Woodrow Wilson International Center for Scholars
Program on Science, Technology, America, and the Global Economy

New Thinking in International Trade: National Strategies to Build Comparative Advantage

Edited by Lynn Sha and Kent H. Hughes

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WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS

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by Kent Hughes

I want to thank the Sloan Foundation for for making these conferences possible and for all their past support. They have made enormous contributions over the past decade to our understanding of innovation as well as to the whole field of industry studies, which had been a neglected discipline.

On November 16, 2006, the Woodrow Wilson Center held a conference examining the economic strategies of advanced and emerging market countries and their impact on the United States. This conference was the second in a series of policy forums that highlighted new thinking in international trade theory and policy. Its purpose was two-fold: First, to explore how the national policies of foreign competitors are designed to change their respective comparative advantages and thus the pattern of world trade; and second, to evaluate the appropriate U.S. public and private sector policies for dealing with the evolving competitive strengths of other countries.

The preceeding conference in June 2006 dealt with new thinking on international trade. Nobel Laureate Paul Samuelson, Sloan Foundation President Ralph Gomory, and New York University's Harold Price Professor of Entrepreneurship William Baumol focused on new global trade theories that take into account the impact of overseas innovation on the U.S. comparative advantage and the potential gains from trade.

In a continuation of some of the themes from the earlier conference, Senators Lamar Alexander and Jeff Bingaman called for increased funding for the physical sciences, improved education in math, science, and engineering, and recruitment of greater numbers of U.S. scientists and engineers. Their proposals drew on rec-

ommendations contained in *Rising Above the Gathering Storm,*[1] a National Academies study done in response to a joint Alexander-Bingaman request.

Former Secretary of Commerce Peter Peterson chairman of the Blackstone Group, warned that current and future deficits would undermine the foundations of the U.S. economy. He called for business and political leaders to form a high-level commission to study and make recommendations on key challenges to future U.S. prosperity.

Steven Pearlstein of *The Washington Post* led the discussion to examine industrial countries' strategies for building comparative advantage. Mark Lehrer of the Sawyer Business School of Suffolk University described how Germany had improved mid-technology fields such as cars and machine tools but had not generated breakthrough discoveries. Gary Hufbauer of the Peterson Institute for International Economics noted the importance of England's Silicon Glen but put more emphasis on Ireland's successful strategy of combining a well-educated populace and tax incentives to attract foreign investment.

Mark Tilton of Purdue University described Japan's continued strength in the automotive, machine tool, and electronics industries. Japan was also working to make major changes in its university system to facilitate the kind of closer collaboration with industry that had yielded benefits in the United States. However, Tilton did not think that Japan would become a U.S.-like innovator in the near future.

John Cranford of the *Congressional Quarterly* directed a discussion on developing country strategies. China, for example, has had great success in attracting technology, management skills, and foreign investment, building research universities, and upgrading from low-tech to more advanced products, said Carl Dahlman of Georgetown University. India has succeeded in providing online services that have grown from call centers to more challenging fields such as legal research and chip design, said T.N. Srinivasan of Yale University. India also has attracted increasing amounts of R&D investment from U.S. companies with the quality of its research talent.

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1. Norman R. Augustine, Chair, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future,* Committee of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine of the National Academies, 2007. *See* http://www.nap.edu/catalog.php?record_id=12021#toc.

Several South East Asian countries have combined their own efforts with tax incentives to attract high-technology foreign investment, noted Bryan Ritchie of Michigan State University. Singapore has moved from routine to more advanced manufacturing. Its limited size, however, suggests that its approach may hold more lessons for U.S. states or large cities than for the country at large.

Other speakers, such as *The National Journal's* Bruce Stokes, examined how the United States should respond to challenges from rising global competition. Vinod Aggarwal of the University of California at Berkeley, and Rob Atkinson of the Information Technology and Innovation Foundation, warned against being constrained by historical theories. Aggarwal pointed to the strategies pursued by emerging market countries and stressed the importance of dynamic, rather than static, comparative advantage.

Atkinson called for an economics policy focused on innovation rather than the traditional emphasis on efficiency or redistribution. Susan Butts of the Dow Chemical Company explained how the private sector was driven by market forces to aggressively pursue opportunities overseas. Intellectual property protection, while a priority, was less critical than gaining market share in countries like China and India.

Two challenges addressed by Ralph Gomory of the Sloan Foundation were the record current account deficit and how to ensure that U.S. innovations translated into U.S. economic growth, investment, and jobs. The current account deficit could be alleviated through Warren Buffett's theory of balancing trade by gradually introducing tradable import certificates to purchasers of U.S. exports to bring the two into balance. Gomory also suggested the aggressive use of tax incentives linked to investment and employment.

Roundtable discussions on strengthening the U.S. economy focused on long-term debts and deficits, the U.S. lead in innovation, turning innovations into high-paying U.S. jobs, the Gomory-Buffett idea of tradable import certificates, sharply improved K-12 education, and the development of alternative forms of energy.

Future paths and opportunities for the U.S. economy must be defined by examining new thinking on international trade, analyzing changes in the global economy, and searching for policies that will build the future.

Opening Remarks
by Lee Hamilton

Today's conference on *National Strategies to Build Comparative Advantage* focuses on how the United States should respond to the opportunities and challenges posed by the drive for Europe and Asia to become more innovative international competitors.

This conference is the second in a series that started with a look at new thinking on comparative advantage. We will open with Senators Lamar Alexander and Jeff Bingaman, two of our best leaders.

Senator Alexander and Senator Bingaman have made really an enormous contribution to American policy thinking by asking the National Academies to form a committee that would develop policies to respond to 21st century challenges. The Academies, in turn, formed a blue ribbon committee, chaired by Norman Augustine, and the result has had quite a profound impact on our national thinking.

The president, in his 2006 State of the Union address, drew on many of the ideas contained in *Rising Above the Gathering Storm*, also known as the Augustine Report. We're honored and privileged to have Senators Alexander and Bingaman here at the Wilson Center.

Senator Lamar Alexander

Lee Hamilton's work with the 9/11 Commission and the *Rising Above the Gathering Storm* report (Augustine report) illustrate one of my favorite principles, which is that most ideas fail in Washington, D.C. but not because of the idea. The most unique thing about the 9/11 Commission's report was that you could actually read it. It was very specific and very cogent. As a result, the 9/11 Commission report commanded immediate respect as an agenda for how to deal with the threat of future attacks on the United States.

The most important thing about the Augustine Report is that it took an urgent national need, the importance of keeping our brainpower advantage in the United States, and gathered together the people who best understand the problem, and presented in priority order, in very specific terms, an agenda for how we must meet our need for skilled human resources. Like the 9/11 Commission's report, the Augustine Report has received enormous attention and great support. Most of the report's recommendations were introduced as a competitiveness piece of legislation[2] by Senator Bill Frist and Senator Harry Reid in the last week of September. The bill had 70 co-sponsors: 35 Democrats and 35 Republicans. It may have been the only piece of legislation introduced by both Senator Frist and Senator Reid in this session of Congress, and certainly the only one of that importance, with that kind of co-sponsorship.

For those of you in policy work who wonder if new policies can ever get adopted, this legislation proves that an urgent need accompanied by a specif-

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2. *A bill to invest in innovation and education to improve the competitiveness of the United States in the global economy*, 109th Cong., 2nd sess., S. 3936, introduced 9/26/2006. *See* http://thomas.loc.gov/cgi-bin/bdquery/D?d109:12:./temp/~bdnJyR:@@@P |/bss/d109query.html.

ic set of suggestions may receive unexpected attention and support from both parties in Congress. I have very much enjoyed working with Senator Bingaman on this issue.

In August 2006 I traveled to China with a group of my fellow senators. The two lead senators were Ted Stevens, who flew with the Flying Tigers in World War II, and flew the first cargo plane into Beijing at the end of World War II, and Danny Inouye, who won a Congressional Medal of Honor fighting for the United States as a Japanese-American in World War II.

While we talked with President Hu Jintao and Premier Wen Jiabao regarding Korea, Iran, Iraq, and many other issues, the two leaders were the most excited about how to turn China into a nation of innovation and how they could raise their standard of living by improving their brainpower ability.

President Hu had just returned from the Chinese National Academy of Sciences and Engineering. He assembled them all in the great hall of the people, and he said, "We must have a huge leap forward of science and technology. We shall put strengthening independent innovation capability at the core of economic structure adjustment." President Hu's plan is likely to succeed; it includes reforming China's universities and massively investing in new research. President Hu later concluded: "We all bear the time-honored mission to provide strong scientific support for the construction of a well-off society by improving our independent innovation capability and by building an innovative country. I hope that our scientists and technicians will strive hard to make brilliant achievements and constantly contribute to our country and the people."

We have also seen India's version of what China is doing in Bangalore: recruiting top talent, growing top talent, investing in research. This is the new 'flat world' Tom Friedman[3] writes about and a lot of us talk about. What do we do about it? It is important to stop for a moment and realize that the Augustine report's title, *Rising Above the Gathering Storm*, is a good description of where we are. It does not say going over the cliff, or the sky is about to fall; it just says the storm is gathering. This is important to note because the United States still produces an incredible amount of wealth given the number of people we have in this country. And our share of it's going up, it's not going down.

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3. Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-first Century* (Farrar, Straus & Giroux, 2005).

In 1995, according to the International Monetary Fund (IMF), the United States produced 25 percent of the world gross domestic product with about four to five percent of all the people in the world. That was ten years ago. Now we've had all this out-sourcing, in-sourcing, globalization, gnashing of teeth, and jobs going overseas. What's been the result? According to the IMF, in 2005, the United States produced 28 percent of the gross domestic product. Now we might get into a pretty big argument over whether it's fairly distributed once it gets here. But the fact of the matter is we've gotten richer over the last ten years. We've achieved this growth in a number of ways, but our secret weapon is our brainpower advantage: the finest system of colleges and universities in the world, attracting 500,000 of the brightest foreign students who then work hard to improve the U.S. standard of living.

Of the one hundred American Nobel Prize winners in physics, half of them are immigrants, or sons and daughters of immigrants. No country has the national research laboratories that we do. So this innovation has been responsible for much, many say more than half, of the new jobs since World War II. And we worry that we might be losing that brainpower advantage to China, India, Finland, Singapore, and Ireland. That is why Senator Bingaman and I just did a perfectly obvious thing. We went to the National Academy of Sciences a year and a half ago, and asked, "Exactly what should we do to keep our brainpower advantage over the next ten years? Please tell us in priority order." To their great credit, the Academies of Sciences and Engineering and the Institute of Medicine put together a top flight team and they got Norm Augustine, the former head of Lockheed Martin, to chair it, and they came back with 20 specific recommendations.

With a lot of help from Senator Pete Domenici, who's been terrific on this, all this was put into legislation, and eventually attracted 35 Democrats and 35 Republicans. Among the policies set forth by the bill is an increase in funding for basic research in the physical sciences by ten percent a year for seven years. The legislation also provides 25,000 undergraduate scholarships and 5,000 graduate scholarships for future scientists, allows foreign students who earn a Ph.D. in the sciences in the United States to stay one year after graduation, makes those who find a job automatically eligible for a green card, recruits 10,000 new science and math teachers with four-year scholarships, trains 50,000 current teachers in summer institutes at national labs and universities, authorizes a coordinating office to manage the centralized research infrastructure of at least $500 million a year, and offers a research and development tax credit for companies.

Now in most cases in the Senate, authorizing legislation just gives us permission to fund it. But it is an important first step. We have made a lot of progress. Senator Bingaman, Senator Domenici and I met with President Bush at the end of last year and he put in his budget nearly six billion dollars for his American competitiveness proposal. Then the various committees in the Senate worked together on the bill (that I mentioned earlier) that Senator Frist and Senator Reid introduced in the last week of September. What is remarkable about the bill is that it was not written by the Republicans and handed to the Democrats, or vice versa. We wrote it together. The chances of it passing in a Democratic Senate are therefore just as good as the chances of it passing in a Republican Senate.

Senator Bingaman will talk about most of the other programs we are developing. He has been working on Advanced Placement programs and other policies that I have been particularly interested in for many years, such as the authorization of small initiatives, including support for states creating residential high schools for outstanding students of math and science, similar to the one that has operated in North Carolina for the last 20 years.

The Augustine Commission reviewed hundreds of proposals and tried to pick the best of them. Those ideas are part of what we recommended in our bipartisan. The spending authorized over the next five years is $20.3 billion in new spending for these projects. This is a significant savings over what was originally reported by the committees. We recognized that we have budget challenges and we tried to avoid unnecessary duplication of existing programs, but in my view and the view of many other conservative Republicans, keeping our brainpower advantage by investing in science and technology is just as important a part of a pro-growth economic strategy as tax cuts are.

Where do we go from here? The political ground has shifted. We have a Democratic House, we have a Democratic Senate, and we have a Republican president in his last two years. That should not hurt this proposal at all. Bart Gordon (from Tennessee), who is likely to be the new chairman of the Science Committee in the House, introduced most of the Augustine Commission Report in the House. Nancy Pelosi has talked about this as an important part of her agenda, and as I mentioned earlier, Harry Reid joined with Senator Frist in introducing the Senate bill. There have been as many Democrats as Republicans in the Senate eager to get this done, and the President has made this an important part of his agenda.

My hope is that as we begin the new year, the country, the President, and the new Democratic Congress are looking for a way to show that we can lead, that

we care about our country, and that we understand the future. I cannot think of a better first step than to tee up a piece of legislation on which there has been so much work by so many people on both sides of the aisle. The President can talk about it in his State of the Union address and he can put it in his budget. Senator Reid has the ability to make it the first order of business in the new Senate. Speaker Pelosi can do the same thing. If the Democratic leaders do that, I believe the legislation could be passed by the February recess, and I hope that it is.[4]

QUESTION: While we rank high in competitiveness, our standard of living has actually stayed very flat. While the Augustine Report is an important step, is it really going to do enough? Who needs to take the lead to actually put together an innovative economy as opposed to just generating more input without any change to the structure of organization?

SENATOR ALEXANDER: The Augustine report deliberately was a list of 20 things that were important, but also were 20 things that they could agree on and that they thought we could agree on. So they obviously left out a number of things that are contentious, or broader. For example, our legal system is an impediment to innovation in our country. The Sarbanes-Oxley law is an impediment to new IPOs. All of that would have just provoked a big fight in the Senate for six months, and we would not have gotten anything done. So these are 20 things in the Augustine Report that we could agree on that were important to get done. There are a lot of other things, some listed by the Augustine Commission, that would be a broader part of an innovation agenda. It would be wise to regard the Augustine Report as a first step in the right direction, and not a prescription for an entire innovation economy.

Well, the recommendations by the Augustine Commission are in priority order and they put K-12 math and science first. So making it a priority is the first thing. Second thing is an infusion of the best possible math and science teachers. There are all these formulas for how to improve schools, but in my view it boils down to about 95 percent parents and teachers, and we do not know how to help create better parents, so that leaves the teachers. There are proposals at the University of Texas UTeach Program, which recruits outstand-

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4. The bill was reintroduced by Sen. Reid in 110th Congress and incorporated in H.R. 2272, which became Public Law No. 110-69 on 8/9/2007.

ing students in the physical sciences, for example a chemistry major, and gives that person a scholarship to become a chemistry teacher. And then the proposal was also to give that person an NSF $10,000/year fellowship over the five years after they graduate to raise their salary a bit. That idea represents another answer to your question of how to keep the best teachers? Recruit new teachers and train existing teachers.

There is a proposal in here borrowing on a University of Pennsylvania proposal that would put teachers in the Oak Ridge and Los Alamos National Laboratories for the summer to infuse them with more excitement and training for teaching. Finally, we are going to have to come to grips with the idea of paying more for teaching well. I had fights on that issue when I was Governor with the National Education Association. We have got to pay good teachers more for teaching well. Albert Shanker, the head of the American Federation of Teachers, used to say, "If we have master plumbers, we can have master teachers. And if we don't have master teachers who are paid more for being good, they won't stay in the classroom; they'll go somewhere else." Much of this focus is on teachers.

Senator Jeff Bingaman

Senator Alexander did a good job of describing the legislation that we are trying to move ahead with in the Senate, and there is a reasonable prospect that we can move ahead either in the remainder of this session of Congress—the "lame duck" session—or early next year. I do not know of any opposition, at least in the Senate, to proceeding with this bill and passing it.

I know many of you have been working on competitiveness, innovation, science, and technology for a very long time. Let me put things in a larger context.

One of our big challenges is to relate our objectives and work in the competitiveness area to the protection and improvement of the standard of living of Americans. This is something that many of us do not fully understand. In other words, what is the direct connection between the effort to make the country more competitive, and the effort to protect and improve the well-being of the average American citizen? We are going to be permanently focused on efforts to keep our country competitive and to keep our standard of living as high as possible.

I believe that there are three big challenges that we need to focus on and this is probably true with any permanent issue such as competitiveness. As I see it, dealing with such a challenge first requires a consensus on the problem and its definition. But the consensus on the problem and the vision for its solution must remain strong. We have made some progress in that regard, but there is much more that can be done to educate and inform the public of the nature of this problem. We must continue to persuade the Congress and other elected officials as well.

A second challenge is to identify the specific steps and actions that must be taken to address the issue or to achieve the vision. The Augustine Report has done a lot in this regard, by coming up with very specific recommendations. I

expect and hope that those specific recommendations will now be acted upon in a constructive way.

The third point I would make is that we need to have the political will and the persistence to stick at it long enough to actually make a difference. We have such ephemeral agendas in Washington that every time there's an election, there's a new set of priorities. Sometimes that is very good, and obviously, I think that this latest change was fairly positive. But we also need to recognize that there are some issues and some priorities that need to carry through and carry over from election to election and from administration to administration. I hope we can sustain the momentum behind this set of issues. I hope we can not only develop a better consensus that competitiveness is a priority for the country, but also develop a consensus to pursue the kinds of specific actions that the Augustine Commission has recommended, and any other specific actions we can identify over a period of years.

The report of the Augustine Committee gave us a very good first step toward focusing attention on these issues and toward identifying the specific actions that need to be taken. We are in the process of getting the authorizing legislation enacted by the Congress, and I agree with Senator Alexander that that is likely to happen in the near future. Then the real question will be: to what extent does the Congress actually follow through with funding? To what extent will the president's budget actually reflect the categories and the levels of funding that we are talking about in this authorizing legislation? I hope very much that the funding behind this legislation is properly and adequately set forth in the budget.

Furthermore, we must identify the other issues that also play a significant role in maintaining the competitive posture of the country. In the energy area, where I am particularly focused on now, there are a whole range of issues and specific actions that we need to be pursuing to maintain the standard of living and to maintain the competitive posture of the country. Energy is an area that is ripe for innovation, because there is a lot of interest in new science, new technology, and the application of that science and technology to meet our national needs.

But again, the big challenge lies in keeping the focus and continuing to pursue these competitiveness initiatives. In 2005, we passed a major energy bill that authorized a great deal of activity;[6] unfortunately, the administration's 2006 budget proposal omitted funding for these activities. Many of us experienced that frustration last year. I do not know if we will have that opportunity again in January or February 2007 with regard to the energy research and development

initiatives that we authorized in the 2005 energy bill, but that is an example of where we need to maintain the consensus to move ahead and to keep this a priority. So that's the big challenge. I would be eager to hear any suggestions that you folks come up with about how we keep up the momentum and the focus on U.S. competitiveness.

I am also interested in any suggestions you folks can come up with about other specific areas of action that are required, in addition to the funding of science and math education and the funding of research and development at our universities and our national laboratories. Those are the Augustine Committee's areas of focus. I certainly do not dispute the Augustine Committee's judgment that those are the top priority issues, but there are many others that fit into the competitiveness agenda. We need to do a better job of defining the other priorities and develop more of a consensus on how to approach them.

