marginal rates and capital (capital gains and dividends). This gives wealthy individuals more capital to invest in the economy. Supply-side economist Larry Kudlow states, “Tax-cut incentives will promote capital formation, productivity, jobs, and growth.” For moderates it means boosting public and private savings, including reducing budget deficits and helping low-income people save more.²¹ Former Obama Administration Office of Management and Budget head Peter Orszag reflects this belief when he states, “The fundamental benefit of higher national savings—achieved by preserving a substantial

portion of the projected budget surplus—is that it will expand economic output in the future.”²²

In either case, the policy is clear: ensure high levels of saving (public and/or private) because that creates the capital pools needed for investment, which in turn drives economic growth. When this is the conviction held by most policymakers, then tax cuts on individuals and/or cutting the budget easily trump public investments in research, infrastructure, and skills as a way to drive growth and competitiveness.

The only problem with this view is that in the innovation economy it is not the amount of capital that drives growth, but the demand for capital, and that demand comes from innovation. As U.C. Berkeley economist Brad DeLong explains, “Growth accounting studies in the tradition of Solow have found that capital deepening is responsible for only a small part of advances in labor productivity.”²³

Moreover, in global capital markets there is a surplus, not a deficit, of capital. This was reflected in the fact that trillions of dollars worth of capital flowed into the United States over the last decade. But all this capital and its low price didn’t spur investment in innovation because the demand for investment in real wealth creation and innovation was low. The fact that R&D investment by U.S. firms has grown two and a half times faster overseas than all corporate R&D in the United States suggests that the challenge is not a lack of investment capital but a lack of good investment opportunities in the United States.²⁴ People used all this low-cost capital (aided and abetted by corrupt banking and investment practices) to increase capitalized spending, particularly on housing, which not only did nothing to increase innovation or productivity, but also drove the U.S. economy into the worst recession in seventy-five years.

Flawed Concept #7: New Firms and New Technologies are Enough.

Capitalist economies are evolutionary systems where new kinds of activities, products, services, firms, occupations, industries and business models constantly replace older ones. This evolutionary rate differs over time and space, depending on a variety of factors, including the pace of technological advancement, entrepreneurial effort, and the domestic and international competitive environment. Nonetheless, as Schumpeter wrote, this process of “industrial mutation” is one that “incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one.”²⁵

However, many in Washington interpret Schumpeter to mean that innovation policy is only about speeding up the evolutionary process by supporting the more rapid emergence of newer entrepreneurial activities and technologies. In other words, it’s all about speeding up firm (and technology) birth, not about extending the lives of existing firms and technologies. That is, it’s all about “new,” not “renew.” As such, the favored policies focus on speeding this introduction of front-end innovation, through programs and policies to spur firm start-up and commercialization of new technology breakthroughs.

In fact, for some “creationists” any concern about slowing the loss of U.S. jobs is a waste of time at best, and downright harmful at worst. For example, in a recent Washington Post editorial, Zachary Karabell argues that since China steals so much U.S. intellectual property

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and engages in so much forced technology transfer, it's a waste of time to try to fight it. We should give up the fight to slow this "execution rate" and instead try to develop new IP and firms that use it faster than the Chinese can steal it.²⁶ Likewise, Council on Foreign Relations scholar Adam Segal says that "we can't compete with China on hardware (e.g., making things)" but we can on software (ideas and innovation) and "an important first step will be helping small start-ups."²⁷

The reality is that no matter how many new firms we create, if we don't slow down firm death and contraction by reducing foreign innovation mercantilism and helping existing U.S. firms (including "traditional" manufacturing firms) to become more productive and innovative, we will find ourselves like Alice in Wonderland, where it takes "all the running you can do, to keep in the same place." We can't afford to let China, Brazil, and a slew of other nations manipulate the global trading system to either steal American intellectual property or force American firms to transfer technology to their shores.²⁸ Hoping, for example, that somehow American biotech and pharmaceutical firms will come up with new breakthroughs (and the U.S. jobs associated with them) faster than other nations can steal life science intellectual property (in part by forcing U.S. pharmaceutical firms to go off patent sooner than otherwise would be the case or to transfer drugs at very low prices) is fanciful at best and just plain wrong at worst.

