

NATIONAL INNOVATION INITIATIVE

# Innovation Markets

Working Group Final Report

## **RECOMMENDATIONS IN BRIEF**

The Innovation Markets Working Group analyzed the new challenges and opportunities facing US businesses, workers, and researchers as they pursue innovation in the global market place. These forces include: growing markets abroad, increasing competition from firms and talent abroad, and deepening global integration of economic activities including innovation.

The Working Group's recommendations aim to bolster US capabilities in innovation and promote orderly international trading relationships that serve America's interests and advance the goal of improving opportunities for all people around the world.

### **(1) Strengthen the innovation chain from institutions to people.**

**Global opportunities and challenges call for a new commitment to workers to include:**

- **funded worker adjustment programs, including wage insurance and community development,**
- **legislated pension and health benefits portability, and**
- **establishment of a human-capital investment tax credit.**

**On the research front, the federal government should –**

- **create permanent incentives for basic research**
- **focus on smaller innovators, and**
- **emphasis on integrative research that spans traditional sectors and disciplines in agriculture, manufacturing, and services.**

### **(2) In trade negotiations, the US government must consider the following:**

- **Bilateral and regional negotiations are important avenues to advance US interests .... (NEEDS CLARIFICATION)in particular, a re-balancing of emphasis on agriculture, manufacturing market access, and services trade and investment.**
- **A forward-looking and comprehensive 'template' strategy can ensure that these agreements are synergistic and directed toward affecting the multilateral agenda.**
- **As part of negotiations, domestic subsidies to specific commodities should be redirected toward general basic research and worker adjustment.**

- **Cross-border private sector initiatives can complement the political agenda in support of more open and transparent markets abroad.**

**(3) Global Rules: The federal government should undertake these measures:**

- **Increase transparency of domestic regulations and legal environment;**
- **Strengthen global codes of conduct on specific technology-transfer and investment-related subsidies, as well as currency manipulation;**
- **Ensure that these activities can be addressed by multilateral dispute settlement and enhanced safeguard and, if necessary, enforced through existing domestic law, including through anti-dumping and countervailing duty assessments.**

**INNOVATION MARKETS WORKING GROUP PARTICIPANTS**

Catherine L. Mann, Chair  
Senior Fellow  
Institute for International Economics

Stephen Roach, Chair  
Chief Economist  
Morgan Stanley

Jennifer Bond  
Vice President for International Affairs  
Council on Competitiveness

Kevin Casey  
Senior Director of Federal and State Relations  
Harvard University

Steve Clemons  
Executive Vice President  
New America Foundation

A. Benton Cocanougher  
Interim Chancellor  
Texas A & M University System

Robert Fauver  
Fauver Associates, LLC

Ronil Hira  
Assistant Professor of Public Policy  
Rochester Institute of Technology

Kent Hughes  
Director, Project on America and the Global Economy  
Woodrow Wilson Center

Merit E. Janow  
Professor, School of International and Public Affairs  
Columbia University

Abbot B. Lipsky Jr.  
Attorney  
Latham & Watkins

Dana M. Marshall  
Senior Advisor, International Trade and Investment  
Piper Rudnick LLP

David McCurdy  
President  
Electronic Industries Alliance

Anil Menon  
Vice President, Corporate Brand Strategy and Worldwide Market Intelligence  
IBM Corporation

J. Frank Mermoud  
Special Representative for Commercial and Business Affairs  
Department of State

William F. Miller  
Herbert Hoover Professor of Public and Private Management Emeritus  
Stanford University

Amb. Ira S. Shapiro  
Attorney  
Greenberg Traurig, LLP

Denis Simon  
Dean, Lally School of Management and Technology  
Rensselaer Polytechnic Institute

Michael P. Skarzynski  
Vice President  
UTStarcom, Inc.

Nancy Smith-Nissley  
Senior Advisor for Business Outreach  
U.S. Department of State

Thomas F. Walton  
Director of Economic Policy  
General Motors Corporation

Grey Warner  
Senior Vice President  
Merck & Co., Inc.