We have a lot of very capable science and engineering talent in this country that is on the verge of retirement. We see that in New Mexico and we see it all around the country. We need some creative thinking about how we can renew the talent, the capability, and the expertise that we currently have and keep it productively engaged for longer periods of time.

One of the great opportunities is to get more and more scientist and engineers into teaching. This is especially important as we consider new and potentially critical technologies such as the resurgence of nuclear power in the Capitol, because of the interest that companies are now showing in the development and construction of new nuclear power plants. A math and science renaissance in this country must become an area of priority national concern if we want to realize the full potential of technologies and their applications. The Augustine Committee report starts us in that direction. There are a lot of people currently in the workforce who have a great deal more that they can contribute to these kinds of efforts, and we need to find effective ways to keep them involved.

QUESTION: What do you think about putting the focus on innovation and technology together with the growing interest in alternative sources of energy?

SENATOR BINGAMAN: In trying to deal with our energy problems through increased attention to science and technology, we face the same challenges there that we face more generally, just trying to solve national problems by focusing more efforts on science and technology. In the energy area, the dan-

ger, frankly, is that the price of gas goes back down to $1.50 a gallon, and we once again lose a focus on dealing with energy problems. That's been somewhat the history of our national discussion about energy over the last several decades; the price of gas goes up, everyone gets up in arms, we have a lot of press conferences around Capitol Hill, and perhaps we rush off and actually enact a few things. But if the price drops again, the interest again drops in developing new technologies, alternative forms of energy, and increased attention to efficiency and energy, and people lose the focus and move on to something else. That is the danger that I see.

I hope we can avoid that this time. I hope that we can find some sustainable ways to continue to move in this area. There is a lot of private capital going into the development of new technologies in alternative energy. All of that could dry up very quickly if the economics change by virtue of a change in the price of oil or natural gas.

QUESTION: In the new political environment, there is likely to be a move for recognizing that one of the aspects of the present prosperity is a growing inequality of income and wealth in American society. Many folks do not have the chance to participate in our success in world competition. Will those developments and conditions be addressed in the policy discussions on competitiveness, economic performance, and standards of living over the next couple years?

SENATOR BINGAMAN: That set of concerns will be very much a part of the debate and the focus in the next couple of years in the Congress, because the evidence is pretty incontrovertible that there has been a growing gap between the wealthy and much of the rest of America. We need to focus on that. I do not think there is anything inconsistent between trying to come to grips with that, and also trying to focus on keeping the country competitive economically. I think the two concerns go hand in hand. The issue you raised is one that is going to get a lot of attention. We do not have a silver bullet solution to it. The new Democratic Congress is hoping to move ahead on a variety of proposals, such as the minimum wage, that will at least begin to focus on the issue. There is no question that the problem exists, and it is one that we hear about when we visit with people in our home states.

QUESTION: Has any thought been given to the fact that some of the teacher certification exams are inane?

SENATOR BINGAMAN: I agree with you that we have some barriers to people going into teaching that make no sense, and that we need to try to bring change in that area. There is a question as to whether the federal government should be overriding states in that regard, and to what extent, and that has always sort of held us back in that area. Some states, I think, have come up with ways to get people certified to teach, which do not involve a lot of the inane requirements that you have referred to. Many have not, and we need to think creatively about what the federal government could do, short of preempting states on that issue, which would not be well received by a lot of people.

QUESTION: My question goes back to the 1980s and the focus on critical technologies. Do you have any plans to revisit that question in the next Congress?

SENATOR BINGAMAN: We do not have any specific plans to do that. It was a useful exercise when we pursued it in the 1980s, to try to get our country to focus on those technologies that had the greatest chance of actually making a difference. Particularly in relation to energy, there are technologies for alternative energy, alternative fuels, and increased energy efficiency, where we could well invest more heavily than we have been investing. Maybe identifying and highlighting them would help us to do that. It is something we are going to look at.

On the issue of visas and immigration, I recently saw some statistics that showed the number of foreign students coming to this country is, once again, up this year over what it was last year by six or seven percent. We are finally beginning to dig out of the trough that we have been in as far as attracting foreign students, so I think that problem is on the way to getting fixed. This was one of the critical areas the Augustine Commission focused on. We need to attract the best and the brightest to our universities as we traditionally have, and I think some of the changes that have occurred in the administrative handling of visas has helped that substantially.

On trade coordination within the executive branch, I agree that we do not have any serious effort at export promotion through our various executive branches. I mean that we have some focus on that in the Department of Agriculture, of course, but when you look across the agencies, we have not put export promotion on our list of priorities. We need to put it at the top of our list if we are going to deal with

the trade imbalance in a meaningful fashion. The more we can do on the export promotion side, the less pressure there will be to become protectionists, and so it is very much in the country's interest to make that a priority.

QUESTION: The Middle East oil producers cut oil prices when they see the United States move infrastructure away from dependence on oil. Europeans use gas taxes to stimulate innovation in energy efficiency and transportation. Would it be possible to persuade the American public to keep oil prices high and moving the money into the U.S. Treasury instead of the pockets of the Middle East oil producers?

SENATOR BINGAMAN: I think President Bush is well known for his opposition to tax increases of any kind. What you just described would clearly be characterized as a tax increase, and accordingly nothing like what you have talked about is possible, at least in the near future.

QUESTION: Many of us are concerned over the rise in tuition expenses. Do you see any significant movement to address this problem in Congress?

SENATOR BINGAMAN: There is certainly an interest in trying to, once again, begin to increase both the amount and the number, of Pell grants. The annual cost of a higher education has increased by about 40 percent in the last five years. We have not increased the amount available in Pell grants at all in that period, so that is another area in which the Congress is trying to take action. I hope we can get an agreement by the administration to do that.

QUESTION: How do you balance the need for strengthening our non-proliferation agreements with the need for a safe and effective nuclear power supply?

SENATOR BINGAMAN: I agree with you that we have a very serious challenge in the non-proliferation area, and frankly we do not have a good blueprint for how to proceed in that regard. We're going to be debating the U.S.-India Nuclear Agreement[5] sometime in the next couple of months, and I

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5. Agreement for Cooperation between the Government of the United States of American and the Government of India Concerning Peaceful Uses of Nuclear Energy (123 Agreement), U.S. Department of State, August 3, 2007. *See* http://www.state.gov/r/pa/prs/ps/2007/aug/90050.htm.

have had real concerns about the proliferation implications of that agreement. We will have a chance to offer amendments and try to focus people's attention on the implications for nuclear proliferation, but that is a very real issue.

At the same time, I have a substantial interest in seeing nuclear power once again pursued in a serious way in this country, because, not just in this country but worldwide, nuclear power is the one type of base load energy that we have identified that does not create greenhouse gas emissions. The problem of global warming is a real one and one that we need to deal with. Again, I hope very much that we can get a consensus in these last two years of the Bush Administration to change course on and begin to do something responsible on greenhouse gas emissions. I think there is a crying need in this country to begin working toward a cap and trade system that would be similar to what Europe has tried to develop in their cap and trade system. There are a lot of big challenges in each of these different areas.

QUESTION: How could Americans be better protected from the inherent instability and uncertainty in the global economy? Would portable pensions and health care be an effective way of insulating U.S. workers from job losses or a weak economy?

SENATOR JEFF BINGAMAN: There is a general consensus that there is going to be a lot of turmoil in our economy. That is the way our economy is structured. There is going to be a lot of change, a lot of job creation, and a lot of job loss. I do not think that anyone would doubt that that turmoil will continue. The real question is does the end result of that turmoil improve circumstances for most or deteriorate circumstances for most? We need to persuade people that we are able to control those larger trends. I think people are accepting of that kind of change as long as they feel that their opportunities for employment are not going to be constantly less attractive than what they have had in the past.

As far as the pension requirements, health care, and the other factors you mentioned that are impediments to companies pursuing innovation, we have less of those obligations than virtually any developed country in the world. We impose fewer requirements on companies with regard to maintaining employees, providing pensions, and providing healthcare. If anything, we need to be finding ways to strengthen the safety net for folks that do fall out of the system. From my perspective, there are not a lot of companies that are dissuaded

from doing innovative things because of the extra burden the government is putting on them with regard to how they treat their workers.

Panel I

STEVE PEARLSTEIN: I write about economics and business, and occasionally about competitiveness. It is actually one of the problems that the Senators have and that someone like me has when you write about competitiveness, because you know everything in life is a poll. When you write about competitiveness, you get zero letters or emails, and you begin to develop a sense that it is not the sexiest topic in the world.

The topic before us is new thinking in international trade, and I would just like to start by reminding folks of some things with a short history of the recent old thinking in international trade. If we were here 25 years ago, someone might have given a talk about how the Japanese model was the best model for generating wealth and technological innovation in the economy, and that we ought to follow that model in this country. If we had had this conference 15 years ago, maybe Robert Reich would have been here telling us that actually the German model was the best model, and we should be following that model.

Ten years ago, some forward looking people would have been here and said, "Ahh, they were all wrong. Look what happened to Japan and Europe. The best model is right here in the United States and in Britain: low taxes, no regulation, and let the market take care of itself." And now we are here today in 2006, and we are all worried about China. I do not know whether anyone would suggest that we exactly embrace the Chinese model here in the United States, but there is probably something to be learned about what it is they do well and whether we could do it here.

Our first panel is going to look at what other industrialized countries are doing, in terms of their national strategies, to build comparative advantage.

MARK LEHRER: I will be talking about recent economic development policies in France and Germany. Getting right to the heart of the matter, do policies to build comparative advantages actually exist in France and Germany? Well, certainly both countries have policies that aim to expand the economic and skill base to create new jobs, and increasingly this is happening at regional and local levels instead of at the national level. These policies are non-mercantilist, in my view, and in fact, they greatly resemble the type of economic policies that we see in our U.S. states.

Beginning with France, their approach to building new sources of comparative advantage tend to be guided by the French state, and involve coordinating large-scale projects, particularly in areas like nuclear energy, aerospace, and so forth. This is very well known. It is also well known that the effectiveness of the large-scale project approach is declining. There are many reasons for this, including EU regulation, budgetary constraints, and the globalization of markets and production. But it is not dead yet. The French are still shelling out five million euros for a fusion reactor. But nonetheless, the large-scale approach to creating new sources of comparative advantage is declining.

So if you have a national government that can no longer generate comparative advantage the way it used to, what do you do? You turn to the regions, and this is what France has done. A good example of this is the regional cluster initiative, so-called "poles of competitiveness."

The French are very interested in clusters, or intra-regional or inter-regional networks of R&D institutes and firms. The national government went to the prefects of the region and said, "What sources of comparative advantage do you have in your region? Show us some good clusters," and "show us a plan for upgrading and developing those regions, and we will fund it."

The prefects of the regions then had to go out and submit their own call for proposals locally. The regions collected 105 proposals altogether and sent them to Paris, where they were evaluated by a panel of 30 mainly scientific experts. But it was the national government, specifically an inter-ministerial commission, that selected 67 of these competitive clusters. Paris was not the winning region; it was Lyon.

In the southeast, there were 15 clusters that were selected in the region of Rhone-Alps. That region, which has medium-sized firms in Lyon and has long militated for more autonomy in economic planning, is getting it, as are the other regions. The list of the poles of competitiveness in Rhone-Alps demonstrates that they are funding everything from medical research to sports goods.

These policies do not aim at creating new clusters. The clusters already exist. Rather, they aim to upgrade existing clusters and build the clusters within the country and even internationally.

There is nothing specifically French about this. The Organization for Economic Cooperation and Development (OECD) calls this "decentralized collaborative governance," in which calls for proposals and incentives to network come down from the French state. But ideas, self-promotion, and the execution of economic initiatives are more bottom-up. However, the nurturing of clusters does shed some light on the protection of national champions in France.

Germany represents a slightly different case. Traditionally, Germany has not relied on the state to develop new sources of comparative advantage. That was more the business of industry and industry associations, such as banks, unions, and semi-public organizations. The planning-heavy German system was very effective for nurturing major export sectors in areas like automotive, machine tools, chemical, pharmaceutical, and industrial electronics—what is often called medium-tech industries. Germany has also historically been a very large exporter, especially in those industries.

Germany's problem is employment. The industries that I just mentioned do not generate much new employment. This is very well-known in Germany. My statistics and OECD statistics both show that Germany has serious trade and patent deficits in high-tech sectors like IT, semiconductors, biotechnology, and even optics and new materials. Germany's government has been trying to do something about that since the 1960s without much success.

These disappointing policy results stem partly from the structure of Germany's government. Germany does not really have at the federal level the levers that it needs to change its sources of comparative advantage. The ministries, by constitution and by habit, are quite autonomous. Therefore, the federal chancellor does not and cannot tell the ministers what to do. That means there is a lack of coordination among ministries at the federal level.

For example, the Ministry for Educational Research is able to fund R&D projects, but cannot do much more than that. The Federal Economics Industry, on the other hand, has always been traditionally *laissez faire* and has been very skeptical of efforts by the research ministry or other ministries to try to sponsor new industries.

That is very different, however, at the state level, that is, the so-called *Länder,* in Germany. The German states are far more autonomous than the regions that

you see in France, and some of them, like Bavaria, regard themselves as practically sovereign countries. That means that a state premier like Edmund Stoiber of Bavaria has the latitude to govern with a very strong hand and will have personal contacts to local industry leaders. The German states also run their own colleges and universities.

Since at least the 1980s, certain German states have implemented their own industrial policies, and that has sometimes been called the MITI-zation (the former Japanese Ministry of International Trade and Industry) of *Länder* industrial policies. Now you would ask the question, "Well, who's MITI in the German states?" The answer is: the state premier and his or her own political dynasty, which has very close contacts to industry and will listen to industry.

Bavaria, for instance, has poured billions into the sponsorship of high technology, and not because of leadership from the parliament or the ministers. It really was Edmund Stoiber, who relied only on a privy council of about a dozen experts. Edmund Stoiber said, "Here is the money we are going to spend on high tech. Parliament, this is what we are going to do," and they did it. Of course, in Bavaria it helps if you have a party majority and a sort of one-party hegemony.

As a result, Bavaria has invested massively in high technology. The first initiative dates from 1994, the "future of Bavaria offensive," where Stoiber took 2.9 billion euros, raised from the privatization of Bavarian state firms, and invested in R&D centers, technology parks, and incubators across quite a wide range of technology fields.

The second phase was called the "high-tech offensive"—by the way, that is not an English phrase; that is the original German. In this phase, another 1.35 euros were raised from privatization and invested in R&D. This time, there was a track record showing that the life sciences firms, especially the biotechnology firms, were doing well. So a lot more funding went into the life sciences. This year, there is a new cluster initiative. It is only 50 million euros, but it is good for propaganda and publicity. Now they are into clusters as well. Clusters are what is in fashion in old Europe, you might say.

In conclusion, the nurturing of comparative advantage has been increasingly delegated to regional and local levels. There is an emphasis on making selective R&D investments and in targeting local sources of industrial excellence for upgrading in clusters. What can we learn from France and Germany? We would want to learn from their mistakes and avoid repeating them. Both countries have fossilized higher education systems. They have national science systems that do not have enough openness and competition.

I live in Rhode Island and I work in Massachusetts. Those two states have completely interwoven economies, and yet there is almost no coordination of economic planning. One idea to consider, for example, is a multi-state cluster, which you might call the New England poles of competitive initiative.

MARK TILTON: I am going to talk about the Japanese approach to creating and preserving comparative advantage. The first thing to say about Japanese policy is that there has been a big push in recent years toward liberalization in general. In many ways, the model has been the United States. The push has been to move towards more liberal markets for capital labor and commodities. There has been a push for stronger antitrust measures, although not too strong. If we compare Japan with the United States, however, we find a lot of lingering mercantilism.

There certainly are community policies for promoting particular industries. The industrial revitalization law has been important. It put money into all the industries to help firms in those industries put money in the old industries themselves. In new areas, there has been money for investment in new industries as well. Japan also has a regional cluster plan, although it has not been as central to policy as in Western Europe.

Japan has emphasized targeting particular industries and technologies. The United States has been very much the benchmark of success for Japan. A couple of policies I call "E-Japan and U-Japan" have attempted to help Japan catch up with the United States in the use of the internet. "E-Japan" first pushed the promotion of fast access to the internet. Japan put money into expanding its fiber optic networks. "U-Japan," standing for ubiquitous Japan, emphasized a push on smart tag technology that allows all commodities to have a little code in them so they can be tracked easily. The government is very much behind these policies to help Japan innovate in ways that would enable it to catch up with the United States.

One thing Japan has been very aware of is its dependence on the United States for information technology, especially software from Microsoft. There is an awareness and concern over Microsoft's monopoly, and big government is pushing to try to develop alternative software.

What has been interesting in just the past few years is that there has been kind of a push to a quasi-EU in East Asia. Just as the EU put France and Germany together, sworn enemies a few decades ago, in Asia there is a push to bring the People's Republic of China, Japan, and South Korea together. We

read in the newspapers all the time about lingering problems over World War II that these countries still have.

However, there have been close talks for the last several years between these countries on challenging the United States' monopoly in software. On the Japanese side, this has meant bringing Japan's leading firms—Hitachi, Sony, et cetera—to come together on information technology and meet regularly with the Chinese and the Koreans to develop the technology. A number of agreements have been worked out in a wide variety of technology areas. As is typical of the old Japanese model, there is a quasi-government agency that then promotes these new software and technologies throughout Asia, Southeast Asia, South Asia, and East Asia.

Japan has also used important policy to help industries scrap and build. This looks like pretty old-fashioned industrial policy. Although there has been a big push for liberalization in Japan, it still looks pretty similar to what it was like in 1990. However, if we compare Japan with the United States, or even with Europe, we still see a lot of mercantilism. So Japan is still doing this. Japan has not had a decade of great growth and there are a lot of warnings of what not to do.

If we look at the steel industry, for instance, we find it is a lot of the same old stuff. I follow the steel industry. I look at these numbers every year and they still hold on with these old cartels. They pushed a merger between the two big firms, but that has been the only difference. METI (Ministry of Economy, Trade and Industry) continues to monitor, monitor this cartel. METI says that this is new thinking and that there is a strategic vision for steel. It is a key input for autos and the auto industry is pretty happy to have these arrangements in steel. METI says that steel is a high-value industry, and Japan has a state-of-the-art steel industry.

Steel is, nevertheless, a pretty low-growth industry. We can see the effects in Japan's trade profile. Japan doesn't import much steel. There are still many informal barriers to trade. I talked to people in Europe about the comparisons between the two places, and Japan just has a tighter lock on markets than Europe does. European countries import a lot of steel. A lot of it is, of course, between each other, but even the EU as a whole imports a lot of steel, as does the U.S. Japan doesn't.

In addition to having domestic controls, Japan has informal agreements with Europe and Asia to keep out foreign steel. This is not a great recipe for success but it is what Japan keeps doing.

My discussion of the Japanese auto industry begins with Toyota. Toyota likes stable ties with its suppliers. It is happy to have stable relations with steel firms.

The auto industry is a famous example of a case where pushy industrial policy was not important. It is certainly not the key explanation of why the industry has done so well. When we think about an important industrial policy in autos that gives the Japanese auto industry a base for being competitive and forward-looking around the world, it is that they have an energy policy. There is, by European standards, a modest gasoline tax. Nevertheless, they at least have a tax on gasoline. The United States has virtually no tax on gasoline. It is quite remarkable that we can come up with the collective gumption to actually invade Iraq and occupy it, but somehow cannot tax ourselves on gasoline. When we think about what we could do to help our industry compete and look farther ahead, we certainly could look to the Japanese model here.