At the same time, we also can't afford to ignore the competitive challenges of existing firms and industries, particularly small and mid-sized manufacturers. Slowing down the death rate, not by protectionism and resistance to innovation, but by helping these firms better compete in global markets is required so that the births from innovation are plentiful enough to create the jobs we need.

Flawed Concept #8: All We Need Are Better Innovation "Inputs."

Among those who recognize the need for government to act all along the innovation cycle and in all industries, many believe that this role should be limited to simply supporting "factor conditions" that all firms can benefit from (e.g., free trade, better education, a good regulatory system, basic research, etc.). For them, the problem is not within enterprises; it's that enterprises lack the necessary inputs for successful innovation. Indeed, most leading reports on innovation and competitiveness reflect this focus. The widely praised *Rising Above the Gathering Storm* report largely confined itself to arguing for greater government support for factor conditions such as science funding and STEM education. Likewise, a report from the Council on Competitiveness calling for action argued, "Education is perhaps the single biggest threat to future American prosperity."²⁹

But while government surely needs to do more to support "factor conditions," doing that alone is woefully inadequate to ensure that the United States regains its competitive position. The notion that just getting factor conditions right is enough is clearly rebutted by studies of sectoral differences in productivity levels across nations. As Bill Lewis, former head of the McKinsey Global Institute, demonstrated in *The Power of Productivity*, if factor conditions were the key, then there would not be dramatic differences in productivity in sectors (relative to global best practice) in particular nations.³⁰ But there are, and these differences account for the lion's share of productivity differences between nations. And as

a recent report from the McKinsey Global Institute explains, “Global competitiveness of industry sectors in countries such as Japan, Korea, and Finland vary immensely, despite the fact they all exist under the same macroeconomic policy rubric... sectoral policy factors largely explain these differences in outcomes.”³¹

It’s only policies that are grounded in deep sectoral understanding that can ultimately drive productivity and innovation effectively. In other words, effective innovation policy has to go beyond simply supporting factor conditions that all firms can use; it has to go inside the “black box” of the firm to help firms and key industries thrive. This means that effective innovation policy includes things like much stronger R&D credits; programs to help small and mid-sized manufacturers adopt new technology; policies focused on key technologies (such as advanced batteries, robotics, and artificial intelligence); and policies focused on key industries (like broadband, clean energy, semiconductors, IT, and life sciences) all the while enabling competitive markets. While it is generally inadvisable for governments to pick specific winner companies or narrow technologies, it can and should pick broad technologies and industries to support.

Flawed Concept #9: “We Can Win Without Helping Big Corporations, Especially Multinationals.”

Finally, while most liberal advocates and policymakers recognize there is a problem and see government as having a key role, including an active technology policy, many oppose policies that directly or indirectly help U.S. companies, particularly large multinational corporations. For these progressives, businesses—especially large multinational corporations—are part of the problem, not the solution, since corporations are “profit hungry,” “selfish,” and “uncaring” with “Benedict Arnolds” for leaders who put the interests of shareholders ahead of workers. Thus, they question how we can even consider policies to make U.S. corporations more competitive when these very corporations have moved jobs offshore. To the extent progressives soften their antipathy to corporations, it’s to favor small business and “progressive” industries like clean energy.

As a result, for them, there is no need to make the corporate tax code more competitive so that America does a better job of attracting global investment. In fact, that’s the last thing they want to do when workers are hurting. There’s no need to take steps to protect companies from having their intellectual property stolen. In fact, they see strong intellectual property as the problem, not the solution. And there’s no need to ensure that our regulatory system doesn’t erect unnecessary barriers. In fact, more regulation is needed to protect Americans from their companies.