John Zysman  
Co-Director, BRIE, University of California, Berkeley

## BACKGROUND

In the last twenty-five years, the United States economy has gone from a largely isolated economy to one that is deeply integrated into the world economy. In the 21<sup>st</sup> century, global engagement by US firms and workers occurs along new dimensions:

- **Collapse of communism and a global shift toward open markets:** China, India and the former Soviet nations states have all become part of the global economy. Along with their markets, these states contribute a supply of technically educated workers including engineers, scientists and computer specialists.
- **Digital revolution and spread of broadband communications:** A large supply of educated and comparatively lower-wage workers overseas can now compete in new sectors, particularly in service activities. Moreover, these factors allow rapid and perfect replication of intellectual property, as well as greater fragmentation of production processes.
- **Change in the nature of innovation:** The linear model of innovation is being replaced with more dynamic models that combine technology push and market pull and will increasingly focus on services innovation. Much of the world is seeking to match America's prowess as an innovator.
- **Increase in the pace of change:** Innovations are spread rapidly through worldwide networks. A larger swath of our domestic economy is tied to global circumstances at all times. The upside may be greater, but so is the potential for domestic dislocation.

This new environment presents many challenges for the research, business, and labor communities. In addition, policymakers must respond to the changing dynamics. They must take into account how the nature of innovation has changed, the state of the global institutional environment and whether it supports US objectives, and how domestic policy may need to be adapted in light of the increasingly competitive world scene.

### **Changes to the global business environment and implications for innovation**

Increased competition has put pressure on American companies to innovate and improve product price and corporate performance. Companies are responding both on the revenue and cost sides, and have dedicated an increasing share of corporate activity, including research and development, to emerging high-growth foreign markets such as China, India, and Eastern Europe.

China and India, in particular, have huge internal markets, with unique consumer tastes defined by their social, political, and cultural factors. Success in these new and growing markets requires more than shipping mass-produced, undifferentiated commodities. Companies must use their economies of scale in large-scale production and distribution,

but at the same time tailor product designs and sales and service operations to meet local market demands.

Globally competitive companies must also take advantage of a large and growing pool of extraordinarily productive talent in the major markets. Competition in countries like China and India which just a number of years ago focused around low-cost manufacturing labor now include highly competitive engineering graduates who earn less than production workers in the developed world.

As economies mature and as technology spreads, demand shifts toward consumption of services, both as an input to other business activities and as final demand. Thus, in the global economy overall, and particularly in China and India, demand is shifting toward services, away from agriculture and manufacturing. One reflection of this trend, as well as of US leadership in this sector, is the increasing share of services in US international trade, the rapid rise in foreign direct investment and sales of affiliates, and in an increased share of intellectual property receipts.

Because global markets have become so important, **macroeconomic policies of inflation and demand management in the US and in markets overseas are critical.** America has traditionally emphasized demand side policies that promote consumer welfare. Other economies have emphasized supply side policies that promote the competitiveness of their producers, and still others attempt inward-led growth strategies. These differences have profound implications for the competitiveness of American manufacturers as well as for broad measures of the US economy such as trade flows and the current account.

**US domestic policy fundamentally affects our global competitiveness in innovation.** Studies by the Department of Commerce, the National Association of Manufacturers, and the Electronics Industries Alliance show that the cumulative effect of the nation's tax, trade, and regulatory policies has been to put US manufacturers at a substantial competitive disadvantage. We have one of the highest cost structures in the world for conducting business and for performing R&D. For US manufacturers, costs of employee health care and other benefits are almost as high as total manufacturing costs in China.

Global engagement is critical to America's continued economic growth. In technology and other innovative industries, global engagement has generated faster growth and more high-end jobs. But globalization has caused serious dislocations in low-tech industries that lack product differentiation. Maintaining public support for global engagement requires that corporate and governmental policies address adjustment assistance, as well as training to strengthen the flexibility of the nation's workforce. Basic principles of both economic efficiency and equity demand nothing less.

### **Changes to the nature of innovation**

**The linear process of innovation, whereby researchers invent and then corporations decide how to market the inventions as business products, has been replaced with a more dynamic model.** Innovation today balances supply factors (such as skilled

workers and the push of new technology) and demand (such as pull and direction of specific market needs). The process requires more exposure for innovators to the marketplace and suggests the importance of locating research and development functions in target markets.