If we look at Japan overall, it is not a very globalized place. Japan has changed a great deal over the last 15 years, but in international terms, not much has changed. It talks about wanting foreign direct investment, and there is a little bit more than there used to be, but still not very much. Foreign affiliates in Japan do not produce very much and they do not give much competition to domestic Japanese firms. Thinking again about the steel industry, although on a broad, general level, METI says they have been very actively encouraging foreign direct investment. However, when it comes to what they still consider to be a key strategic industry, they have been very wary of liberalization. They think: "What if Mittal Steel did what it did in Europe and bought out one of our steel firms and shook up our cartel? That would be terrible." They have therefore been very active with the steel industry to prevent that. Japan, in this regard, does not provide a good model to follow.

Japan still does not import much. Imports are up in the last ten years to 12 percent, but still behind the United States. This has occurred even though Japan is on the doorstep of the workshop of the world in China and South Korea. Even though Japan of course is a much smaller economy than the United States, we would expect higher levels of trade. Therefore, Japan is also not a good model in terms of imports.

Despite the Japanese strategies I mentioned earlier, the United States is still the benchmark for telecommunications technologies. The United States does very well because it has a more open economy. Japan is great at certain things. For example, the cell phones in Tokyo are very impressive. Everybody in Tokyo is constantly doing everything on their cell phone, which is really quite remarkable. But Japan has not been able to sell these cell phones anywhere else because they cost a fortune. The rest of the world is not willing to buy them. The idea of getting togeth-

er with China and South Korea is based on the lure of an enormous market. They think: "If we could get our technologies into China and figure out how to sell them there, we could then have a basis for our technologies being standard throughout the world." That is the hope. But Japan has not figured out how to come up with technologies that sell well in other advanced industrialized countries.

The United States complains about informal protection of the steel market or other markets. There have been attempts to work through the WTO on these sorts of things, but that does not really work and there is little benefit. In the United States, we have contracted our steel industry and our economy overall has done much better than Japan.

Japan also seeks to build on existing strengths in education innovation. Here again, Japan looks to the United States. Japan has a terrific lower grade educational system. I have had my own kids in a number of grades in Japan and it is quite wonderful in a lot of ways due in large part to the fact that teachers are paid very well in Japan. They therefore get great talent in the Japanese education system. However, at the university level, Japan is looking to the United States to see how it could build universities that would prepare students to be better innovators and to work more closely with entrepreneurs to develop technologies that could succeed in world markets.

The one key area where the United States has a great deal to learn from Japan is in energy policy. There are constant complaints about some unfortunate environmental policies in Japan such as killing whales. But on a broader level, Japan is very responsible on energy policy and it helps their industry. This is really something the United States could learn from. It is also unfortunate that we are talking about ways we could innovate when gas taxes are off the table.

GARY HUFBAUER: I am going to talk about the United Kingdom and Ireland, which has much less central direction or planning.

I want to begin with a few statistics. The GDP per capita of the United Kingdom is about the same as in France, and is about 75 percent of the GDP per capita in Germany. The old industries are in decline and the United Kingdom is not trying to rescue them in the way Japan is attempting. In the last decade, the performance has been better in the United Kingdom than in Germany or in France. In terms of GDP, the United Kingdom has seen about one percent faster growth. But probably more importantly for most people, unemployment is quite modest in the United Kingdom. It is similar to our level, whereas in France and Germany, unemployment is quite high.

The inward foreign direct investment stock in the United Kingdom is about 40 percent of GDP. The figure is only about 18 percent in Germany and 30 percent in France. So the United Kingdom has been a magnet for inward investment amongst the major countries in Europe.

I want to talk in greater depth about two things in the United Kingdom. The first is finance, which builds on a very old tradition, and the second is open capital markets. Older people in this room remember how the United States helped London get going with our interest equalization tax in the Kennedy era. That misguided tax gave a big spark to the London financial markets.

More recently in the United States—in the last ten or fifteen years—we have seen quite a bit of new regulation over financial markets. In fact, the governor of New York got elected on the back of scolding the New York financial markets. The model in London, on the other hand, is very different.

Compared to the United States, the United Kingdom has a simplified regulatory system. The Financial Services Authority (FSA) maintains broad control over banks, the stock exchange, and other financial institutions based in the United Kingdom. But the FSA exercises its authority in a flexible manner. The resulting regulatory environment has led London to a dominant financial position in Europe which is second only to New York in the world. In some sectors, it is more dominant than New York, which is remarkable when we consider that the currency in Britain is still the pound sterling and the rest of Europe has gone to the euro. It was thought that retaining the currency might be a disadvantage. It turned out to be no disadvantage at all. London finance houses deal in euros just as well as anyone else. In fact, they can deal better than in Frankfurt or Paris.

As a result, there is a whole range of areas where the London financial market is absolutely central to the world system. This has led to an enormous cluster of financial talent in London, which has a natural tendency to expand. This is far more successful than anything France or Japan has created.

What is the U.K. policy now? The new regulatory approach and the "big bang" in financial markets about fifteen years ago eliminated many of the old fixed-price systems and market barriers between financial players. Those were very important steps in the Thatcher era. Current regulation is quite good and has attracted and indeed welcomed many foreign banks.

The other friendly U.K. policy which deserves favorable note is that the taxation of individuals in Britain who are citizens abroad excludes their foreign investment income. Their earnings in the financial markets are taxed,

but a lot of these people have wealth abroad that is not taxed by Britain. Thus, the tax system is quite friendly to financiers.

What are the other policies in Britain that might possibly rank with the features in other European countries and Japan? Silicon Fen stands out, but U.K. policies did not create Silicon Fen. Silicon Fen is fed by the brilliance of Cambridge University and the proximity to London, both of which are critical features. Silicon Fen is an hour-and-a-half trip to London. Numerous firms have sprung up since I was a graduate student at Cambridge in the 1960s. But the colleges, as institutions, do very little to promote Silicon Fen. St. John's provides a small industrial park and it is of no consequence. The location of Silicon Fen does give it tremendous access to smart graduates. But the British state was no more a driver of Silicon Fen's success than the State of California is responsible for the success of Silicon Valley, which is to say that the government can claim little credit for their economic and technological success.

Ireland is truly remarkable. It is the best performing economy in the OECD. When I was a student at Cambridge University several decades ago, the British view of the Irish was not one of admiration. Times have completely changed.

What did the Irish do? They embraced the "Washington consensus" far before John Williamson thought of the term. Ireland is the model of the Washington consensus. There was a complete change in macro policy from a kind of a socialist, deficit-spending, inflationary policy to the Washington consensus. So we could call it the "Dublin consensus."

As a result of these and some other policies, Irish GDP per capita—much of it earned by foreign firms—is now about $47,000 where the U.S.' GDP per capita is about $42,000. The U.K.'s GDP per capita is about $37,000. There is migration. In my time, the flow was always from Ireland to Britain. Now, the flow of people is back to Ireland, from abroad as well as from Britain. Unemployment is amazingly low at just four percent. That is by far the lowest unemployment figure in Europe. Inward foreign direct investment is 126 percent of Irish GDP. Half of that FDI is from the United States. The most important sectors are pharmaceuticals, computers, and chemicals.

Ireland has had fast economic growth; ten percent in the second half of the 1990s, right up at the Chinese level, and six percent since 2000, which is very good for a country at Ireland's level of economic performance. It is the largest per capita exporter of merchandise goods in the OECD and the country is now getting into finance. Of course, Dublin is small as a financial center com-

pared to London, but it is exactly replicating the London model in terms of regulation and is doing very well for a small city.

Ireland also did some other things well. One which is truly important is the low corporate tax rate. It is now 12.5 percent and it is flat. Both the fact that it is low and that it is flat is amazing. A company does not need an army of accountants to compute its tax obligation. The tax system is such a magnet that a few days ago the British essentially said, "Maybe we will apply the same tax rate to northern Ireland and try to catch up with the south."

STEVEN PEARLSTEIN: On the question of business culture and political-economic culture, which can be difficult to fully describe and understand, could each of you talk about what public policies either reinforce or do not reinforce a culture that encourages entrepreneurship, innovation, hard work, and views toward wealth? In some ways, it is a question of whether the culture comes first or last. In any case, it is part of the dynamic in each of the countries, whether Japan and the view toward outsiders, which is reflected in their policies; or in Ireland, where there has been a tremendous shift from the view of wealth as something that is negative to the celebration of entrepreneurship. There have been some similarities in Europe. Could each of you talk about the degree to which you think government either is trying to change the culture or is reinforcing the negative parts of culture in terms of business?

MARK LEHRER: The government is able to do many things to change certain aspects of business culture. France, but especially Germany, has tried hard in the past decade to create new incentives for individuals and groups to start up their own companies. There was a high-tech boom in Germany in the 1990s, when it became easy to start one's own company and waste other people's money. There were many high-tech firms starting up in the late 1990s and going broke in the year 2000, just as there were in the United States.

MARK TILTON: We were talking earlier about developing talent, and an enormous concern in Japan is about future talent in the sense that children simply are not being born. This is not completely different from Western Europe, but Japan's birthrate is even lower than that of the rich countries in Western Europe. The concern is essentially that the Japanese are great at working really hard, but their corporate culture is so strong that there is no time to have kids. Women look at what a life with a Japanese husband will be like and simply say,

"I don't want to do this." There was a big bestseller with the message: do not get married; it is awful.

The Japanese government is worried about this. They have population policy bureaus, but have a very hard time changing this particular culture. There is also concern about innovation and venture capital, and the Japanese government has had a difficult time figuring out how to spark that. But there has certainly been financial liberalization, and that has helped Japan move a little bit away from the old rigid system. But it has been difficult to change Japan's culture in many ways.

GARY HUFBAUER: The British, even under the old days of socialism of Harold Wilson and James Callaghan, were never envious of wealth in the way of some other European countries. Certainly, since the Thatcher revolution, Tony Blair has continued to be very friendly to wealthy people. Entrepreneurship has been celebrated, from the Beatles and right down to J.K. Rowling. Ireland, of course, has flipped completely from socialism to capitalism.

Where the British have seemingly failed, and they recognize this failure, is in their neglect of two national assets, Oxford and Cambridge Universities. Good professors still teach and do research there because the prestige is great, but the academic pay is terrible. The British are also wrestling with their secondary and primary education systems, in the same way as the United States. Education is quite a troublesome feature in the British landscape.

STEVEN PEARLSTEIN: It seems so obvious to us and probably to most people that they should help Oxford and Cambridge. Is there some sort of political impediment?

GARY HUFBAUER: I do not know exactly what Jeffrey Sachs or Paul Krugman earn from their universities, but I would guess it is around $300,000 or $400,000. It would be somewhat scandalous for a public university in Britain to pay that kind of salary. But it would be fine if a private investment banker or popular writer makes a billion dollars. No financier in London feels self-respect unless he is earning a million dollars. There is just this enormous discrepancy between what a public university can pay and what the private sector can pay.

STEVEN PEARLSTEIN: In the Rhone-Alps, people seem to believe that they can engineer and brand clusters. Should the United States invest in regional cluster development or rely on organic evolution? Does geographic proximity matter with global innovation, assets, the Internet, and the migration of creative talent?

MARK LEHRER: There is a need for some kind of regional leadership in these clusters. Even if you look at some U.S. clusters, you will see very strong leadership. For example, Silicon Valley is really the product of Frederick Terman at Stanford University, who worked on building up that cluster over a period of decades. Whether government agencies, such as those in France, necessarily produce the best leaders is an empirical question, and we will have to examine the evidence to get an accurate answer.

As for the importance of geographic proximity in the Internet age, there are many economists who have been working on that very issue, and they found actually that geographic proximity does matter, especially in highly innovative, fast-moving industries. At the same time, because of the Internet and global communications technologies, and France recognizes this, it is very important to network clusters with the rest of the world.

STEVEN PEARLSTEIN: One of the big reasons that proximity still matters is that people like to be with other people who are like themselves. They also like to be able to move around firms easily without having to move their families. It is not a very sophisticated explanation for things, but it turns out to be the way human beings behave. Empirically, that seems to be an important factor.

Turning to Japan, how is the country doing in terms of its standard of living as compared to other countries?

MARK TILTON: Japan is currently about even with France and Germany. It has fallen a bit in relative standing over the last 15 years. However, there is a big concern in Japan about increasing inequality and increasing unemployment for people with low skills. As a result, there has been a shift to a more open market. There has been a cost in terms of equality within Japan, which is the big political concern there.

STEVEN PEARLSTEIN: Does the collaborative state in France differ in any significant way from the East Asian development states in terms of protecting and nurturing new industries?

MARK TILTON: Japan is very different from Europe in that there is much more scope for protective measures. If you compare what the Japanese government does with what the EU does on telecommunications, for example, the EU is very active in forcing national industries and markets to be open. Japan has no corresponding body to ensure that openness is included with new industry plans.

MARK LEHRER: What Mark [Tilton] just said applies exactly to the French situation. The French have lost control over their markets. What remains to be seen about these whole regional clusters is whether they are a strong proactive economic measure or really a measure of the government's impotence in altering the country's economic base.

STEVEN PEARLSTEIN: Does London's success in financial markets give other industries in the United Kingdom a comparative advantage? In other words, is finance important and is their strength in finance turning out to be an important source of strength for other industries in the United Kingdom?

GARY HUFBAUER: After the United States, or maybe at equal levels with the United States, venture capital is more easily raised in the United Kingdom than in almost any other country. Maybe it is similarly easy to raise venture capital in Australia. But venture capital would be the one very obvious thing, apart from all the employment for bond traders, derivative traders, and hedge fund managers. I am a believer—even though the statistics are not terrific on this—that equity capital is a better driver of innovation than bank finance. If you look at equity flotation relative to GDP in the United Kingdom, it is very high compared to other countries, including the United States. Britain has an equity-driven economy to a greater extent, and that is a plus.

STEVEN PEARLSTEIN: In Germany they have been trying to develop an equity culture for ten years, and it is safe to say it has been a total failure. They were on the way to doing that, and they had a small business stock market, but it totally collapsed. After the bust, Germans put their feet in the water in terms of owning stock, and a lot of them got burned.

My favorite story on that is the privatization of Deutsche Telekom. Everyone wanted to get a piece of it so everyone went out and bought stock, and it was widely held. Everyone was following it in the newspaper, and it was one of the things that led the news every night. After the telecom bust it went down, and

there was a serious debate in the German parliament about whether the government should re-compensate everybody for their losses. Obviously, the equity culture and even the understanding of it did not take a very strong hold there. This is related to my point about culture.

Does the popularity of the London Stock Exchange for IPOs suggest that the United States has a competitive problem?

GARY HUFBAUER: The New York financial market is obviously very strong. But there is a Sarbanes-Oxley problem, and Congress will address that. It seems the SEC is about to change Regulation 405 and make some improvements. But, consider what would probably not be acceptable in this country. If the New York Stock Exchange were to try to buy NASDAQ, or vice versa, that would probably be blocked. But that would not make any sense in a world where U.S. stock exchanges face competition from London and other stock exchanges. The U.S. antitrust system is probably not as favorable as London's system. Then we have this duplicate regulation—state and federal—in New York State. Other states are going to get into the game as well and that is very harmful.

STEVEN PEARLSTEIN: Everyone says that the regulatory system in the United Kingdom is just much better. We have a rules-based system and they have a principle-based system. What does that effectively mean?

GARY HUFBAUER: The British Financial Services Authority has tremendous disciplinary power and the power is written in quite broad terms. In contrast, the United States is quite specific in its rules, both at the federal and state levels. There are also several parties involved, including the Federal Reserve, the comptroller, the SEC, the state of New York, and possibly other states as well, all with a finger in the pie of regulating the New York financial market. They are all very legalistic, so if a company breaks the rule, they broke the rule, and if they did not, they did not. There is quite a bit of legal back and forth on this, as opposed to a very powerful regulator calling up the president of an investment firm and saying, "What you are doing is inappropriate. Stop it." Then they listen because nobody bargains with the FSA.

STEVEN PEARLSTEIN: The future of U.S. competition and growth seems to ultimately hinge on our ability to produce an educated workforce. What lessons do these countries hold for the U.S. education system? Is there anything that the United States might learn from them.

MARK TILTON: In the case of Japan, there has been relatively equal income and there are not as many families in as much economic trouble as there are in the United States. Parents have also not had as hard a time as American parents on the bottom end. That has been very important. It is also important that Japan has been better at preparing not just the best and the brightest, but also at preparing the kids in the middle and the bottom middle. They are keeping them in high school and everybody learns some basic math skills at a level that we do not meet in the United States. That has been important for Japanese success.

MARK LEHRER: An educated work force is certainly a necessary condition, but German experience demonstrates that it is not a sufficient one. Germany does have a very well-trained population. Many people go to the university and receive high level degrees. There is an extensive vocational training system. But it is simply not enough. There are structural problems in the science, higher education, and financial systems that show that an educated workforce is not a sufficient condition for economic growth.

GARY HUFBAUER: It is difficult to say favorable things about the British education system, but there is one point that can be made. The tuition fees borne by parents are quite modest at Oxford and Cambridge. That is also true at Trinity College Dublin, and the University of Dublin, which are very good universities. The United States is building a university system which is very good at promoting an elite class, thanks to exceptionally high tuition rates. Yale University is basically inaccessible to the average middle class family unless the student wins a scholarship. That is not true of Oxford or Cambridge, so that is a meaningful benefit of the British education system.

STEVEN PEARLSTEIN: We all hope this is not true, but is there an inevitable trade off with a system that brings everybody up to a certain standard, or that does not allow people at the bottom to stay at the bottom. Is there a trade off between that kind of system and an education system in the United States where the people who do get through to the top schools such as Yale, Harvard, or MIT, probably get a better education? We seem to have a superstar mentality toward education. Is there inevitably a trade off there, and if there is a trade off, which one is the better model to have from an economic perspective?

MARK TILTON: The United States spends more money on higher education and less of it on the lower grades than Japan or European countries, and we have had a higher growth rate. This is partly also due to immigration, which tends to reinforce this trend because the United States receives very talented, bright people, as well as very low-skilled people. That exacerbates the tendency to big numbers at the outliers of very talented and very unskilled components in our population. It is a trade off. Japan has looked at that trade off and moved more in that direction, and Europe has been pulled toward similar practices as well. At the same time, there has been a lot of political angst about the results.

GARY HUFBAUER: There may very well be a trade off. The countries which have traded off the most are in Latin America. In comparison to the amount of money that goes to the universities in Latin America versus what goes to primary schools, the United States seems quite egalitarian. But the practice does not seem to be paying off in Latin America. Furthermore, both China and Japan have excellent top universities. They are right at the top of the top, so there is no quality lacking for the small fraction of students who are to reach those top places.

STEVEN PEARLSTEIN: It might be that for a developing country you want to try to get everybody up to a certain level. Once you get there, in an industrialized country it may be that a different strategy is important. Speaking of Latin America, to what extent have countries such as Uruguay, with a long experience of relatively high per capita income and social benefits for skilled workers in the middle class avoided the possible cost of those policies in terms of the international competitiveness of local industries by establishing tax-free zones that have attracted internationally competitive investment? In other words, do Germany and France have experience with tax-free zones and have they worked?

MARK LEHRER: No. They have tried to implement certain policies to help East Germany, but it did not work. But it is a good idea, nonetheless, because there actually is a trade off between vocational training in these older industries and efforts to nurture new ones.

GARY HUFBAUER: The most successful examples of the high social safety net model coupled with a thriving economy are the Nordic countries. That

speaks to their uniqueness. In Sweden, the foremost of the success stories, the percent of GDP which is run through the government is still about 45 percent. Swedish business leaders, such as the Wallenbergs, are very loyal to that Swedish culture. Swedish businessmen could usually move elsewhere and earn much more money at the executive level, but these guys like living in Sweden. They like the culture and their country, and they are very loyal. They are not going to move down to London or Paris. The other thing Sweden does well is to run a very favorable tax system for Swedish multinational corporations. Sweden has high tax rates, but also credits and deductions, which basically zero out the tax burden for new investment. France and Germany have not entirely succeeded in duplicating that model.