Rather, we should be exerting more control over corporations, they assert. Harold Meyerson, a liberal columnist for The Washington Post understands that the U.S. economy faces serious challenges, writing, “Our economic woes, then, are not simply cyclical or structural.” But then he goes on to write, “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.”³² But his solution is not to do what other nations have done—enter the race for global innovation advantage on the side of your business establishments to help them win the race—but to call for economic

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democracy. As he 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.” Others advocate that the federal government must make up directly for the lack of industrial competitiveness. As liberal economist James Galbraith says, “GDP goes up at least dollar for dollar when this form [social policy spending] does.”³³ For him, if businesses are moving jobs to China, just expand government spending. If good jobs are being eliminated, then mandate that firms pay higher wages. As Galbraith puts it, “You want higher wages? Raise them.”³⁴

Of course, the problem is that unless America can find a way to have globally competitive enterprises in traded sectors, there is simply no way to be competitive in the global economy. And many of these enterprises will be owned by large corporations. It might be possible for a small nation like Denmark to power its economy through a larger share of small businesses, but it’s not for the United States. We need healthy enterprises producing cars, jet aircraft, computers, software, and pharmaceuticals, and the reality is that small firms will not make up enough of a share of these industries to produce the jobs needed. And while helping with factor conditions (e.g., better educated workers) and technology policy is certainly needed, we must also ensure that the U.S. tax and regulatory climate is at least on par with those of our major competitors, which it is not now.

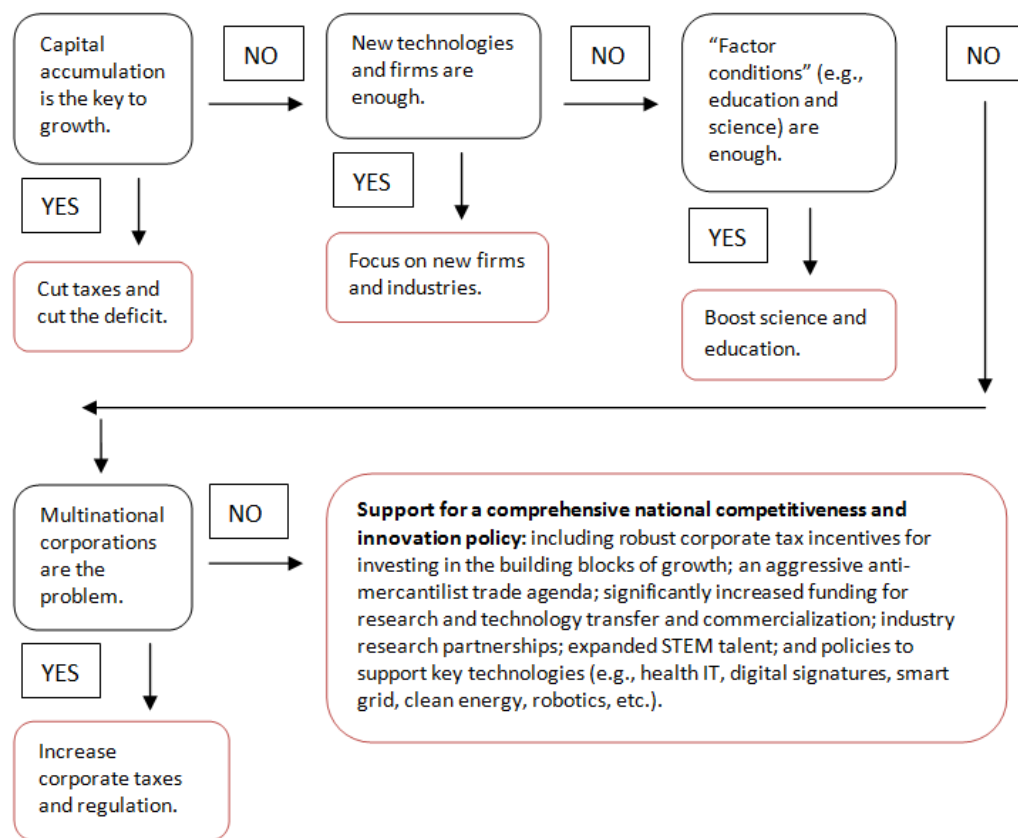


Figure 2: The Logic Chain of Action: From Acceptance of the Problem to a Comprehensive National Innovation and Competitiveness Policy

CONCLUSION

Okay, so here we are. Getting from here to there, with there being support for the development and implementation of a comprehensive national innovation and competitiveness policy, requires a series of logic steps, with any misstep able to derail efforts. However, if one accepts each of these steps then the only logical conclusion is that to maximize U.S. economic welfare we need a national innovation and competitiveness strategy.