In the past, the term “innovation” referred almost exclusively to the goods-producing sector. With the rising importance of demand for services around the globe, **innovation in services and business processes has become increasingly important**. The potential markets in China and India are great -- both because of population size and because these countries now have such low provision of services. The vast majority of R&D supported by the US government has focused on manufactured goods and life sciences, and while these fields are certainly worthy, policymakers must begin to allocate resource to work on services innovation. Opportunities for the US to bring services innovations to markets around the world are real and immediate.

These changes in the nature and process of innovation combine with the digital revolution and the ability to codify and fragment knowledge to create a complex global network and set of markets. Because innovation activities can now often be broken into components, the process can be carried out in multiple markets simultaneously. This type of “**open innovation**” is increasingly the strategy that meets both technology demands and market demands.

By locating R&D facilities in the US and around the world, US companies can increase their understanding of local markets and create innovative products and services to address the needs of those markets. At the same time, they can draw upon talent that may reside oceans away to participate in the process.

America’s historical approach to innovation has relied heavily on the supply side of innovation (e.g. Federal R&D funding, math and science education, R&D investment incentives, etc - more) under the assumption that if America creates enough inventions, we will retain global leadership in innovation. But, if the process, nature, and environment of innovation has changed, so too should US strategy.

### **Innovation and the global institutional environment**

Powerful trends continue to broaden the global sweep of research, innovation, business, and trade. Even as these activities become more deeply integrated and internationalized, they encounter a dense but largely uncoordinated network of overlapping rules and institutional jurisdictions – from local regulations, to state/provincial rules, to national/federal legislation, and to regional/supranational communities and free trade areas, such as the EU and NAFTA.

**The world community faces the challenge of developing institutional arrangements that will permit sovereign jurisdictions to serve the demands of their citizens but not impose differential or excessive restrictions on cross-border activities.** A limited but important set of global rules has emerged within the WTO, and significant debate

surrounds recent efforts to expand the WTO mandate as an international rule-setting body. Two areas illustrate the complexity of these issues: international trade rules, particularly with respect to intellectual property, and antitrust/competition law and policy.

**Rules protecting intellectual property are fundamental to innovation**, particularly so in the digital world of perfect, quick replicability and with the increasing importance of intangible services-oriented innovations. Without some protection, the innovator is less willing to make investments and take risks; users are less assured of valid copyrighted or patented products; and global investors less likely to invest in piracy-prone countries. But, as with all rules related to intellectual property, global trade rules must balance the rights of the innovator with the rights of those who legitimately wish to use those innovations to create economic opportunity. Too-tight rights to the first innovator may squelch future innovation, as well as valid use today.

Global institutions must adapt rules to keep pace with technological change. In 1994, the Traded Related Intellectual Property Agreement (TRIPS) reached as part of the Uruguay Round of multilateral trade negotiations was regarded as an enormous breakthrough. However, it soon became clear that TRIPS had established worldwide intellectual property standards based on the style of innovation and type of intellectual property of the 1980s -- not that of the 21<sup>st</sup> century.

**The evolution of antitrust and competition rules provides a clear example of the challenges faced in a field where there are no global rules.** The US has a long history, beginning in 1890, of enforcing a strong regime of antitrust rules, primarily at the federal and state levels. The U.S. was also alone in seeking to enforce these rules extraterritorially -- against foreign-based enterprises and conduct originating outside the U.S. that might harm competitive markets within the U.S.

In recent decades, as the world turned away from authoritarian governments and toward democratization, privatization, and competitive economic systems, many nations and regions adopted competition rules. Former Soviet countries and others in Africa, Asia and Latin America enacted new competition rules or strengthened existing laws and enforcement agencies. Europe, seeking unification through the creation of a single market, placed at its core a powerful set of competition rules and a strong administrative enforcement system.

As a result of the explosion in rule setting, international business systems and transactions are often caught in a complex web of conflicting and overlapping antitrust rules, which can and have produced serious international disputes. (e.g. Honeywell-General Electric, Microsoft) The potential now exists for countries to use their competition rules to restrain the even the largest corporations operating in global commerce.