STEVEN PEARLSTEIN: Ireland has a very interesting wrinkle on this. There are essentially no taxes or very low taxes on royalties from patents and other licensing of intellectual property. As a result, Microsoft has shifted a lot of their operations, including a lot of their R&D operations and a lot of their patents, over to Ireland to run them through their Irish subsidiary. But they also are creating new patents there because they know that from a financial standpoint it will be better to create them there than anywhere else . Does that work?

GARY HUFBAUER: It works for Ireland. How much the model would work for other countries remains to be seen because nobody else has tried it. One important statistic that is a tip to the supply side school is that Ireland collects a bigger percentage of GDP in corporate tax than any other European country, even though the tax rate is very low. But Ireland has all that foreign direct investment. What was said about royalty taxation is absolutely right. Ireland has signed tax treaties with many countries. But there is no doubt that there is a lot of tax abuse as well as genuine innovation. The bottom line is that Ireland is extremely friendly from a tax standpoint to all intellectual property, whether generated in Ireland or brought from other countries.

STEVEN PEARLSTEIN: How does the infrastructure in Germany, France, the United Kingdom, Ireland, and Japan compare to that of the United States? If there is an infrastructure deficit here, how might the United States address that? Broadband is one factor, but are there any others you can think of?

MARK TILTON: On broadband Internet access, Japan and South Korea have had public support for developing truly excellent broadband networks. There is also

criticism that the money was poorly spent, and that it is an equally good strategy to wait and let private firms figure out what sells and what really works well. Those arguments are fairly persuasive. Japan has had a huge political push in the 1990s to try to reflate the economy, in what is now considered excessive investment in infrastructure—too much road building, etc. So that is not a good model to emulate.

MARK LEHRER: An obvious deficit in the United States is in passenger rail, and Americans on the East Coast know that concern intimately. But it is not just the Northeast. Miami, for example is beautifully designed for a subway system. All of the industry is basically on one street, both in Miami Beach and in Miami. Mass transit and passenger rail is obviously a major problem that must and probably will be tackled. But it requires initiative by state governors.

STEVEN PEARLSTEIN: In Europe there was some standard setting in investment, for example, in telecom. Billions poured into technology. Did they pour it into the wrong technology? Is that a big danger with regard to infrastructure for new technologies? Is there a problem with the possibility of choosing the wrong technology and becoming stuck with it? Is it better to, as Mark Tilton noted, "let the marketplace pick the technology."

MARK LEHRER: Certainly in telecom, Germany did not pick the wrong technology, but charged a lot for those third generation wireless technology (3G) licenses. They charged a great deal in Britain too, and we may have to wait ten years for all the dust to settle on that technology. But it did help the government receipts.

GARY HUFBAUER: When something new is done in Singapore, the United States has difficulty adopting the practice. But when it is done in London, the United States should have an easier time. London has a very sophisticated system for taxing vehicles coming in to the central city. The English cannot build any more roads in London than we can build in downtown Washington, D.C. or New York, but they do use their transportation network more efficiently. This is not even being debated here, but London is much better at getting more out of its transportation infrastructure.

STEVEN PEARLSTEIN: What kinds of labor and healthcare policies do these countries employ? Are these policies encouraging or discouraging to economic growth?

MARK LEHRER: In France and Germany, it is pretty clear to everyone, even to the politicians, though they may deny it publicly, that labor market policies are almost catastrophically inflexible. Their health and pension systems are the swords of Damocles that are hanging over the heads of these countries.

MARK TILTON: In Japan, everyone has health insurance. It certainly makes it easier for poor families to raise children who will be successful. On labor policy, Japan's big problem is a corporate culture that is oriented toward permanent employment, making it very difficult to go in and out of the labor market. For women, that means choosing between having kids or a career. This is an area where the United States has a big advantage in terms of having a more flexible career structure. Japan has not figured out how to do that. This is true to a great degree for old Europe as well.

GARY HUFBAUER: Both the United Kingdom and Ireland have much higher union membership than the United States—but the strident unions of the 1960s and the 1970s are a thing of the past in both countries. The labor force is very flexible. The United Kingdom has a national health service which even the conservatives did not try to abolish. The way they deal with the cost of health care is straight out rationing. The system is a mixed blessing. I know a French entrepreneur who runs a hip replacement clinic. He gets good French doctors but the customers are British folk who are on a two-year wait for hip replacement.

STEVEN PEARLSTEIN: Hospitals and clinics in Buffalo, New York, and Minnesota are providing the same services for Canadians, since the Canadian system makes it illegal to provide and charge for any medical service, except in Alberta.

We are having a debate in the United States about foreign investment in sensitive industries. We seem to be more inclined to regulate this sector than most other countries, with the possible exception of France, which uses it as an excuse for protectionism. To what extent is this problematic for the United States? Do the other countries have a better and more flexible way of doing it or do they just ignore it?

GARY HUFBAUER: This is the real face of protection in the United States. In the trade area, it is still talk. In investment, it is action. The next action is going to be airlines because the new head of the Transportation Committee in

the House feels that foreign investment in U.S. airlines is a threat to national security. The U.S. civil aviation industry has dropped well behind of our global competitors. The Bush administration had some proposals which would allow more foreign investment but they will go the way of Dubai Ports[11] if they come forward. That is just the tip of the iceberg. The United States is going down the investment protection road for at least the next couple of years.

STEVEN PEARLSTEIN: You noted that U.S. airlines have done poorly in terms of competitiveness. That is certainly understandable in terms of service, but what else are you referring to?

GARY HUFBAUER: For example, the networks offered by Lufthansa, British Airways, and Air France are superior to those of the U.S. carriers. They are building truly global networks; U.S. firms are much more confined. Air France is actually doing better than some U.S. airlines. The United States endorses an airline "fragmentation model," and the financial results of that strategy are evident. The United States does not have a single airline, even including Southwest Airlines, in the top 20 in terms of profitability in the world. Also, U.S. firms are not ordering new aircraft. The damage incurred by the U.S. airline regulation model is not fully appreciated. It is dragging this industry down, globally.

11. In early 2006, Dubai Ports World, a state-owned company in the United Arab Emirates, sought to purchase a British company, Peninsular and Oriental Steam Navigation Company (P&O), which managed several U.S. ports as well as ports overseas. The sale was approved by the inter-agency Committee on Foreign Investment in the United States (CFIUS) but actively opposed by others on the basis that it could compromise foreign security. Dubai Ports completed the purchase of P&O, but subsequently sold the management contract for the U.S. ports.

Panel II

JOHN CRANFORD: Several of the participants in this conference have studied and written about competitiveness for the last twenty years and the subject is rightfully back at the forefront of public debate.

CARL DAHLMAN: Looking at the economic shares of the world in terms of purchasing power parity (PPP), China is currently the second largest economy. Using the growth rate for the last 12 years to estimate where countries may be in the near future, China will be as large as the United States by about 2011. This is before the adjustment in China's GDP as a result of revaluation in 2005, when they realized there was more of a private sector than they had thought, especially in the services sectors.

India is currently the fourth largest economy in PPP terms, and by that measure, it will become bigger than the third largest, Japan, by the end of 2007. In other words, these are two very large economies, measured in terms of PPP.

In terms of real dollars, China is now the third largest exporter of merchandise goods in the world. Estimated at the rate countries' exports have been growing for the last five years, China's merchandise exports will be bigger than the United States by the end of next year, and will catch up to Germany by about 2009.

A big caution: projections cannot be based on historical trends. These are thought experiments of where these countries are going. Situations change frequently and we are often wrong, so this is just to demonstrate the economic significance of these large economies.

China has recently made significant investments in education. As recently as 1997, China had an enrollment rate of 6.5 percent; now it is up to 21 percent.

As of 2005, it had the largest tertiary education system in the world. China has more students at the tertiary level than the United States, and forty percent of China's students are in math and science. The quality is still low, but they are investing very quickly in improvements.

On the R&D side, China has also been ramping up its investments. Again, in PPP terms, the United States is the biggest, followed by Japan. But China has been increasing its funding of R&D as well. In 1998, these investments represented about .8 percent of GDP. Last year, China spent 1.4 percent of its GDP in R&D. Some quick calculations would demonstrate that China may very well be spending as much as Japan in PPP terms by the end of 2006.

These projections are indicative of where China is headed. The key point is that China has been very effective at tapping into global knowledge through trade, copying, and reverse engineering through foreign investment. Now China is beginning to invest on its own account. The investment is still quite inefficient, but China is improving very quickly so it will be more competitive on innovation too. China's strengths are its very large market and its very rapid growth.

China's savings rate is about 42 percent of GDP. That makes a big difference, although it may not be invested very efficiently. China has been really good at tapping into global knowledge, including using the Chinese diaspora. China is integrated into the world economy and has become the world's manufacturing base. Of the large economies, it has the greatest structural integration in terms of imports and exports. China also has a large supply of excess labor; it can bring about 200 million people in the rural sector on-stream, so wages can remain low for a long time. The country is moving up the value chain very rapidly because it is able to do a great deal independently, in addition to the benefits that it derives from tapping into global knowledge. China is also very efficient on export trade logistics. Almost any of the Chinese ports can place merchandise in the United States much more cheaply than even Mexico.

China is also investing heavily in R&D. The strong investment in education and R&D are driven with a big sense of national purpose.

But China also has big challenges. The country is dealing with increasing income inequality, limited natural resources, and big environmental problems. China is also very dependent on the global market. If there is a global turn towards protectionism it is going to be in significant trouble because China depends so much on the global markets. China has a very weak financial sector. There is also a tension between the transition to a decentralized economic system and a one-party system of government.

The speed, scale, and scope of China's rise in the international system is unprecedented in history. South Korea's export expansions have been the fastest, but China came from a bigger base, so the impact it is having on the world is much bigger. China has done this by plugging into the global system very effectively. It has tremendous economies of scale and specialization. China is also adopting many new elements of competition, education, innovation; also in information and communication technology, and in tremendous improvements in connecting to the global system.

U.S. consumers are benefiting from the reduction in the cost of manufactured products and it is helping to keep inflation down. Also, the Chinese are purchasing U.S. treasury bonds and that keeps interest rates down. Companies competing with Chinese imports feel the increased competition, but if they relocate to China, that allows them to remain competitive globally. There is a lot of potential to sell to China, and the United States is benefiting more than most of the other countries because it is the most dynamic, adjustable, and innovative. It is able to move up the value chain and innovate because it has the most flexible economic system. Europe is going to have a lot more trouble.

On the negative side, there are many regions with a concentration of industry, which are going to be hurting as China continues to expand, not just in labor intensive goods but in medium manufacturing as well. U.S. manufacturing workers will face a lot of pressure from low Chinese wages and increasing productivity. Knowledge workers will also feel the challenge, and not just from China, but also India, because now we have tremendous possibilities for communicating and conducting business through the Internet. Anything that can be digitized can be done abroad. The friction with China is going to increase over the exchange rate, intellectual property, access to natural resources, energy, in particular, and of course, in geopolitical influence.

In terms of the bigger global picture, part of what is going on for the United States is that other countries such as China and India are catching up in terms of their relative R &D investments, education, and Information and Communication Technology (ICT) infrastructure. Also, multinational companies are now coming from Europe and Asia. As a result, there is a bit of confusion over which companies are owned by whom, since there is stock ownership from all over the world. Countries are grouping into regional arrangements to compete with the very large U.S. market, even though that has become less important because of trade liberalization and globalization.

The United States, which is extremely vulnerable with its very large fiscal and trade imbalance, is neglecting necessary investment in infrastructure, and in maintaining flexibility to re-deploy assets to a more competitive use, and also its economic leadership. There is also going to be growing tension over the growth and the strength of global multinationals which are operating for the profit function of the stockholders, which is perfectly appropriate. But their interests may be very different than those of the workers in particular economies, and that is something that should be more closely examined.

In the big picture, there are two major components to a lot of global restructuring: one is the unbundling of things that could be produced and factories going offshore and the other is the unbundling of tasks because of what can be done through ICT. The implications of this latter development are that the returns to labor in developed countries are decreasing because of the doubling of the global labor force. Richard Freeman at Harvard estimated that with the entrance of the new emerging countries, such as China, India, and former Soviet states, the total global labor force in globalization is twice as big as it was before. So the returns to capital are increasing. There is more labor. Job security is decreasing. Then there is this distinction between the big agents of globalization—the multinationals—and the national interest of the home countries of those multinationals.

Some of the implications for the United States include the need to increase the flexibility of the economy to constantly restructure and adjust to the shocks; reduce the fiscal and trade imbalances; increase the innovation effort; and then work on the entire education system. Education is fundamental. It gives flexibility. But higher education and knowledge workers are not protected in this new, more dynamic world environment where the new element is the potential to do many things at a distance. In terms of skilled labor, especially in the ICT sector, there are many things that can be done much more cheaply in India, the Philippines, China or the former Soviet states.

This also implies that it is very important to focus on strengthening social safety nets, which are very weak here. That includes unemployment insurance, job retraining, and health insurance. This will be a big issue. It was already brought up in terms of increasing inequality. The United States also has to improve its global image. It has made a lot of enemies and drawn a lot of fire, and that is going to be a big problem in terms of its geopolitical position. China, despite of all the competition emanating from it, needs to be considered a partner in this very unstable world because it has a great deal at stake in the global system.

BRYAN RITCHIE: The Southeast Asian countries that I am discussing today have not been traditionally perceived as a threat to the United States. But there might be something that the United States could learn from these very small and very different economies that might be interesting, so I want to discuss Southeast Asian development strategy, a little bit of its history, and then a little bit of these countries' current strategy.

For a long time, people considered Southeast Asian countries in terms of a flying geese analogy where they were following Japan, Taiwan, and Korea. But that analogy does not really work very well for a number of reasons. There were a lot of changes in the global system that made it virtually impossible for these countries to implement the same kind of industrial policy and the same kind of protection. There was not the same market access in the United States, so they were forced to adopt very different strategies. At first, they tried the import substitution route, but being very small economies, the markets did not support that approach. However, when the United States forced Japan to restructure its exchange rate in the Plaza Accords in 1985, there was a massive shift of capital out of Japan and into Southeast Asia. This was probably for contiguous reasons primarily, but also because of a fairly well-educated labor force, low-wage labor, and manufacturing.

The United States and Europe followed fairly rapidly, and there was a massive influx of FDI into these economies. They rapidly shifted their focus to open markets. These Asian countries were certainly doing this long before China was. Put together, the Asian Four (the Philippines, Singapore, Malaysia, and Thailand) are approaching 300 million in total FDI inflows over the last thirty or so years. Compare that with China, which has certainly eclipsed and passed them, but there is still a significant amount of FDI that has gone into this region.

The results have been very impressive. These countries together have averaged better than six percent GDP growth per year, including the years of the financial crisis. By the late 1990s, all of these economies had better than forty percent of their exports made up of high-tech exports. In the case of Singapore and Malaysia, those numbers are 70, 80, and approaching 90 percent. Thailand has become known as the Detroit of Asia. For example, all of Ford's production for markets outside the United States is based in Thailand. Malaysia, Singapore, and Thailand produce the large majority of the hard disk drives that are in your computers. They also do a large amount of manufacturing of computer chips.

However, in the early-1990s, technological capacity began to diverge. What has become pretty apparent is that oftentimes, and especially from an economic perspective, technological deepening and upgrading with growth are equated. In fact, those are two very different things. Singapore clearly diverges from Malaysia and Thailand in terms of this technological capacity. For example, in 1970 the three countries had a similar base in terms of R & D as a percentage of GDP; Singapore now invests a percentage that is very similar to developed countries' investment of over two percent. In 1966, Malaysia and Thailand were still struggling down in the 2-2 level; they are now up to about a little over a half of one percent. Researchers per million capita are a similar thing here. The Singaporeans are closer to the developed countries, and Malaysia and Thailand are still struggling to increase the number of scientists and engineers.

This is where the United States could learn something. The difference between these economies is the approach that Singapore took. Being forced to play in a global economy, they were very interested in opening their economy. But at the same time, they realized that they needed to take a techno-nationalist approach to creating intellectual capacity, in other words, to creating knowledge and innovation. This is a coordinative type of state relationship where they were trying to leverage technology from the foreign firms and make it their own.

This has resulted in the state creating coordinative linkages between firms, government agencies and departments, organized labor, and academia. It is the focus on improving national technological capacity that has resulted in a very interesting outcome. It is different from Ireland, for example, where Microsoft, for instance, takes its R&D facility to Ireland, but the R&D capacity, technology, and intellectual property is still owned by Microsoft. In Singapore's case, the state has actually created the mechanisms to move that technology out of Microsoft and into the local economy.

Singapore did this in a number of ways. For example, it created incentives for global firms to help create industry within Singapore. One of the industries that has done very well is precision engineering, a unique area, but one that is applicable across a number of industries.

When Singapore first began trying to attract new industries, one of the first companies the government contacted was a German company named Rollei, which was an optics manufacturer. Rollei indicated that while there was interest in going to Singapore, the country did not have the skilled human resources they required. Singapore's governor offered to cover all the costs of the training all the engineers that Rollei would need if they would train twice as many. In

return, Singapore would retain the second set of trained engineers. Rollei agreed to the arrangement and once the training was completed, the extra engineers were transferred into the Institute for Technical Education system, which began producing even more precision engineers for optical capacity. Then Singapore approached other companies with their newly trained human capital in precision engineering in optics. They ultimately attracted companies such as Seagate, IBM, Mac Store, and Hitachi, all of whom went to Singapore because they discovered that precision engineers in optics were very good for hard disk drives.

Singapore has now replicated this strategy in a number of ways, and they continue to use it over and over again. But this is fundamentally about moving the technology out of the firms and into the country. They have done this in a number of ways. For example, Singapore has created mechanisms that connect the multinational corporations to local firms for R&D upgrading. They have connected the government and firms to research and development. One great example of this was Seagate, where Singapore again covered the cost of training the engineers. Seagate then moved one of its R&D facilities there. Then Singapore also created options to move that technology out of the R&D center and into a research center, where they established a partnership with the National University of Singapore to undertake basic research in thirteen different areas. One of those areas was data storage, and they have developed a number of advanced materials handling all kinds of different areas in which they have a focus.

This is not the industrial planning that took place earlier in East Asia. This is really about picking broad areas and then letting champions emerge. There is no nurturing going on in Singapore, like there was in these other developmental state economies. Singapore is coordinating this, but it is also getting the market to participate and it is bringing them to the floor. Singapore's leadership is in making these things happen.

Thailand and Malaysia, on the other hand, have not gone down this same coordinating type of path; they have really followed the "Washington consensus" liberal open market economy. But this has positioned them and caught them in a structural squeeze in which they are neither price competitive on the label with China nor intellectually or technologically competitive with Singapore or the other countries. This puts them in a very tough situation and has resulted in some very strange policies. In some cases, they are trying to suppress labor; in other cases, they are trying to force technological development. But as we know, innovation and technological development is a very creative process and one that is very difficult to force from a top-down position.

These policies have led to a backlash to globalization in some of these countries. In Thailand, for example, the king has put forth the idea of sufficiency economics, which is very ill-defined. It is difficult to understand how to get sufficiency economics without some level of protection, so there are some real conflicts in some of these countries about how to move forward.

One of the big, interesting things for me is how some of the lessons that we learn in these small, developing countries may be applied to the United States. There are not very many lessons we can take on a national level, but on a state level there is a lot to learn. I'm from Michigan, and right now Michigan has the highest unemployment rate in the country. It has a declining automobile manufacturing sector, and a very difficult transition process for moving out of second and third stage manufacturing to more third and fourth stage upgrading to the technological and knowledge-based industries.