Indeed, in the twenty-first century global economy, nations can no longer be indifferent to the industrial and value-added mix of their economies. With the sole exception of the United States, virtually all nations have consciously adopted national policies to “intervene in the market” in order to make it easier for corporations to invest in higher-value-added activities that create higher-wage jobs at home. These countries are not content to sit idly by to observe how the market will allocate production, for they know that the market could allocate to them low-wage T-shirt factories and call centers, instead of semiconductor factories and software companies. In essence, these nations recognize that while markets can create prosperity, they don’t always do so at home. The next thousand high-value-added jobs could just as easily be created in another nation. Recognizing the need to go beyond letting firms alone determine the location of high-value-added economic activities, they “intervene” in their economies with policies such as implementing national innovation strategies, funding basic and applied scientific research, providing corporations R&D tax credits, and so forth. It’s time for the United States to do the same.

ENDNOTES

1. Richard McCormack, "The Plight of American Manufacturing," *American Prospect*, December 21, 2009, http://www.prospect.org/cs/articles?article=the_plight_of_american_manufacturing.
2. The problem with the standard measure of manufacturing output is that the U.S. Bureau of Economic Analysis vastly overstates the output of the computers and electronics industry. To see how, consider that the federal government classifies manufacturing into two major groups, durable goods (industries like automobiles, machines, and computers) and non-durables (industries like food, chemicals, apparel, and petroleum products). From 1987 to 2009, increases in the output of non-durables added just 2.55 percent to overall GDP growth. This is well under half of the approximately 6 percent they should have added to GDP had they contributed their "fair share." Durables, on the other hand, added 39 percent more than their fair share. But a closer look reveals that every durable goods industry grew more slowly in output than GDP except one: computers and electronics, which grew a whopping 2,438 percent faster than if it had grown proportionate to its share of GDP. In fact, close to 12 percent of total U.S. GDP growth came from this one sector, which accounted for less than half a percent of GDP. Does anyone really believe that the computers and electronics industry is in fact 5,550 times larger than it was in 1990? To put this in perspective, this one sector accounted for 48 percent of U.S. manufacturing output growth, even though in 1987 it accounted for just half a percent of manufacturing output.
3. Gary P. Pisano and Willy C. Shih, "Restoring American Competitiveness," *Harvard Business Review*, July 2009, <http://hbr.org/2009/07/restoring-american-competitiveness/ar/1>.
4. Charles Wolf, Jr., "The Facts About American Decline," *Wall Street Journal*, April 13, 2011, <http://online.wsj.com/article/SB10001424052748704415104576251292725228886.html>.
5. Robert Shapiro, *Futurecast: How Superpowers, Populations, and Globalization Will Change Your World by the Year 2020* (New York: St. Martin's Griffin, 2009).
6. Council on Competitiveness, *Competitiveness Index: Where America Stands* (Washington, DC: Council on Competitiveness, 2007), http://www.compete.org/images/uploads/File/PDF%20Files/Competitiveness_Index_Where_America_Stands_March_2007.pdf.
7. Tania Branigan, "China's Tianhe-1A Takes Supercomputer Crown from US," *Guardian*, October 28, 2010, <http://www.guardian.co.uk/technology/2010/oct/28/china-tianhe-1a-fastest-supercomputer/>.
8. Harold Meyerson, "Corporate America, Paving a Downward Economic Slide," *The Washington Post*, January 5, 2011, <http://www.washingtonpost.com/wp-dyn/content/article/2011/01/04/AR2011010403742.html>.
9. Census Bureau, Foreign Trade (U.S. trade in goods and services; accessed December 1, 2010), <http://www.census.gov/foreign-trade/statistics/historical/gands.txt>.
10. Stefan Theil, "Why Europe Will Win," *Newsweek*, April 16, 2010, <http://www.newsweek.com/2010/04/15/why-europe-will-win.html>.
11. N. Gregory Mankiw, "Reflections on the Trade Deficit and Fiscal Policy," *Journal of Policy Modeling* 28, no. 6 (2006): 679-682.
12. Council on Competitiveness, *Competitiveness Index*, 30.
13. *The Causes of the Trade Deficit, Before the U.S. Trade Deficit Review Commission* (1999) (statement of Robert A. Blecker, Professor of Economics, American University).
14. J. Bradford Jensen, "Business Service Exporters," Washington, D.C.: Peterson Institute Working Paper, 2007.
15. Paul Krugman, "Competitiveness: A Dangerous Obsession," *Foreign Affairs* 73, no. 2 (1994): 28-44.
16. Jane Gravelle, "What Can Private Investment Incentives Accomplish? The Case of the Investment Tax Credit," *National Tax Journal*, September 1, 1993.
17. Clyde Prestowitz, "Beyond Laissez Faire," *Foreign Policy*, no. 87 (1992): 67-87.
18. "Cash Machines," *The Economist*, March 31, 2011, http://www.economist.com/node/18484080?story_id=18484080.
19. Kenneth Green, "Why the U.S. Shouldn't Panic," *New York Times*, November 9, 2010, <http://www.nytimes.com/roomfordebate/2010/11/08/can-the-us-compete-on-rare-earths/america-should-not-panic-about-rare-earths/>.