As leaders around the world address this maze we should only expect to achieve success through a diversity of approaches, rather than fixate on opportunities to find a “one-size-fits-all” solution.

## **Domestic labor and innovation in global markets**

Over the past generation, the contrast between the mobility of capital, technology, and management on the one hand and the relative immobility of manufacturing workers on the other has meant job loss for many workers in the US manufacturing sector. For this generation and with alarming speed, the same reality affects both modestly trained workers in the service sectors, as well as highly-trained and degreed research professionals, engineers, and scientists.

Going forward, more and more emerging market countries will attempt to copy the Indian and Chinese models of production platform for both goods and services. Call centers, the entry-level step in attracting international traded services and their jobs, can be found in such disparate worlds as Bangalore and Botswana. The spread of digital communications, the rapid increase in the number of trained graduates overseas, and the growing familiarity with how to integrate overseas services into the U.S. economy suggest that this type of international trade, investment, and job creation and loss will continue to grow.

Entire disciplines in the United States could shrink, ranging from number-crunching to radiology to animation, and any other work where specifications can be precisely written, educational attainment can be certified to global standards, and knowledge can be codified and digitized.

The new model of innovation, trade, and investment points to a highly complex relationship between domestic jobs, foreign markets, and global innovation. For example, even as many low-skilled manufacturing jobs have been lost in the US, others using high technology processes, skilled tradesmanship, and team concepts go wanting, suggesting a mis-match between what current workers know or where they are located in the US and where the jobs are. Likewise, among services workers, those able to work electronically across boundaries, integrate services or research done offshore into a broader project, and communicate well with colleagues of different cultures enjoy job premiums. Even for highly degreed professionals, rapid technological obsolescence of their knowledge, combined with increased demand for integrative and project design skills, can spell difficulty in the job market.

Against this backdrop, America's lead in science, engineering, and technology development is shrinking. US industrial spending on research and development fell in 2002 for the first time since 1960. America's share of total research done around the world -- measured by publications in the major scientific journals -- has declined, as has the rate of new patent applications earned.

For the last fifty years, the United States has been a magnet for scientific talent from the around the world. US universities offered the best scientific training; US research offered the greatest opportunities; and America's welcoming culture made it easy for most to adopt America's civic culture. Now, the United States is facing new global competition

for talent as other countries improve their institutions of higher education and strengthen their own domestic innovation systems. Moreover, after the September 11<sup>th</sup> tragedy, the US government tightened immigration policies, making entry into the US by students and scholars much more difficult.

## **RECOMMENDATIONS**

The Innovation Markets Working Group developed the following recommendations to address the 21<sup>st</sup> century forces of growing markets abroad, increasing competition from firms and talent abroad, and deepening global integration of economic activities including innovation.

In the domestic context, these forces put a premium on increased funding to strengthen the **entire innovation chain from institutions to people**, from basic research to education and training, as well as easing worker adjustment through portability of benefits and wage insurance.

In the trade negotiation context, these forces require synergistic efforts on **bilateral, regional, and multilateral trade negotiations** and re-balancing of emphasis on agriculture, manufacturing market access, and services trade and investment.

In the context of **global rules**, these forces highlight the value of global transparency and codes of conduct backed up, if necessary, by multilateral dispute settlement and unilateral action.

### **(1) Strengthen the innovation chain from institutions to people.**

**Global opportunities and challenges call for a new commitment to workers to include:**

- **funded worker adjustment programs, including wage insurance and community development,**
- **legislated pension and health benefits portability, and**
- **establishment of a human-capital investment tax credit.**

An increasing fraction of the US labor force is exposed to global change. New entrants as well as current workers must be prepared to acquire new skills and possibly change employers or industries several times. Current policies dealing with worker adjustment to market change must be enhanced and some important new ones enacted -- including portability of health insurance and pension benefits and wage insurance. In addition, a “human-capital” investment tax credit, modeled after the tax credit that helps align business and national interests in the areas of capital investment and research, recognizes the enhanced value of human assets in the innovation economy.