However, the problem here is that Singapore has a very strong state and thus has an ability to coordinate. We have, in turn, very high levels of fragmentation. This leads to very murky visions in entrenched institutions and cultures that are difficult to overturn without some sort of top-down coordination. But even seeing that top-down coordination, it is very important to understand that implementation comes from the private sector, academia, and labor. For example, labor's role in Singapore is very different than it is in the United States. Rather than collectively bargain for wage increases, very early on it was clear that any wage increase labor won would come from increases in productivity. So Singapore's government gave labor the responsibility to improve skills and labor's focus is on skills improvement because that is where the productivity upgrades and wage increases occur.

At that point, we might think about ways to create this vision and this focus and ways to change institutions. The political structure is going to have to be a key component of that as well, and maybe that leads the teacher to become the student.

JOHN CRANFORD: Carl Dahlman brought up the point of the tension between the interests of multinationals in China and other developing countries and the United States, or in other words, the tension between the interests of those companies in China and the U.S. national interest. What kinds of things do you think the United States could do to more closely align corporate interests with U.S. national interests? What do the other countries we have been talking about do to align multinational interests with their goals?

CARL DAHLMAN: The multinational corporation is the biggest agent in generating applied knowledge. Over fifty percent of all R&D conducted globally is by multinational companies. They are operating globally and trying to maximize profits. They want to apply that knowledge on the biggest possible scale. Knowledge is not consumed in its use, and they are going to wherever the best opportunities are located; they go where they can find good assets and good markets. They are looking at a globally integrated company. The article by Sam Palmisano in *Foreign Affairs* (June 2006) explains that very clearly.

The problem is that in a global economy when different assets are placed in different places, there is tension between the profit objectives of the multinationals which is perfectly reasonable—and each nation-state's point of view and objective regarding employment or maintaining high-value jobs. What is happening right now is that many types of jobs, including manufacturing and high knowledge jobs, are being outsourced from the United States to places all over the world. China is receiving a lot of that offshoring, not just with manufacturing jobs, but also with the service jobs that can be done digitally. The multinational company is going to go wherever it sees the best opportunities, and it is also putting in place a great deal of R&D outside its home country. For example, there are now 800 R&D labs owned by multinationals in China. There are 200 such multinational labs in India. This is part of the fragmentation of the different tasks. But from the point of view of the domestic economies, there is a lot of labor that is not being used. The question then is where will this excess labor be absorbed? Are there going to be more productive jobs for these displaced workers?

There is really no simple solution to this problem. I am just pointing out this tension. The multinational is the most important agent in generating wealth and distributing it, and so there is this inherent tension. However, several policies can be helpful. These include the retraining of workers, taking off the load of some of the pension and Social Security costs, and also revising immigration policies in the U.S. case to continue to make it attractive to hire immigrants in the United States and to be able to train them with necessary skills. These measures, and the broader issues of fiscal policy and the government budget need to be addressed.

T.N. SRINIVASAN: India, for the first 30 or 35 years, viewed multinational companies as exploiters and did not welcome their establishing enterprises within India. This has all changed, but selectively; in the case of the information technol-

ogy and the IT services sectors, the welcome mat is out. Indeed, many of the foreign enterprises are not only establishing themselves earlier on the low-end information technology, but now extend their activities to high-end researching, development, and engineering services. India is becoming a destination for multinational enterprises, but this trend is not pervasive throughout the sectors.

One area where it could make a difference is in the service sector. For example, India has been extremely reluctant in opening the retail trade market for foreign investment. Instead, they want to encourage domestic large enterprises to establish their own retail domestic firms to open retail chains. Then, once there is a domestic competitive capacity to face up to the multinational firms, they are sequencing the entry into the retail trade.

In the financial sector, there is some reluctance to expand the presence of foreign banks and foreign enterprises. This is very much the case to keep the financial system as much as possible in the hands of domestic ownership. In the industrial sector, India is opening up like China in manufacturing, in areas such as auto components, auto sectors, and telecommunications. A number of multinationals have come in and established facilities. Here again, Indian policy has been selective. I do not know whether India has the capability, and I doubt whether any government has the capability to look far into the future and pick winners, but they believe they can pick winners and they are being selective.

BRYAN RITCHIE: Thailand, Malaysia and Singapore are in a different position than these larger countries. They have always had the welcome mat out for multinational corporations, but they are still trying to protect their local industries in banking, telecommunications, and other industries as well. Malaysia and Thailand, especially, put a lot of stock into the idea that if these foreign multinationals came, the technology would naturally transfer into society. When that has not happened, there is a lot of skepticism about their value.

Now there is pushback against some of this. Singapore took this active approach and has been fairly successful. These other countries have not experienced the same level of success. It will be interesting to see how this plays out going forward, but that is certainly a difference. They also do not have a market. These multinational companies do not make Thai products the way they make Chinese products, Indian products, or other things, so there is not that same sort of incentive for the companies to share technology.

JOHN CRANFORD: What is the decline of rural poverty, particularly in China, from 30.7 percent in 1978 to nine and a half percent in 1990 directly related to, and is it attributable to the opening of China and economic growth?

Also, with the potential for a rise in income equality, will political and economic tensions develop? Is this decline in poverty going to change?

CARL DAHLMAN: As China began to open up to the rest of the world by joining the WTO and integrating into the global economy, two to three hundred million people moved from the countryside to the coastal provinces to work in export-oriented manufacturing. This was one of the biggest migrations in history. This is what has raised the per-capita incomes and reduced the poverty rates. This kind of transformation has not happened in India because it has not had this big integration. India has been very limited to just a few small islands based on the ICT sector, as T.N. pointed out. That is a very big difference.

Income inequality is increasing very rapidly in China. The Gini coefficient in 1990 was about .33; now it is about .47, so China has become more unequal than the United States in the space of 15 years. The projection is that if this were to continue, then China would experience serve income inequality. This is a potentially destabilizing situation because there is tremendous TV penetration in the countryside. Rural people can see what is happening. People are becoming billionaires almost overnight through special relationships with the government and with foreigners. Even though income in the poorer areas of China has been going up slowly by one to three percent, the wealth of the coastal areas grows at 15 to 20 percent. There is relative deprivation. This is one of the big concerns of the Chinese government, which is related to concerns about the political transition.

T.N. SRINIVASAN: In India, agriculture was not at all the focus of the reforms in 1991. The opening of agriculture to international trade is still relatively limited. And India's stance in the WTO negotiations also is not exactly one of greater opening of Indian agriculture. So you don't expect that much of an impact on rural areas and rural poverty with such limited opening. The data show that reduction in rural poverty has not been that extensive.

But that said, there is also concern that, just as in China, coastal regions are growing much faster. And with the growing labor migration from the rural areas in India, there are also substantial regional disparities in growth. But as

Carl pointed out, India is not really a single common market, and there are many internal barriers. The movement of labor from agriculture into fast-growing towns and states has not happened to the same extent in India. But my view of inequality is somewhat different from Carl's, in the sense that it is natural that when you open up an economy you create opportunities. But not every person, every region, nor every household, not every town is equally placed when you begin the opening to take advantage of the opening, so it is absolutely natural that the disparities widen initially. If they didn't, in my view, your reform has not succeeded.

So the question to be asked is whether there are processes that will enable those who were initially not in a position to take advantage of the opening to catch up. So that's the question that one should ask, not about increases in inequality. India being a democracy, there is electoral competition, and the people provide signals that this is not where you should be going, and where you should be going. In the Indian case, far more attention is being paid now to agriculture in rural areas. But China is not a democracy. Who knows what will happen? But in India, at least, there is a safety valve of democracy, which will correct extremes developing.

BRYAN RITCHIE: Inequality is certainly a problem in smaller countries as well, and they've been doing this FDI longer. And there doesn't seem to be any convergence back toward equality in these countries. In fact, Thailand had the highest per-capita ownership of Mercedes Benz in the world up until 1997. So there's certainly these problems. Although Thailand is also a democracy but when the government gets a little too strong, the king says, "All right, let's have a coup and we'll just remove them and then we'll go back to democracy." So there's instability. It's hard to say whether that's just a rearranging of the deck chairs or whether there's something deeper going on there. But this is certainly a problem.

JOHN CRANFORD: Does the rise in inequality help the United States' efforts to sell to these emerging economies?

CARL DAHLMAN: It does. China, for example, has very unequal income distribution. In terms of PPP, income per capita is about $5,000. The top ten percent of the population earns a per capita income of $18,000. That is a very significant market of 130 million people. The next ten percent below is about 260 million people making roughly $12,000 per person—a large market.

JOHN CRANFORD: So for U.S. exports, maybe we ought to be more aggressive?

CARL DAHLMAN: Yes, and this is why the auto industry is going gangbusters in China at seventy percent growth per year. People want access to cars and have the income. There is a growing class of people with a sufficient level of income to participate in the market. It is a very lucrative market now but it creates other problems in terms of some of the effects on the society, for example, increased pollution in the case of the rapid expansion of the auto industry.

T.N. SRINIVASAN: The same thing is true in India where there is the emergence of a so-called rising middle class, estimated to consist of 150 million to 250 million people. This creates a huge market for products that the United States and other developed countries produce. But much more in the case of India than perhaps in China, the U.S. culture is influencing the choices that individuals in upper income groups make. And whether it is good for them or good for the economy, I don't know.

JOHN CRANFORD: Does revealed comparative advantage, a method used by economists to determine competitiveness by calculating a country's exports of a specific category as a percent of trade in all products, a good benchmark to determine where the United States should specialize in trade with China? I suppose that could apply as well to the smaller countries in Southeast Asia.

CARL DAHLMAN: It is a start, but it is a very imperfect measure because, for example, in terms of the revealed comparative advantage, it depends also on the input/output matrices having to do with the different sectors. For example, there is a very high percentage of high-tech exports from many of these East Asian countries. But they are importing all the components and assembling them, so the real technology value there is very low. You have to be careful when you look at the figures.

The numbers do give you a good understanding of where there is a broad-based capability, and it gives you a sense of where one might build on that. For example, cluster policies might help to strengthen the key factors that are necessary to move them forward, including the links to R&D, education, and also very importantly, creativity. This goes back to the question on entrepreneurship and creativity.

T.N. SRINIVASAN: I am not a great fan of revealed comparative advantage, devised by my late friend Bela Balassa. It is a backward-looking notion. It is not a forward-looking notion of where your comparative advantage is likely to lie in the future. It only tells you what it is that you have done in the past, good, bad or indifferent, that has resulted in the particular trade pattern that you observed. I am not at all sure you can learn anything useful by looking at the static notion of revealed comparative advantage.

JOHN CRANFORD: Corruption is a significant problem in China and in India. Will it become worse? What is the macro effect going to be?

What about this other overhanging geopolitical problem of terrorism? Is that going to be a problem in these countries?

T.N. SRINIVASAN: In India, terrorism was a problem long before September 11. The United States woke up to terrorism too late, while India has been facing it for decades. That is a problem and an increasing concern. India's assessment is that a large part of it originates from its neighbor, Pakistan.Whether things are going to change for the better remains to be seen. The foreign secretaries of India and Pakistan have been meeting with each other to push the dialogue further.

CARL DAHLMAN: It is clear that there is corruption in both countries and a problem that sometimes gets more and more attention and visibility, and then gets out of hand. China, historically, had periods where rulers became very greedy and started to use the government's assets for their own interests, and then the people revolted. In the case of a one-party system, which China has right now, they have to be very careful because if there is a widespread perception of corruption, there will be a lot of popular discontent. This is why they have periodic cleanups, and the death penalty. They have even executed governors. This is part of the centralized governance system.

Terrorism has not been such a big problem in China because there is more control and there is very strong control of the Internet. This goes back to the issue of inequality and instability. China, in reforming and privatizing the state-owned enterprises has been firing ten to fifteen million workers per year. These are organized urban workers. Imagine how destabilizing this kind of situation could be if the workers were very unhappy, which is why they worry so much about the Internet.

They also use the Internet a lot. They understand that it reduces transaction costs for economic activities, which is great. Of course, any political association or assembly that might threaten the continuity of the one-party system is immediately clamped down. That is the system.

BRYAN RITCHIE: All of these countries are characterized by a certain degree of corruption. The problem I have with corruption is that it's very difficult to know exactly what its influence is. We would all agree that the less corruption there is, the better. But Korea, Taiwan, and Japan were very corrupt as they grew. Part of the question must consider what kind of corruption it is, where it is, how it is operating. Indonesia, the largest Muslim country in the world—and Malaysia, also a large Muslim country—have remarkably little terrorism even without strong state control.

CARL DAHLMAN: One more thing on the issue of corruption: one of the things that must be understood about China is that the whole incentive regime of this one-party system is based on performance of the local authorities— municipal, provincial and central—in terms of implementing effective growth policies. That is what drives the efficiency of the system, and that leads to some kind of accountability. Then leadership is rotated. This makes a big difference given that this standard is driven by a focus on accountability for economic performance—whereas in many other places, including in democratic countries, such a focus does not exist.

JOHN CRANFORD: There are no lawmakers in this room today, which is not a surprise. Congress and their staff do not seem to fully appreciate the specific problems in China. Maybe in India; maybe in Southeast Asia. A Vietnam trade pact went down the other day and there are concerns with the Indian nuclear pact. Some senators are still advocating punitive tariffs for currencies. How bad is the misunderstanding on Capitol Hill, and what can be done about it? That should be the focus for another conference.

T. N. SRINIVASAN: Paul Samuelson was once asked a question by Stanislav Ulam, a mathematician who had worked on the Manhattan Project: "Name one proposition in all of social sciences, which is true and nontrivial." Paul Samuelson replied, "Comparative advantage." This proposition was enunciated nearly two centuries ago, but I do not know whether the

Congress' knowledge about comparative advantage has advanced at all. That is where the problem lies.

Peter G. Peterson

I know you are focusing today on renewed competition from not just Europe and Japan, but in particular, the rising economic powers of China and India. It seems to me that around the world other countries are learning the lessons that we taught them about the tremendous importance of capital investment in human investment, infrastructure, education, science, and technology to build their comparative advantages.

This country faces a series of long-term challenges. Several of them are close to unsustainable, which unfortunately have one thing in common: we're largely ignoring all of them.

Our entitlement programs are one example of a long-term and unsustainable challenge that threatens to consume staggering percentages of our GDP, not for investment, but basically for consumption. This is spending essentially on consumption, on the past, and on old fogies like me. It is not an investment in the future.

Over the next 35 years, when 78 million baby-boomers, twice the current generation of the elderly, retire, a mid-case forecast is that spending will increase by about nine percent of the GDP. That may not sound like much to some people, but that is nearly three times what we have been spending on defense. The Concord Coalition estimates that entitlement spending plus interest will consume the entire federal budget in only 15 years.[6] In other words, these numbers

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6. The Concord Coalition is a nationwide, non-partisan, grassroots organization advocating generationally responsible fiscal policy. It was founded in 1992 by the late former Senator Paul Tsongas (D-Mass.), former Senator Warren Rudman (R-N.H.), and former U.S. Secretary of Commerce Peter G. Peterson. *See* http://www.concordcoalition.org.

demonstrate that if we fail to deal with entitlements, the other cherished federal programs that we talk glibly about are likely to be decimated.

It may help explain why we have conferences like this and we unanimously agree on the critical need to invest in research and development, and it's a competitive imperative, it seems to me. But the reason, perhaps, that we don't do much is someone might ask the rude question, "Where are you going to get the resources for that investment?"

You may not remember that in 1960, five percent of the federal budget was invested in basic research and development, which has been a very important source of major breakthroughs such as the Internet, to take one recent example. Today that number has fallen to only two percent of the federal budget. One could therefore argue that the crowding out of vitally needed investments in basic R & D in this country has already been happening. Senators Alexander and Bingaman have spelled out a number of specific steps for funding R & D and improving our entire education system.

I want to step back from those specifics to emphasize the critical importance of dealing with our overall series of deficits and debts that inevitably will erode the political and economic power of this country, which has led the world for six or seven decades. But I do want to come back and focus on the rude question, "Where are we going to get the resources to make the critically important and needed investments that the Senators speak of?" These steps are going to be very difficult and they will require public understanding and political courage. Washington, the great political town, is much more aware than I am of the partisanship and gridlock that has paralyzed this country's ability to deal with the future. I am going to leave that problem to the Beltway pundits in Washington, because I am convinced that even the most enlightened political leadership will not succeed by itself.

I would like to focus today on a new generation of business leadership that—as politically incorrect, if not terminal—as this may sound, will demand some modest level of sacrifice on the part of all of us. There is a tremendous need for farsighted and courageous business leadership, and for the willingness of all Americans to step up to these challenges. In short, I hope that business leadership has not become the newest oxymoron. I have been very troubled by the criticisms of such serious journalists as David Wessel of the *Wall Street Journal*, and Thomas Friedman of *The New York Times*. Friedman declared businessmen to be MIA, or Missing in Action, on the major long-term issues that are confronting our economy. Wessel simply asked, "Where have the business statesmen gone?" Are these

critics, and people like myself, being romantic? Have there ever been many business statesmen who took some real responsibility for the future?

I am old enough now that my memories go back to the years just after World War II. At home, we were managing the transition from a wartime society, including the demobilization of 19 million soldiers. Abroad, we were trying to rebuild a shattered world economy, devoid of rules or institutions. The 1930s had been defined by a depression and by isolationism. Yet, the list of initiatives successfully undertaken and led by a hearty band of business leaders is breathtaking: the Employment Act of 1946, the Bretton Woods Institutions, and the Marshall Plan. When the Marshall Plan was announced, only 14 percent of Americans approved; they wanted to stay home. Then these business leaders led a massive public education effort, and America changed its mind. How do I explain, if I am correct, the lack of today's business leadership?

When Henry Kissinger and I were in the White House,[7] he once walked into the press briefing room with a simple question: "Does anyone have any questions for my answers?" I thought that was pretty good. You had to be in that White House to understand that you had to have your sound bytes. It did not make any difference when anybody asked; you had to get those sound bytes. It was pretty relevant to the Nixon administration, at least.

One might begin today by asking the question: does business have sufficient clout today to make a real difference? The answer to that is yes. One need only look at so many of their impressive legislative achievements.

I look elsewhere and ask you and the business communities the following questions: has business become so hyper-competitive, so global, so demanding, so focused on corporate governance that it feels it has little time left for anything else? Have recent corporate scandals left CEOs feeling so morally crippled that they feel they lack public credibility? Do the executives worry that the "got you" media will defame us if we stick our heads up? Do they feel that Washington is so relentlessly vindictive and polarized at the present time that we fear retribution if we occupy a lonely but centrist and sensible position? Has the anonymity of the non-citizen become the best executive policy? Did the big party in the 1990s, when all of us were getting fat, rich, and happy, leave CEOs caring less about standards of behavior in the future? Do our stock markets so

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7. Peter G. Peterson was U.S. Secretary of Commerce from February 29, 1972–February 1, 1973.

discount the future that we assume we are judged largely by short-term results? Finally, are CEOs saying to themselves, "If my tenure is down to only four or five years, let somebody else worry about our collective future."

There is a shortage of business leadership, but there is most certainly no shortage of daunting and unsustainable long-term challenges that are screaming out for business leadership, indeed, for all kinds of leadership. Herb Stein,[8] our one humorist in the Nixon administration, once said if something is unsustainable it tends to stop. We have several challenges of that nature that are unsustainable.

My friends would tell you that I have relentlessly, cruelly bored them and others with my railings about entitlement programs for the elderly. I have tried and failed to make clear that the trust funds are a fiscal oxymoron; they should not be trusted and they are not funded. The money has already been spent, and even Washington cannot spend the same money twice. Therefore, while the politicians and bureaucrats anesthetize us with soothing soporifics like, "the Social Security Trust Fund will keep us solvent," for the next 30 or 40 years, official projections are that your and my children and grandchildren, (and I have nine), confront payroll taxes of 30 percent, which is double of what we now pay for Social Security and Medicare. Can we honestly call that solvency? Do not listen to those that tell you we can grow out of these entitlement problems.