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20. Matt Hourihan and Robert D. Atkinson, "Inducing Innovation: What a Carbon Price Can and Can't Do," (technical report, Information Technology and Innovation Foundation, 2011), <http://www.itif.org/files/2011-inducing-innovation.pdf>.
 21. See Gene Sperling, *The Pro-Growth Progressive: An Economic Strategy for Shared Prosperity* (New York: Simon & Schuster, 2005).
 22. Peter R. Orszag, "Marginal Tax Rate Reductions and the Economy: What Would Be the Long-Term Effects of the Bush Tax Cut?" (technical report, Center on Budget and Policy Priorities, 2001), 1.
 23. J. Bradford DeLong, "Productivity Growth and Investment in Equipment: A Very Long Run Look" (working paper, Harvard University, 1991), 4.
 24. National Science Board, *Science and Engineering Indicators: 2010* (Arlington, VA: National Science Foundation, 2010), <http://www.nsf.gov/statistics/seind10/pdf/seind10.pdf>; Bureau of Economic Analysis Innovation Account (1959-2007 research and development data; accessed December 7, 2010), <http://www.bea.gov/national/newinnovation.htm>.
 25. Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper, 1950), 82-85.
 26. Zachary Karabell, "For China Trip, Lose the Old Baggage," *Washington Post*, November 8, 2009, <http://www.washingtonpost.com/wp-dyn/content/article/2009/11/06/AR2009110601904.html>.
 27. Adam Segal, *Advantage: How American Innovation Can Overcome the Asian Challenge* (New York: W. W. Norton, 2011).
 28. Xiolan Fu, "Foreign Direct Investment, Absorptive Capacity and Regional Innovation Capabilities: Evidence from China" (working paper, Department of International Development, University of Oxford, 2008), <http://www.oecd.org/dataoecd/44/23/40306798.pdf>.
 29. Richard McCormack, "Council on Competitiveness Says U.S. Has Little to Fear, but Fear Itself; By Most Measures, U.S. Is Way Ahead of Global Competitors," *Manufacturing and Technology News*, November 30, 2006, <http://www.manufacturingnews.com/news/06/1130/art1.html>.
 30. William W. Lewis, *The Power of Productivity: Wealth, Poverty, and the Threat to Global Security* (Chicago: University of Chicago Press, 2004).
 31. James Manyika et al., *How to Compete and Grow: A Sector Guide to Policy* (New York: McKinsey Global Institute, 2010), <http://www.mckinsey.com/mgi/publications/competitiveness/index.asp>.
 32. Meyerson, "Corporate America."
 33. James K. Galbraith, *The Predator State: How Conservatives Abandoned the Free Market and Why Liberals Should Too* (New York: Free Press, 2008), 56.
 34. *Ibid.*, 195.

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