**On the research front, the federal government should –**

- **create permanent incentives for basic research**
- **focus on smaller innovators, and**

- **emphasis on integrative research that spans traditional sectors and disciplines in agriculture, manufacturing, and services.**

Funding basic research -- blue-sky, long-horizon, and integrative research that initiates innovations that span agriculture/biology, manufacturing/material science, and services -- remains a key role for government. New incentives are needed to promote basic research, particularly through partnerships that bring together educational institutions, government institutions, and industry. Small firms in particular are sources of innovation advantage. A government-sponsored central database could enhance the national value of this work by providing transparency of methods and results and promoting cross-pollination of ideas across sectors, disciplines, and firm sizes.

**(2) In trade negotiations, the US government must consider the following:**

- **Bilateral and regional negotiations are important avenues to advance US interests ... in particular, a re-balancing of emphasis on agriculture, manufacturing market access, and services trade and investment.**
- **A forward-looking and comprehensive ‘template’ strategy can ensure that these agreements are synergistic and directed toward affecting the multilateral agenda.**
- **As part of negotiations, domestic subsidies to specific commodities should be redirected toward general basic research and worker adjustment.**
- **Cross-border private sector initiatives can complement the political agenda in support of more open and transparent markets abroad.**

The United States is the premier market in the global economy, making bilateral and regional negotiations of particular interest to other countries. At the same time, the fastest potential growth exists in markets abroad, making multilateral agreements valuable to the US. While US negotiations in the traditional areas of manufacturing market access will still be important, negotiations for agriculture and even more so for services offer significant potential gains because the share of services in a country’s GDP rises as that economy develops and matures.

In bilateral and regional negotiation, the US should continue to use the leverage of its market size to progress further and faster in areas of key interest, including implementing the ‘negative list’ for services trade and investment; strengthening labor and environment principles and implementing dispute settlement avenues; and agreeing, at minimum, on transparency of domestic regulations and policies.

Acknowledging the give-and-take in such negotiations, the US should accelerate market access in key commodities, goods, and services of interest to negotiating partners. As part of this strategy and to complement domestic policy initiatives proposed above,

specific subsidies to specific commodities should be redirected to general incentives for basic research and worker adjustment and training programs.

Recognizing the value to both the US and to its trading partners of market liberalization, labor and environment standards, and codes-of-conduct, the objective of these bilateral and regional negotiations should be to create a like-minded group large enough to sway multilateral negotiations in due time. This objective is furthered by adhering to a common template and is further supported by efforts led by industry as well as labor to reach across international boundaries to achieve the common goal of policy reforms in the interest of economic well being.

**(3) Global Rules: The federal government should undertake these measures:**

- **Increase transparency of domestic regulations and legal environment;**
- **Strengthen global codes of conduct on specific technology-transfer and investment-related subsidies, as well as currency manipulation;**
- **Ensure that these activities can be addressed by multilateral dispute settlement and enhanced safeguard and, if necessary, enforced through existing domestic law, including through anti-dumping and countervailing duty assessments.**

Integration of global markets and growth of US exports are hindered by inconsistent and overlapping regulations, standards, legal systems, and enforcement. Given global heterogeneity, it is not realistic to suppose that global agreement on these matters will emerge over night. However, promoting transparency of the standards and regulatory process, including for example, technical standard setting, financial disclosure rules, and factors that underpin competition law would significantly enhance international activity. Even-handed and prompt adjudication of known rules, including intellectual property rules, levels the playing field for all participants and thereby improves the global environment for trade and innovation.

Specific subsidies for investment, demands for technology transfer and persistent currency intervention that are designed to attract plants and firms from one jurisdiction to another significantly tilt the global playing field toward individual companies and countries. These policies alter comparative advantage and prop up export-led growth strategies to the detriment of individual firms and overall macroeconomic trade and financial balances.

To the extent that these activities are a detriment to US companies in the US or promote movement of operations (manufacturing or services) abroad, they should be addressed in dispute settlement in multilateral forum, and can be addressed directly through US law. A revitalized safeguard mechanism, with sunset, allows an immediate and unilateral response to these specific policies. Assessment of penalties, with sunset, through anti-dumping and counter-valuing duties is a third option. US companies operating abroad also need to adhere to these rules and would be subject to the same penalties. Penalty

money resulting from such assessments should be directed toward basic research, education, and worker training and adjustment in support of US innovation initiatives.