The Comptroller General of the United States, David Walker, essentially the chief accounting and auditing officer of the country, has said that under plausible assumptions, to grow out of our entitlement programs would take about 20 percent annual growth for seven decades. That is clearly totally unrealistic.

Pronouncements from an investment banker on morality do not come convincingly. Still, however unconscious our denial, or however irresponsible our paralysis, slipping this huge hidden check to our own children and grandchildren for our free lunch is immoral. Dietrich Bonhoeffer, the German theologian, once said that the ultimate test of a moral society is the kind of world that it leaves to its children.

Healthcare costs are the main cost metastasis. After spending just over twice as much per capita as the rest of the developed world, we have remarkably little to show for it. We have barely begun to even ask the fundamental, but awkward questions of how to reduce these unsustainable healthcare costs. For example, how do

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8. Herbert Stein was appointed to the Council of Economic Advisors on February 4, 1969 and served as Chairman from January 1, 1972 to August 31, 1974.

we tolerate an out-of-control, open-ended Medicare system, where some localities in the United States have six times the back surgery, and others have six times the prostate surgery than in other areas? The blue states and the red states are one thing, but am I to believe that we have bad back and bad prostate states?

Another unsustainable problem is our trade deficit and its first cousin, the current account deficit, of a stunning seven percent of the GDP, which is twice the previous record in the 1980s, when the dollar fell by a third. This unsustainable and dysfunctional dependence on foreign capital implies daunting risks that no great country should take. This is one reason that virtually every economist is very concerned about the precipitous drop in what they call the net national savings rate. You may be surprised to hear that only 40 years ago, it was 11 percent of GDP. It is now less than one percent. Thus, there is widespread agreement that we must increase this country's savings, so that we are not so dysfunctionally and recklessly dependent on foreign capital.

But if we are to shrink the deficits, there are only three sources of revenue we can tap into: we can increase corporate earnings, but they are already at record levels. We are going to have to depend on doing something to reduce our budget deficits that, after all, represent negative savings or government dis-savings. We are also going to have to increase, significantly, personal savings. Americans, at the personal level, have gone from being among the biggest personal savers in the world to the lowest. In 1992, only 14 years ago, Americans saved personally about eight percent of their disposable income. This year, our savings rate has gone negative, roughly to one percent of our disposable income. The differences between China and the United States on savings are dramatic. Our net national savings rate is one percent; China's is 32 percent. Our personal savings rate is negative .7 percent; China's is 22 percent. Our national investment, which is critical to growth, is 17 percent; China's is 43 percent.

Side by side with our apparent obsession to consume and not to save is our propensity to borrow. You might recall a commercial where a man says, "I have a four bedroom house, a new car, and I belong to a golf club. How do I do it? I'm up to my neck in debt." How much are we in debt? Household debts, as a percentage of disposable income, are at nearly 14 percent. It is the highest it has been in decades. For example, when gasoline prices rise and people feel squeezed, 80 percent of gasoline transactions are on a credit card. Three years ago, that number was only 50 percent. Increasing personal savings has become a national imperative.

Energy presents still another long-term and, at present, unsustainable challenge. The president refers to our oil dependence as an addiction. Our ravenous con-

sumption and limp energy policies are major enablers. With less than five percent of the world's population, we consume 25 percent of the world's oil, and over four times the gasoline per capita than other developed countries.

Is it a statistical coincidence that foreign countries' gasoline taxes are on average ten times higher than our taxes? How little we hear about reducing our gluttonous consumption or how unthinkable it is that we run a $300 billion annual oil import bill that deepens the already deep pockets of some of the unfriendliest countries in the world, and thereby helps them finance activities very dangerous to our health. There is also the issue of global warming.

No wonder one of the wisest of Americans, Paul Volcker, says, "Altogether, the circumstances seem to be as dangerous and intractable as I can remember. And I can remember a long time."[9]

Given that this talk is about business leadership, I have intentionally focused my questions on the business community. But what questions might we be asking ourselves as citizens? With modern political democracies such as ours, fixated as we are on the next election, can we deal with silent, slow motion, long-term challenges absent a crisis? Because if dealing with these problems requires a crisis, it will be a very costly one.

Millions of those in my parents' generation had not only a shared responsibility for the future, but a required sense of shared sacrifice to fulfill that future. If we were to wage the biggest war in history and provide, for example, for a GI Bill of Rights, they would have to pay for it. No free lunch for them. Today, at a time of ballooning deficits, major domestic reconstruction efforts, and shockingly, even at a time of a protracted and costly war, what are our political leaders asking us to give up? A continuing preoccupation of many of my own Republican Party members is how the Pete Petersons of this world get their income tax cuts made permanent and their estate taxes eliminated.

We have managed to do LBJ one better. We have guns, butter, and tax cuts, too. Whoopee, I say. One might ask, in this all get-and-no-give political world, has it become too politically incorrect to suggest that there are times when some of us might be expected to give up something for the long-term greater good?

Lady Thatcher was the only Western leader[10] who tackled one of these problems that I discussed. Specifically, she addressed the Social Security problem by

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9. Paul Volcker was Chairman of the Federal Reserve Board from August 6, 1979 to August 11, 1987.
10. Lady Margaret Thatcher is the first woman to be elected Prime Minister of Great Britain. She served three terms between May 4, 1979 and November 28, 1990.

eliminating the so-called wage indexing as part of her reform. As a result, Great Britain is in much better shape on Social Security than any country in the world. I asked Lady Thatcher once, "What do you people talk about at your G7 or 8 meetings? Are you aware of the impending cost of the aging baby-boomers in your country?" She said, "Oh my, yes, Mr. Peterson." I said, "How do you explain this?" She replied, "I explain it this way: they say, that it is not going to happen on my watch, but on somebody else's watch, and why should I take the pain for somebody else's gain?" That is the crisp definition of the challenge we confront today. We seem to want it all, we want it now, and we do not want to give up anything. Have the post 9-11 and weapons of mass destruction traumas left too many of us asking, "Why not live it up now?" We do not know whether we or our children will even have a future.

I call on those of us in business, in particular, to become business patriots, and put ourselves on the line for those policies that we believe will help the long-term interest of our company, our economy, and our country. Can a successful business executive also be a business patriot? I say yes. But I also call on us as citizens, as parents, and as grandparents to share in the sacrifices to meet our shared responsibilities for our future and our children and grandchildren's future. We need a movement, so let's get moving.

QUESTION: How should the United States be addressing the energy challenge?

PETER PETERSON: I am deeply involved in the Council on Foreign Relations and all of the various presidential candidates come to the Council to speak. Two or three of them have announced "bold energy policies." These "bold energy policies" always involve increased emphasis on alternative energy sources. The Iowa governor, who recently announced his candidacy, announced a "dramatic program," and unsurprisingly, it focused on ethanol made out of corn. I have asked several of these people, "Tell me, who could possibly object to more focus on alternative energy sources of various kinds? But have you made a quantitative estimate, in terms of how much that would reduce our oil dependency over a reasonable time frame of three to five years?" The answer, almost without exception on these alternative energies, is a very few percent.

The problem, fundamentally, is there are only about three proposals that are likely, in the near-term, to have a very substantial impact. One is clearly an energy or carbon tax, and there are several forms of that and these could be accompanied by a parallel cut in the payroll tax to make it revenue neutral. Another is much tougher Corporate Average Fuel Economy (CAFE) standards on mileage. The third is

nuclear power. France now gets 80 percent of its electrical power from nuclear. Japan derives about 30 to 40 percent from nuclear power. We have not built a nuclear plant in 20 years.

The energy problem is a classic example of what I am talking about. It is not as though there are no solutions, but every one of them requires somebody to give up something. This problem will probably require several solutions.

I have been very impressed with what happened with the 9-11 Commission, where two very able people, including Lee Hamilton, not only devoted immense intellectual energy, but a lot of time, to follow up and educate the American public. Since they were credible and serious people, they helped persuade America, because they appeared on every television show to talk in a serious and thoughtful way regarding the fundamental problems.

We also have to seriously consider the entitlements problem, because there are so many myths that exist.

Assembling a group of the quality of Alan Greenspan, Paul Volcker, Robert Rubin, Sam Nunn, Warren Rudman, and people of that ilk whose integrity is beyond question, is necessary to not only study these programs, but to help take the responsibility of helping educate the American people. Also, I'd like to use one of these up or down votes that we use in base-closing legislation. It is long past time to do that, because while I admire George Bush for bringing up his Social Security reform program, my enthusiasm for its specific elements is a bit restrained. A meaningful result will take an effort of that kind by a president who is trusted and courageous and it clearly requires a bipartisan effort to have any chance of success.

Take Social Security as an example. If the American people believe that the system is solvent for 40 or 50 years, why should they worry about it in the kind of short-attention span type of world that we have? I hope it does not require a crisis, because if we have a genuine crisis, the cost would be much higher than we currently are anticipating.

QUESTION: If we had a credible, blue ribbon commission, which problems should they look at first?

PETER PETERSON: I would be thrilled if they tackled one of the ones I mentioned earlier, such as Social Security and Medicare or energy. The entitlement problem is perhaps the biggest one, just in terms of the massive resources that it consumes. I would like to underline my point. When people talk about invest-

ment, it requires savings. There is a choice between consumption and savings. If you look at these programs that are consuming an additional nine percent of the GDP, on top of everything else, think of those programs in terms of whether they are consumption or investment. They are very largely consumption.

In other words, Pete Peterson's age group is not about the future. My grandchildren are about the future, and that is why we want to emphasize education and R & D. I would attack those programs because they are the prime example of consumption largess in this country.

QUESTION: With the degree of investment that we do have, a great deal of it now goes into housing. Should we adopt policies that encourage a redirection of some of those resources into manufacturing or service investments?

PETER PETERSON: People often ask me with regard to the real estate market, "How is it that people can spend more than they earn?" It seems like a contradiction of sorts but they use their assumed housing wealth. This is problematic because while housing wealth does represent one kind of savings, you and I need savings that are investable and usable. The increases in housing net worth are not usable savings to begin with.

I have urged college leaders and academic think tanks to try to understand how we went from one of the biggest savers in the world to one of the biggest consumers and borrowers, because that is a cultural change of deep magnitude. I have several theories. After the Second World War, our plants were thoroughly intact; the rest of the world's were destroyed. We needed to build demand so that these plants could be kept busy building houses, selling appliances, and so forth. We did a variety of things because we had an unlimited mortgage interest deduction. We had Fannie Maes and so forth to bring down cost.

That may have been an appropriate short-term strategy to get the economy going, but there is nothing that suggests that this is our primary need today. About 43 percent of the new houses are purchased with interest-only loans and without any down payments. About 50 percent of the new mortgage applications are for floating rate or adjustable rate loans. The one thing that concerns me, because we have been depending on the real estate market to keep consumption going, is if anything were to happen to the dollar, for example, because of the current account deficit and if interest rates were to go up, there would be a very significant effect on this economy. At the risk of insulting the real estate industry, the time has come to reexamine our priorities, and the future of America does not depend on their

building that many more houses. Available funds would be much better spent in research, development, and innovation.

QUESTION: How would you attack the trade and current account deficits?

PETER PETERSON: There are some things that we need to do, and there are some things that others need to do. I do not mean to blame the United States alone, because the rest of the world has gotten hooked on this dysfunctional dependence. Starting at home, I think nothing is more important than getting our fiscal house in order and keeping confidence in the U.S. economy, because the dollar depends a great deal on confidence. A lack of confidence can be triggered by all kinds of things: geopolitical events, a stupid comment by a treasury secretary, or any number of imaginable things. We have to get our house in order and also increase domestic savings so that we are not so dependent on foreigners. We have to consume less, import less, and export relatively more. Now, there is a lot of focus in the world on what the United States needs to do, but there is extraordinarily little attention paid to what the rest of the world must do.

For example, China's economic strategy has been essentially export-led. They need to create 20 or 25 million jobs every year for the people leaving the agricultural and rural sectors of the economy. China sees this huge export surplus as a solution to their domestic problem, and ultimately, their domestic stability. This year, China is expected to have a nine percent current account surplus, so they are depending on an essentially unsustainable situation to help them solve their domestic problems.

What does China have to do? They have to do the opposite of what we have to do. They have to consume more, they have to invest relatively less, they have to import more, and Europe has to do much of the same. China is beginning to talk about that adjustment, but the progress is pretty slow.

The rest of the world has kind of enjoyed this symbiotic dysfunctional partnership, where Fred Bergsten has described the situation as a new definition of supply side; they supply the goods and they also supply the money. That cannot continue indefinitely. It is going to require some fundamental changes in the United States, but very importantly, it is going to require some fundamental changes in their own domestic strategy, toward stimulating their own demand instead of depending on us.

Panel III

VINOD AGGARWAL: My focus today will be on three topics. First, I will discuss the context of some of the theoretical aspects of new trade theory. Second, I will briefly consider the link between domestic and international policies. In view of the panel's division of labor, however, I will mainly focus on my third theme. In particular, I will examine the costs and benefits of different trade approaches in dealing with advanced developing countries (ADCs).

As in many other disciplines, economists are good at building models that mimic current trends. Despite the view that economic models spring up from tabula rasa mathematical assumptions, most models in economics often look suspiciously like lagged variables that simply track real world developments. This is not necessarily bad. After all, completely abstract models that bear no resemblance to reality would not really do us much good in an empirical science. Yet the problem in my mind is how these models, which may be based on a political agenda, are often portrayed as being pure unbiased science.

Lest you think I am a wild-eyed Berkeley post-modern radical, let me quote from the latest edition of the leading international economics textbook by Paul Krugman and Maury Obstfeld.[1] In discussing Ricardo and the theory of comparative advantage they note:

> Ricardo knew that repeal of the Corn laws would make capitalists better off but landowners worse off. From his point of view this was all to the good; a London businessman himself, he preferred the hard working capitalists to idle landed aristocrats. But he chose to present his argument in the form of a model that assumed away the issues of internal income dis-

1. Paul R. Krugman and Maurice Obstfeld, *International Economics: Theory and Policy* (Addison Wesley, 2005).

> tribution. Why did he do this? Almost surely the answer is political; *while Ricardo was in reality to some extent representing interests of a single group, he emphasized the gains to the nation as a whole.* This was a clever and thoroughly modern strategy, one that pioneered the use of economic theory as a political instrument.

The political nature of economic models can hardly escape the attention of developing countries. Liberal economists throughout the 1950s and 1960s argued that import substitution industrialization (ISI) efforts to alter one's comparative advantage, as advocated by economists such as Raul Prebisch, were absolute folly. While I would hardly call ISI policies a success, *all* government policies of promoting industries such as those followed by Japan and South Korea were tarred with the same critique. Yet when Japan and Korea became successful exporters, particularly in the 1980s, strategic trade policy that showed how countries could manipulate the terms of trade became very popular in the U.S. Yet as the Japanese economic boom fell apart for mostly unrelated reasons, such economic analysis fell out of favor.

The recent work by Gomory and Baumol and Samuelson are seen to be of great importance as containing contain novel insights for trade theory. Yet surely the Chinese and other successful exporters might be forgiven for thinking that revisions in our trade models are highly correlated with the U.S. trade deficit!

Let me now briefly turn to the second theme of my presentation: domestic and international options that the U.S. might have in "dealing" with the new competitive threat from advanced developing countries.

With respect to domestic policies, one cannot avoid being struck by the longstanding sterile political debate about trade. Most Republicans (and I say most to rule out the so-called nationalist camp led by those such as Pat Buchanan) have long argued for free trade—unless, of course, they are from textile states! Yet Republicans have unfortunately bought into the typical liberal economist view of free trade as being part of a general *laissez faire* approach to the economy. Because economists tend to say little about income transfers that might be necessary as a result of free trade and job losses, we have seen a very naïve understanding of American domestic politics. Despite theories about smooth economic adjustment, we have not seen steelworkers and autoworkers rushing to become nurses, despite the high salaries in this profession. Instead, together with firms in the textile industry and agriculture, they have preferred to invest in senators and congressmen who will deliver protection—rather than investing in technological innovation, education, and job retraining.

For their part, Democrats have increasingly become the party of protection, although the leadership has often been considerably more free trade oriented. Indeed President Bill Clinton's success in getting a *few* Democrats to go along with Republicans on NAFTA, the Uruguay Round and other negotiations have been viewed as great political successes.

In my view, considerable bipartisan attention needs to be devoted to properly managing our international trade policy and linking it to a domestic strategy. This would involve a host of issues such as pension and health benefits portability, aid for technological innovation, and innovation. Frankly, I hope for the day that "proactive trade adjustment assistance" becomes a sexy Washington topic. But I fear I hope in vain.

Let me now turn to international negotiations and unilateral measures as an approach to dealing with advanced developing countries.

In terms of unilateral actions, for the most part actual implementation of protectionist unilateral measures to create policy changes appears to create more problems than it solves. On the other hand, it may usefully be employed as a strategy to promote compliance with broader agreements such as the WTO, about which I will have more to say later.

Developed countries, in particular the U.S.' Generalized System of Preferences program but also others like the EU's African, Caribbean, and Pacific policies, can be powerful tools to affect advanced developing countries; the current debate in the U.S. is primarily about whether countries like India and Brazil should still receive the same benefits as Bangladesh and Ecuador. On this note, the policy priority should probably be to establish *explicit rules* for phasing out of preferences following *specific schedules and evaluations of development levels.* These could follow accepted international standards such as the World Bank is developing: measures to legitimize preference-removal.

Actions proposed like the Graham-Schumer bill earlier this year that seek to impose hefty tariffs across-the-board on Chinese goods are not viable policy options as they are likely to simply lead to a series of retaliatory measures. When policy instruments such as a sustained undervaluation of one's currency are used to capture market share, the impetus should be to bring the issue to the multilateral, rules-based system and the IMF before engaging in unilateral action.

Bilateral agreements, in particular in the form of Free Trade Agreements (FTA's), are a superficially appealing means of extracting concessions from countries. Indeed, some have advocated these as a key part of what has been termed "competitive liberalization." But for the most part, this strategy has been a disaster. By turning trade accords into highly specific and tailored agreements suiting various industries, the broad coalition for trade has been undermined.

More practically, this approach has been used more successfully by Asian countries than the U.S.—despite their initial reluctance to use them. And with the renewal of Trade Promotion Authority in doubt, this competitive liberalization strategy has backfired as other countries are likely to pursue such accords while the U.S. is unable to do so.

Sectoral accords such as those in textiles, steel, electronics, and autos, among others have had mixed success. They have given breathing room to U.S. industries, but without real competitive adjustment, they are hardly an answer. For example, in autos, Japanese firms simply moved upmarket and created a new threat to luxury makers, while also moving to the U.S. and bringing their suppliers with them.

Minilateral agreements such as NAFTA and even broader accords may seem to give the U.S. greater control than working through the WTO. Yet they can be very damaging by creating *a 'false' sense of comparative advantage*, where resources are allocated inefficiently from a global perspective but seemingly optimal for the regional community so long as it remains closed. Moreover, they can foster targeted domestic lobbying against broader forms of liberalization, in particular for those new 'faux-competitive' sectors—thus masking the need for real adjustment.

The WTO and its dispute settlement mechanism (DSM) serves as a rules-based and legitimate means of negotiating with advanced developing countries.

The pros of this approach are that they carry legitimacy in the world system, and so are politically viable; retaliatory measures follow clear rules and do not risk the possibility of trade wars that can be costly.

The cons of this approach are that its effectiveness can be limited. Often the reforms demanded by the developed world to prevent 'unfair' practices are much more easily achieved in ***negotiating for accession***, as in the cases of Vietnam and Russia, rather than in further disputes that should theoretically be handled by the DSM, but often become long drawn out affairs.

The DSM should be utilized more often for combating industrial policies like offsetting and forced technology transfer. Because *innovation* is the key to reaping future gains from trade, the WTO forum should be used to make sure national innovation does not depend on forced technology transfer. Although firms may be willing to comply with national demands as a strategy for market access, these actions undermine U.S. competitiveness over the long run.

To sum up: It is time for the United States to develop a coherent trade and domestic policy to enhance both its position in the global economy and to promote global growth. The notion that the market takes care of all problems and that government policies have no positive competitive effects is clearly false. To

paraphrase John Maynard Keynes, it is time for "practical men, who believe themselves to be quite exempt from any intellectual influences to stop being the slaves of some defunct economic model."

SUSAN BUTTS: I am going to take a practical approach to some of the issues that we are considering today, framed in part by the perspective of the Dow Chemical Company, a multinational corporation with about $45 billion in annual sales (for which I work). We are either the largest or the second largest chemical company in the world because we compete directly with BASF; so sometimes, depending on the exchange rate between the euro and the dollar, we may switch positions.

We face the decisions every day about how we are going to be successful in selling our products around the world. In particular, I want to address how we make decisions about where to locate our assets. We make decisions about two types of assets, both the physical assets, such as our manufacturing plants, and the human assets, such as the people in our research and development laboratories. In thinking about the intersection of the factors that drive these business decisions and policy, it occurred to me that that intersection is in fact rather messy, because policy can sometimes have a direct and controlling impact on these factors. More often, however, the impact is going to be indirect, and sometimes it is even irrelevant.

Therefore, the trick for looking at these issues is figuring out for which areas are the policy impacts most critical. In fact, in looking at the title of today's program, National Strategies to Build Comparative Advantage, it occurred to me that what is really important to companies is not comparative advantage, but competitive advantage. In other words, a comparative advantage that does not offer a competitive advantage is really an irrelevant one. In the simplest terms, the imperative for companies is to maximize their sustainable profitability over time. This objective drives the long-term strategic decisions about where companies locate their assets.

I also want to talk about some of the factors that we take into consideration when we make decisions about where to locate our physical assets and human resources. Corporate decision-making, by its very nature, is determined by many things, and therefore, a particular decision on where to locate assets in order to gain a competitive advantage is driven by many factors. But we are always trying to maximize the competitive advantages, and minimize or eliminate the competitive disadvantages.

Some of our principal concerns include the cost, availability, and quality of our raw materials, labor force, and the infrastructure that we have to work with-

in. We also consider government incentives, such as tax credits, or penalties, such as taxes. We also look at things which are much less quantitative and instead, more qualitative; but they are nonetheless important, and include things like the innovation climate.

The innovation climate is a complex factor, because it might encompass several issues, including the quality of the education system that is producing the work force; a company's ability to access the resources available at universities; and protection for intellectual property. Another concern is the regulatory and legal climate in which a company has to operate. Last, but certainly not least, companies consider their access to markets, and that includes both net market growth, which may occur in some geographies, as well as potential increases in market share. In trying to make our decisions about where to locate assets, we are going to take all of these things into account.

This is not a very quantitative exercise, and sometimes the net balance of advantage versus disadvantage is not clear. We often have to make estimates, projections and sometimes even guesses. On some occasions, however, we find that a few of the aforementioned factors become really dominant, and the decisions do become clear.

I would like to go through a couple of examples to help illustrate that. I also want to mention a particular publication, "Here or There, a Survey of Factors in Multinational R&D Location," that was actually a report to the Government University Industry Research Roundtable (GUIRR) of the National Academies. This report was based on a very interesting study by two economists from Georgia Tech and Emory University, respectively, Marie and Jerry Thursby. The study was actually provoked because of discussion within GUIRR about the appearance of more and more large U.S.-based companies building R&D facilities in the emerging geographies like China and India. Participants in the discussion wondered if the trend in private sector R&D resembled manufacturing in the sense that big companies are going to India and China because of the lower labor costs, or were there some other factors that were driving these shifts in R&D?

Attempting to answer these questions, Marie and Jerrie Thursby surveyed 240 companies in the United States and in Europe about the factors that influenced their decision to build an R&D facility that they recently completed, or one that they are planning to build. Importantly, they did not try to ask the broad, philosophical question about how you decide whether to build in the United States or China; instead, they asked about a specific facility, because they wanted to avoid philosophically expected answers.

Among the study's most interesting findings was the realization that when companies based in developed economies like the United States and Europe decided to locate in emerging economies like China and India, the most important driving

factor for them was access to quickly growing markets. The opportunity to have growth in sales and profitability by simply reaching a population that they had not been able to sell to before was by far the most important factor.

Other benefits that the study elucidated included the quality of the employees that companies felt they could hire in most geographies, in part because of the increasing quality of the universities in places like China and India; and access to university resources, both in terms of equipment, and the ability to collaborate with faculty members on doing more fundamental research. Companies also saw a benefit in cost.

But I would caution on the cost issue because most companies, including mine, feel that the differential in labor cost between the developed economies and the developing economies is something that is going to change over time, and that differential will therefore decrease. In other words, it would not be a good long-term strategic decision for us to build in China because we have a short-term large differential in labor cost. We see the difference in labor cost as a nice collateral benefit that comes from being in China, but that is not why we are there. We are there because we want to be able to sell our products to that very large and rapidly growing economy.

Generally speaking, however, even a grand strategy must allow for discrepancies or outlying situations, which then require individual decisions. For example, the Dow Chemical Company generally tries to build large, world-scale, fully integrated manufacturing facilities. We feel that it is to our competitive advantage to have everything together in a large integrated site, or in other words, if we can go from the very beginning of the supply chain through to our products. However, that strategy does not always make sense in terms of infrastructure and cost, and then we have to deviate from our overall strategy.

For example, while you are probably unaware of most of Dow's products, you have perhaps heard of Styrofoam®, the blue board used in housing insulation. Interestingly enough, because Styrofoam has such a low density, an intercontinental shipment cannot be justified relative to the sale cost of the product. Although it is not very heavy, it takes up a lot of space and it is too expensive to actually ship those products from a world-scale plant that might be built, say, in the United States. So for physical assets in such a business, we actually have been building plants around the world for a long time so that we can supply local markets from local plants.

In conclusion, I would point out that it is very important to think about how policy impacts the factors I mentioned. Some of them, especially those relating to innovation, competitiveness, and the link between research and corporate profitability, are of extreme interest to my company and me.

ROBERT ATKINSON I want to give a slightly more cautious or skeptical view of some of the competitiveness debate. Why do we care about this? We seem to care about it almost because it is motherhood and apple pie. We care about competitiveness for a fairly straightforward reason. We want, and any country wants, to be producing on the higher value-added end of production, not the lower value-added end. When our economy essentially was not widely traded internationally, that debate over value-added did not matter very much. Whether we imported or exported high value-added good and services mattered little to our overall prosperity. Now that a much larger share of the U.S. economy is traded globally, the debate matters quite a bit more.

But I also think we can overstate the importance of competitiveness. In reality, most of our standard of living and our prosperity is due to domestic productivity factors, not trade factors. The Information Technology and Innovation Foundation is releasing a report: Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution, that examines the role of information technology (IT) in productivity growth and economic growth. To summarize IT's impact quickly is to say that it is phenomenal. Virtually 100 percent of the labor productivity pick up, from the post-1996 turnaround to today is due to the use and production of information technology. That is not to say that trade is not important. It certainly is, but we have to keep it in perspective as we have these debates.

I recently published a book called *The Past and Future of America's Economy*, and one of the points I made was that the economic transition that we are going through today, driven largely by the IT revolution, is quite similar to one we went through earlier in our history. In the post-war period, the U.S. economy established a national market for the first time. People often do not remember but before World War II, the economy was largely a set of regional markets. After the war, not only did markets for most goods and services become national, but production, at least for most manufacturing sectors was able to locate anywhere in the United States.

As a result, we saw dramatic shifts in the location of production, particularly out of high-cost regions to low-cost regions, quite similar to what we are seeing today. Then production moved to Southeastern United States. Today it moves to Southeastern Asia. For those regions who were on the losing end of that production shift, there were two paths to take. One was renewal through innovation, and that is largely a New England story. Their relative per capita income rose largely because they moved into the higher valued-added sectors. Other parts of the country, including the Great Lakes region and states like Pennsylvania never fully adjusted, and their relative per-capita income fell.

Their absolute incomes have gone up as the overall GDP and per capita income have gone up. But in comparison to the rest of the country, their economies have deteriorated. In some ways, a central question we face as a country today is which of those paths we will take as a nation.

What should we do in response to rising economic competition from abroad? I am less optimistic than others about this debate because there is still a large swath of the intelligentsia in Washington who are in denial about whether there is a real problem. One group says: we do not need to do anything, there is no real problem. Another group admits there is a problem, but its proposed solutions are limited. They propose supply-side solutions, not in the sense of Reaganomics, but with the perception that this is a problem that will be solved with more research and better-educated workers. They argue that if we build these supply components that globally competitive companies can rely upon, they will stay and/or locate here, and everything will be fine. I am very skeptical that this is enough. While it is a nice notion, it is not sufficient. We need to think about not just boosting supply, but also boosting the demand by multinational companies for doing high value-added innovation-based work in the United States.

Why is there so much focus on the supply side? According to the dominant neoclassical economics view (and this is not only expressed in economic journals, but also in the work by Washington economic policy makers) firms compete, but countries do not. If you buy that notion, then it means that we do not have to do anything other than ensure that resources freed up when firms lose are readjusted and moved through the economy. If a firm happens to lose in global competition, it is too bad for the firm and we should try to help the workers find new jobs, but beyond that there is nothing that should be done.

Why is that wrong? It is wrong largely because it ignores the fact that once lost, these disparate factors of production cannot be quickly reassembled and put back into an organization that produces more high value-added product. More likely, what will happen is they will reassemble and the workers will be working at McDonald's. Using an analogy, if the Europeans were able to continue to unfairly subsidize Airbus and and distort the market into gaining a competitive advantage and put Boeing out of business, the United States would never ever again recreate a Boeing, no matter how low the dollar might fall. It would be impossible because Boeing is more than just an organization; it represents a large stock of embedded knowledge, not just in the organization but in its suppliers, universities, etc.

What do we need to do? I do not want to have my comments interpreted as saying that the competiveness bills in Congress—and the Alexander bill, Protecting America's Competative Edge report, PACE bills, and Lieberman-

Ensign bills—are not important. They certainly are. We need to do more. We are one of the few countries that has seen research spending as a share of GDP decline. We have key science, technology, engineering and mathematics skill gaps as well. The current legislation would help address these challenges

I would argue that that is certainly not enough. I would add a couple of other things. The recent Spellings Commission report on higher education, led by Margaret Spellings, Secretary of the U.S. Department of Education, highlights the fairly significant failures of our higher education system to do what it is supposed to be doing, which is teaching. We all pat ourselves on the back and say yes, K-12 is a problem, but at least we have the greatest higher education system in the world. While we have some of the finest research universities in the world, I would argue that overall higher education is not doing enough to teach college students the key skills they need to be successful in the new global economy.

What else do we need to do? We need to create incentives for companies to locate high value-added positions in the United States. Let me just suggest two possible ideas. One relates to the R&D tax credit. In 1990 the United States provided the most generous R&D tax credit in the world. Now we are 17th among OECD nations, largely because other nations have expanded tax incentives for R&D, while we have cut ours. We should create a new "knowledge tax credit," which would double the R&D tax credit, add a component to it for fixed expenses, not just incremental spending, and include a credit workforce development expenditures. Some would argue that it's better to just cut corporate tax rates as a way to boost competitiveness. I would argue that a knowledge tax credit is a better strategy because you get two bangs for the buck: reduced corporate costs so companies can become more competitive, and incentives for them to build important building blocks of competitiveness, of which two are skills and research.

Finally, I find it to be disingenuous or just intellectually inconsistent when free traders laud the the wonders of free trade and the importance of markets (both of which I agree with), and yet defend foreign trade protectionism. A classic example is Chinese currency manipulation. According to markets and trade theory, currency should be adjusted by supply and demand, and yet we seem, in this country, to be willing to accept those sorts of factors. As a forthcoming ITIF report, "The Rise of the New Mercantilists," documents, systematic protectionist policies and practices that nations in Europe, Asia, and South America seek to gain competitive advantage in exactly what it is that we are good at, which is IT. Now that we are running a trade deficit with India as well, is it acceptable for them to have 28 percent tariffs and still call this a part of free trade? Is forced technology transfer acceptable as well? But we seem as a country, content to sit there, accept that, and say that because these countries are

poor, they get to do that. But we are running an $800 billion trade deficit and somehow that is alright?

Winning the competitiveness challenge will require sustained and committed action on a number of fronts: domestic R&D investment, more effective STEM education, stronger incentives for corporate R&D, and more aggressive action to limit unfair foreign trade practices.

RALPH GOMORY: I am going to focus on two concerns. One is, I'm going to balance trade in the United States, and second, I'm going to motivate the creation of high-value jobs in the United States. How am I going to do this? Very simple. I will listen to Warren Buffett. Warren Buffett has proposed that U.S. exporters should receive certificates for the value of what they export. They export $5 million worth of goods; they get $5 million worth of certificates. They then put these out to sell on an open market. The importers of goods need the certificates. They buy it on the open market. They can only import $5 million if they buy $5 million.

This might be a little abrupt for some people who are currently importing in enormous quantities, and which are not balanced by anyone's exports from the United States, so I am willing to bend a little bit and soften the impact by issuing, in the first few years, more certificates than the export value. But we will tighten it up as we go along. In the version that was introduced in the Senate by Senators Dorgan and Feingold, they do exactly that. There are many ways.

In spite of the lighthearted way in which I am presenting this idea, this proposal is quite feasible if it is properly managed. We have had long conversations with very good trade lawyers on whether this proposal is compatible with the WTO. They think it is. It would have to be temporary, but that does not matter. If we are deadly serious that we need to balance trade, and we ought to be since it exacerbates all the problems that we are dealing with, such as a lack of competitiveness and competing with a severely undervalued currency. We should stop standing around and start doing something.

Earlier today, Pete Peterson talked in some sense about the lack of discipline, or the lack of sacrifice. This is one simple, straightforward way to impose discipline. In typical Warren Buffett fashion, this solution goes right to the heart of the matter.

The creation of more high valued jobs is a more complicated matter. Empirically, what do other countries do to motivate the creation of high-value jobs? In Singapore, foreign companies receive special tax treatment for producing disk drives there. Singapore's government will even build facilities for the foreign producers. They also supplement the wages of the workers. In

other words, Singapore makes it attractive for companies to establish a presence there.

Now what does that mean, to make it attractive, and why do they do it? This is the fundamental issue. Countries want and need high value-added jobs. That is what drives GDP. On the other hand, companies want profit. That's what they are in business to create. Singapore strikes a deal by offering companies profitability if they bring the high value jobs that they want for their country.

There are two different kinds of entities here. Countries that want high value-added jobs and companies that want profits; they strike a very sensible deal that is beneficial to both. So Singapore gives companies incentives to go there to make profits. It makes sense for Singapore to do that. Let's keep in mind, however, that these two creatures have different values. There are private sector goals, which are profitability. There are also country goals, which is the creation of high value-added jobs.

How do we apply these ideas in the United States? We have no tradition of a bureaucracy that will make special deals with individual companies to get them to stay here and make semi-conductors, other products, or generate high-value services for us. But we do have something that many other countries do not, and that's the corporate tax. On a very simplified level, we have a way to align the corporate tax rate with the average value per U.S. employee; a very productive per-worker company in the United States pays virtually no corporate tax. However, if it is below the level, it pays an extraordinarily high corporate tax. That motivates companies in every possible way to be productive for our country. The only way it will ever make money is if it is high on that list. It can make profit, but it will be taxed away. This could be made revenue neutral, because taxes will go up among the unproductive companies, and down among the other ones.

Many variations of this are possible, but we should seriously consider the many ways of using the corporate tax rate. The corporate tax rate gives us enormous leverage over companies. We should use it to motivate companies to do what we want them to do. Companies should face low tax rates when they generate high value-added jobs, and high taxes when they produce low value-added positions. This is not really a new idea, because as you have just heard Rob say, this is already being done with the R&D tax credit. The R&D tax credit is a way to lower your corporate tax, which also means tax rate, for doing what society thinks you ought to do, more R&D.

The R&D tax credit is a step in the right direction. But why should we tell them what to do? For some firms, more R&D is right, and for some people, it is not. In general, it is a good idea. But why not aim directly at the goal? High

valuated jobs? If a company can lower its tax rate by innovating at every level, not just the R&D level, but with ingenuity in how they sell, with ingenuity on the manufacturing line if they manufacture goods, with ingenuity in the way they respond to incoming calls? If they can get the work they used to do completed more quickly and more efficiently, they are adding to the GDP. We should reward them for that.

We should not limit tax incentives to scientific and technical areas. We should rather let companies invent their own way to achieve the goal we all want, which is, high value-added jobs. This will incent them to do just that.

BRUCE STOKES: Ralph, how would you deal with the economic and political transition costs associated with your recommendations? For example, if you were to in effect raise the corporate tax on low value-added companies, it would encourage or incentivize them to move abroad faster than they already are. One could envision apparel companies and other businesses that would decide that there is not much value that they could add in the United States and that they have to move. That would create a political backlash. So how would you deal with that?

RALPH GOMORY: Well, there is no way you can increase productivity if you just leave all the low producing ones alone. You have got to give them an incentive to improve. There is no avoiding the problem. The problem you point to is unavoidable. The question is, how do we tackle it? First of all, you tackle it gradually so that you give people a chance to adjust. But secondly, I am quite optimistic. I have very rarely seen anything that is being done with lots of low wage workers that you can't do differently with automation and robotics. For instance, we dig ditches with backhoes. If you looked at a gang of 20 or 30 people digging with shovels, you might not think of the backhoe. But someone had to. The pressure to find a more productive way will bring about that directional change. If you can do something with a lot of cheap labor, or if you have to step back and take a chance, invest capital, invent something, you are going to choose the first way. We will remove that option from the board.

BRUCE STOKES: What I like about the idea is that it incentivizes people to not only invest in science and technology, but also to adapt to advanced management techniques. Vinnie, I want to press you on your argument that the best trade strategy at this juncture would be to more aggressively use the dispute settlement mechanism (DSM) in the WTO. The problem with that approach is that the dispute settlement mechanism has become captive to cor-

porate interests in the United States. Cases are pursued or not pursued depending on the self-interest of individual corporations, and not necessarily in the national interest. Politicians admit that they are not about to pursue a case unless the industry involved is willing to support them politically, because of the political problems in pursuing a case. Now, it is simple enough to say politicians should be high-minded and bureaucrats should be high-minded, but we know from experience that they are not about to become more far-sighted in their policies. How do you get around that problem?

VINOD AGGARWAL: I think that is a good point, but it is hardly a new problem that trade policy benefits particular companies. If we look at all of the voluntary export restraints, steel, textiles, electronics, the semi-conductor industry association pressing for the opening of the Japanese market, it has always been particular corporate interests. What we see recently is this new development where a large-scale effort is being made in the DSM to actually take China to the DSM on intellectual property issues using the Trade-Related Aspects of Intellectual Property Rights agreement of the Uruguay Round. This may benefit certain companies more than others, but I think that is a very general approach to dealing with the problem, and much better than just simply opening up markets in one or two sectors. Going after the lack of protection of intellectual property in China is a very good issue to pursue.

BRUCE STOKES: It is an excellent example, except that we have not filed the case because the companies are getting cold feet.

VINOD AGGARWAL: There are two ways to look at that. One way is that the companies are also trying to broaden the argument before they file the case.

BRUCE STOKES: Susan, what do Congress and the president need to do to encourage Dow and similar companies to redouble their U.S. investments? As a corollary to that, what kind of immigration policies do we need to meet your company's needs here in the United States?

SUSAN BUTTS: Doubling our investments is probably not realistic. However, maintaining our investment in the United States is something that is very much in the company's best interest. About a third of our sales are in the United States, about a third are in Europe, and about a third are in the rest of the world. Having been headquartered in the United States, we already have a significant investment here.

But in terms of what the president and the Congress could do, there are a couple of things that are important to us. One would be addressing the serious problems that we see in energy and feed stocks. This is a serious problem for my company because we suffer twice when the cost of oil and gas goes up because it not only affects the cost of energy that we use in manufacturing, but oil and gas are also our feed stocks for chemical products. So probably at the top on our list would be addressing the issue of the availability, supply, and cost for energy.

Another issue that we are concerned about would be the extension of the R&D tax credit because in order for the United States to continue to be an attractive place for us to do R&D, the tax credit is an important component. Also, many of the things that were addressed in the American Competitiveness Initiative are very important to us, including more funding for research in the physical sciences, which are not only important to a chemical company, but they are really foundational for biomedical sciences and other things that are important to the country.

With regard to immigration, the most significant issue from our perspective has to do with the highly educated workforce that we employ for R&D. In the past, the United States was very successful at not only attracting the best and the brightest students from around the world, but also allowing them to stay and pursue careers here. With 9-11, it became much more difficult for the best and the brightest from other countries to enter graduate school in the United States, and many of them have now chosen to stay at home, and not only to be educated at home, but to seek their careers at home. So making it more attractive or easier for the best and the brightest foreign students to pursue their graduate education in the United States, and then remain here and work in fields like research and development after graduation would be important for Dow and other companies.

BRUCE STOKES: Rob, these are all very fine and wonderful proposals you have all made. But we have a political process in this town that seems to be broken in terms of addressing them. Susan's point about immigration is eminently arguable and I would certainly support it myself. But in the current anti-immigrant fervor in this country, even increasing the H1-B visa program has proved difficult at times and there is significant opposition to a substantial expansion of that program, let alone other categories of immigration. Rob, what do you think are the key political obstacles in Washington to trying to get some of these fairly sensible ideas into law?

ROBERT ATKINSON: My answer is going to reflect the fact that I work at a think tank. I believe that the first step in dealing with these challenges is

winning the intellectual fight. If the intellectual fight were won, this whole debate would be significantly easier. As I said earlier, I do not even think we have agreement that there is a problem. There is a whole swath of neoclassical ideologues and a lot of think tanks in Washington who argue that the trade deficit is not a problem or that the trade deficit is our fault and that if we would just save more, it would end, and why are we worrying about all this other stuff? Those people are quite influential in economic policymaking. So it is probably as unrealistic to expect them to change their opinions as it is to expect Republicans and Democrats to work well together. However, I am not as pessimistic on the political side in the following sense. I think we will raise the number of H1-B visas and that we will do something on the R&D tax credit. Congress is a slow moving animal, but eventually it gets up to speed and it starts making these policies. They are not as fast as most of us would like, but I think that in the next two or three years, we will see movement from where we are today. However, we may not see as much change as we might like.

BRUCE STOKES: There is a second question about the political atmosphere in Washington. One audience member pointed out that increasingly in this town we have a self-interested group of corporations that do business in China. Unlike the 1980s, when we had trade tensions with Japan, and I know from my own personal experience, if I wrote a piece that was critical of Japan, no one from the corporate community called me up to complain. Some might call up to support the idea. But today if you write a piece critical of China, the first reaction comes from American corporations who do business in China saying that you really don't understand the problem and we really can't do anything about this China issue. This change is reflected back in the political process in Washington, where now American corporations are arguing a different side of this debate than they did in the 1980s. Perhaps this is a natural outgrowth of our investment, from companies that are dependent on imports from China as well as trying to export to China. But it does seem to complicate the political process.

ROBERT ATKINSON: That's absolutely right, but it's not as dire as you think it is. I think that the Democrats taking over the Congress want to do something, and enlightened business leaders know that. The concern then, if you are an enlightened business leader, is to give them something to do. As a result, there is a nice overlap of issues that are in both parties' interests. One of them is unfair trade practices, for example: Microsoft getting sued in many different countries; standard-setting being established to keep U.S. technology products out of countries;

and forced offsets, to name just a few. If you want to sell in China, you have to open up an R&D lab, and I know that takes place. Another concern is rampant theft of intellectual property. The Chinese government is stealing software. On all of those cases, there's a fairly close synergy. The problem has been a lack of trade enforcement in the last few years. It seems to be ramping up a little bit now, so over the next couple of years you could see a lot more being done there that all sides in business and government could support.

RALPH GOMORY: I was really agreeing with the fact that this is a problem. It's part of the evolution of the companies and there was a reference made to Sam Palmisano's article that essentially said IBM is not a U.S. multinational but a global corporation. Such an evolution complicates the relationship between companies and countries in such a way that companies will be dealing with each country from the viewpoint of the company and not of the country. The countries have to wake up to the fact that when they're talking to organizations like IBM, which they think of as American companies, and they give us some good advice about how we should conduct policies, that they are not talking with an organization that has the same goals as the country does.

BRUCE STOKES: Ralph, one of the participants here asked if your book, *Global Trade and Conflicting National Interests*, is an attack on free trade agreements in the WTO. How do you think international trade should be conducted going forward? In other words, should it be through WTO agreements or should it be through other arrangements?

RALPH GOMORY: I'm not an expert on how to reach trade agreements. But I will comment on the book on which I am a recognized expert. The book is entirely in favor of free trade. My personal observation and book assumes we have free trade and we support it. But we point out that in a free trade environment, if your trading partner industrializes rapidly, that can have a real negative effect on your country.

This has nothing to do with free trade at all. One of the things that I find most discouraging when I come to Washington and talk with people is when I say, "Look, the industrialization of Asia may have a negative effect, even in a free trade environment." For some reason, people can't hear or comprehend that. They immediately start talking to me about the Doha Round. There is also confusion over the impact of a changed world in which there are many plants and call centers that were not there before. That is an impact. The conditions of trade are an impact. But people will only talk about the conditions

of trade. They won't look at the reality that is new, changing, and different. But that is what we need to look at.

BRUCE STOKES: Susan, one of the issues that you didn't mention among the factors that determine why a company like Dow might conduct some business or even research and development abroad, was the existence or lack of intellectual property protection. One of the things that has always struck me is that you will hear companies come to Washington complaining about a lack of intellectual property protection and press the United States Trade Representative to do something about that. But the financial or political incentives to not cite those R&D violations abroad overwhelms their concern about the threat to their intellectual property. Obviously, that's a calculation a corporation makes and it may well be that the gains outweigh the potential losses. But it does seem to me that the corporations are actually making the right decision. I am not suggesting that the country should second-guess the corporations. But could you talk a little bit about the internal calculus of that and how one thinks about that inside the company.

SUSAN BUTTS: The issue of intellectual property protection is an important one, and it fits in that innovation environment that I mentioned as one of the factors. As you already said, Bruce, at least in the case of a country like China, the tremendous economic advantages of having access to a rapidly growing market and growing the size of sales, is such a strong incentive that companies such as mine would definitely like to see intellectual property protection improved in China. We feel that this issue is very important, and we would support appropriate actions to make that happen.

At the same time, however, we're pragmatic and so we find workarounds. We look at how can we do R&D in China without losing important intellectual property. For instance, maybe we don't produce the whole thing in China. There may be pieces that are done in the United States where we feel we have the ability to protect the intellectual property, with other pieces done in China. It's the whole picture, or the aggregate, that gives us the competitive advantage. Therefore, we probably wouldn't do everything in China. I think my company, certainly, and I believe many other large ones, are finding these sort of temporary workarounds that allow us to deal with the poor intellectual property protections that currently exist, and hope that that the situation will be rectified in the future.

VINOD AGGARWAL: In terms of negotiations, it's quite clear that the Chinese are not protecting intellectual property, nor are other countries as well.

But it's also true that there is no neoclassical trade when it comes to agricultural trade. Many of these countries would like to see the U.S. agricultural market open up. We actually have a mercantilist policy in agriculture, whatever else you might want to call it. We have subsidies. Europeans have butter factories. Many of these issues are dealt with in negotiations.

In the Doha Round negotiations, the discussion centered on the need for protection of intellectual property in these countries. But for our part, we need to start getting rid of some agricultural subsidies. This was what I was referring to when I said that we have undermined the coalition for free trade by pursuing these bilateral trade agreements. We do not have a broad-scaled coalition that says we'll open up our markets if you do that. Traditionally, for the last 50 years, we've been very successful at building this kind of coalition. Therefore, the other issue involved in our lack of progress in WTO trade negotiations is this trade off that we are unwilling to make.

Panelist Biographies

VINOD AGGARWAL is Professor in the Department of Political Science, Affiliated Professor of Business and Public Policy in the Haas School of Business, and Director of the Berkeley Asia Pacific Economic Cooperation Study Center (BASC) at the University of California at Berkeley. From 1991–1994, he was Chairman of the Political Economy of Industrial Societies Program. He is also the founder and Editor-in-Chief of the journal *Business and Politics*.

Professor Aggarwal's current research examines comparative regionalism in Europe, North America, and Asia with a focus on implications for the international system and multinational corporations. His publications include *Liberal Protectionism*, *International Debt Threat*, *Debt Games*, *Le Renseignement Stratégique d'Entreprise*, and *Une Nouvelle Approche des Phénomènes Sociaux*. His edited volumes include among many others, *Institutional Designs for a Complex World* and *Asia-Pacific Crossroads.* His latest book is entitled *Northeast Asia's New Institutional Architecture*. He has also published over 70 articles and book chapters on the politics of trade and finance.

Professor Aggarwal consults regularly with multinational corporations on strategic planning, trade policy, and international negotiations. In the public sector, he has been a consultant to the Mexican Government, the U.S. Department of Commerce, World Trade Organization, OECD, the Group of Thirty, IFAD, and the World Bank. In 1990, he was Special Adviser on Trade Negotiations to the United Nations Conference on Trade and Development (UNCTAD) in connection with the GATT Uruguay Round negotiations and has also worked with the APEC Eminent Persons Group. In 1997, he won the Cheit Outstanding Teaching Award at the Haas School of Business for Ph.D. teaching; in 2003 he was first runner up for the Cheit Award for MBA teaching and won first place for the MBA program in 2005. He has been a Research Fellow and Guest Scholar at the Brookings Institution, a Rockefeller Fellow,

Council on Foreign Relations Fellow, a Professor at the Graduate Institute of International Studies in Geneva, a Visiting Fellow at the East-West Center, and a Fellow at the Woodrow Wilson International Center for Scholars in Washington, D.C. He is also a lifetime member of the Council on Foreign Relations. Prof. Aggarwal received his B.A. in political science and psychology from the University of Michigan and his M.A. and Ph.D. in international political economy from Stanford University.

ROBERT ATKINSON is President of the Information Technology and Innovation Foundation. He was previously the vice president of the Progressive Policy Institute (PPI) and director of PPI's Technology and New Economy Project. He is the author of the *New Economy Index* series which looks at the impact of the New Economy on the U.S., state and metropolitan economies. He is also author of *The Past and Future of America's Economy: Long Waves of Innovation that Power Cycles of Growth*. While at PPI he has written groundbreaking reports on a wide range of economic and technology issues, including offshoring; growth economics; R&D policy; telecommunications policy; and e-government and e-commerce. He also directed PPI's New Economy Task Force, co-chaired by Senate Democratic Leader Tom Daschle and Gateway CEO Ted Waitt.

Previously Dr. Atkinson served as executive director of the Rhode Island Economic Policy Council, a public private partnership including as members the Governor, legislative leaders, and corporate and labor leaders. Prior to that he was project director at the former Congressional Office of Technology Assessment. While at OTA, he directed *The Technological Reshaping of Metropolitan America*, a seminal report examining the impact of the information technology revolution on America's urban areas.

He received his Ph.D. in City and Regional Planning from the University of North Carolina at Chapel Hill in 1989.

SUSAN BUTTS is the Senior Director of External Science and Technology Programs at The Dow Chemical Company. In this capacity she is responsible for Dow's sponsored research programs at over 150 universities, institutes, and national laboratories worldwide and also for Dow's contract research activities with U.S. and European government agencies. She also holds the position of Global Staffing Leader for R&D, with responsibility for recruiting and hiring programs.

Dr. Butts is active in a number of organizations that address issues pertaining to relationships between industry, universities, and government research laboratories. She is currently a Dow representative to the Council for Chemical

Research, the American Chemical Society's Committee on Corporation Associates, and the Industrial Research Institute (IRI). She is also a member of the National Council of University Research Administrators (NCURA), the Association of University Technology Managers, the Society of Research Administrators, the American Association for the Advancement of Science, and Sigma Xi. Dr. Butts currently serves on the governing boards for the Council for Chemical Research and the Alliance for Science and Technology Research in America (ASTRA). She is also a co-founder and member of the Steering Team for the University-Industry Partnership Project, an effort sponsored by the Government-University-Industry Research Roundtable of the National Academies, NCURA and IRI with the goal of lowering the barriers to industry sponsored research at universities.

Dr. Butts holds a B.S. in Chemistry degree from the University of Michigan and a Ph.D. degree in organometallic chemistry from Northwestern University. Before joining the External Technology group Dr. Butts held several other positions at Dow including Senior Resource Leader for Atomic Spectroscopy and Inorganic Analysis within the Analytical Sciences Laboratory, Manager of PhD. Hiring and Placement, Safety and Regulatory Affairs Manager for Central Research, and Principal Investigator on various catalysis research projects in Central Research.

JOHN CRANFORD has worked for more than three decades as a reporter and editor, much of that time covering economics and government fiscal and monetary policy. He came to *Congressional Quarterly* in 1984 and served as economics editor for three years before becoming senior economics writer. During the late 1980s and early 1990s, he wrote extensively on trade, foreign investment, banking and securities issues. He covered the stock market crash of 1987 and its aftermath and the savings and loan and banking crises of the period. He is the author of *Budgeting for America*, a 1989 book on U.S. federal budget policies, published by *Congressional Quarterly*.

For six years (1996–2002), Cranford was senior economics editor at *Bloomberg News*, where he managed coverage of the U.S. economy, Federal Reserve policy and banking issues, supervised coverage of the economies and central banks of all North and South American countries, and helped organize economics coverage in Europe and Asia.

He returned to *Congressional Quarterly* in 2003 and soon after was named managing editor of the *CQ Weekly*. When the magazine was revamped in January 2005 to focus more closely on the ways public policy and commerce interact, he was named to the new position of national editor, where he oversees economic and regulatory coverage and writes a weekly column called *Political Economy*.

CARL DAHLMAN is the Henry R. Luce Professor of International Relations and Information Technology at Georgetown University's Edmund A. Walsh School of Foreign Service. Professor Dahlman comes to Georgetown after more than 25 years of distinguished service at the World Bank. His research and teaching explores how rapid advances in science, technology and information are affecting the growth prospects of nations and influencing trade, investment, innovation, education and economic relations in an increasingly globalizing world.

Previously, Professor Dahlman served as Senior Advisor to the World Bank Institute. In this role he managed the Knowledge for Development (K4D) program – an initiative providing training on the strategic use of knowledge for economic and social development to business leaders and policy makers in developing countries. Prior to developing the K4D program, he served as Staff Director of the 1998–1999 World Development Report, Knowledge for Development. In addition, he was the Bank's Resident Representative and Financial Sector Leader in Mexico from 1994 to 1997, years during which the country coped with one of the biggest financial crises in its history. He has also led divisions in the Bank's Private Sector Development, and Industry and Energy Departments. He has also conducted extensive analytical work in major developing countries including Argentina, Brazil, Chile, Mexico, Russia, Turkey, India, Pakistan, China, Korea, Malaysia, Philippines, Thailand, and Vietnam.

Professor Dahlman's publications include *China and the Knowledge Economy: Seizing the 21st Century*, *Korea and the Knowledge-Based Economy: Making the Transition*, and *India and the Knowledge Economy: Leveraging Strengths and Opportunities*. He is currently finishing a knowledge economy study on Mexico, working on a book on the challenge of the knowledge economy for education and training in China, and collaborating with research teams in Finland, Japan and Korea to produce books on each country's development strategies. He earned a B.A. magna cum laude in International Relations from Princeton University and a Ph.D. in Economics from Yale University.

RALPH GOMORY has been President of the Alfred P. Sloan Foundation since June 1989. Dr. Gomory was Higgins Lecturer and Assistant Professor at Princeton University, 1957–59. He joined the Research Division of IBM in 1959, was named IBM Fellow in 1964, and became Director of the Mathematical Sciences Department in 1965. He was made IBM Director of Research in 1970 with line responsibility for IBM's Research Division. He held that position until 1986, becoming IBM Vice President in 1973 and Senior Vice President in 1985. In 1986 he became IBM Senior Vice President for Science and Technology. In 1989 he retired from IBM and became President of the Alfred P. Sloan Foundation.

Dr. Gomory has served in many capacities in academic, industrial and governmental organizations, and is a member of the National Academy of Science, the National Academy of Engineering, and the American Philosophical Society. He was elected to the Councils of the three societies. He was a Trustee of Hampshire College from 1977–1986 and of Princeton University from 1985–1989. He served on the President's Council of Advisors on Science and Technology (PCAST) from 1984 to 1992, and is presently a member of PCAST and of COSEPUP, the National Academies' Committee on Science, Engineering and Public Policy.

He has been awarded seven honorary degrees and many prizes including the Lanchester Prize in 1963, the John von Neumann Theory Prize in 1984, the IEEE Engineering Leadership Recognition Award in 1988, the National Medal of Science awarded by the President in 1988, the Arthur M. Bueche Award of the National Academy of Engineering in 1993, the Heinz Award for Technology, the Economy and Employment in 1998, the Madison Medal Award of Princeton University in 1999, and the Sheffield Fellowship Award of the Yale University Faculty of Engineering in 2000.

Dr. Gomory has been director of a number of companies including The Washington Post Company and the Bank of New York. He is currently a director of Lexmark International, Inc., and of two small start-up companies. He was named one of America's ten best directors by Director's Alert magazine in 2000.

Dr. Gomory's research interests include integer and linear programming, nonlinear differential equations, and computers. In recent years, while continuing his mathematical research, he has written on the nature of technology and product development, industrial competitiveness, technological change, and on economic models involving economies of scale. He is the author of a recent MIT Press book (with Professor William J. Baumol) on conflicts in international trade.

Dr. Gomory received his B.A. from Williams College in 1950, studied at Cambridge University and received his Ph.D. in mathematics from Princeton University in 1954. He served in the U.S. Navy from 1954 to 1957.

LEE HAMILTON is president and director of the Woodrow Wilson International Center for Scholars, and director of The Center on Congress at Indiana University. Hamilton represented Indiana's 9th congressional district for 34 years beginning January 1965. He served as chairman and ranking member of the House Committee on Foreign Affairs, chaired the Subcommittee on Europe and the Middle East, the Permanent Select Committee on Intelligence, the Select Committee to Investigate Covert Arms Transactions with Iran, the Joint Economic Committee, and the Joint Committee on the Organization of Congress. As a

member of the House Standards of Official Conduct Committee Hamilton was a primary draftsman of several House ethics reforms.

Hamilton has been appointed to the Congressional Commission on the Strategic Posture of the United States. He was appointed to the National War Powers Commission, a private, bipartisan panel led by former Secretaries of State James A. Baker III and Warren Christopher, to examine how the Constitution allocates the powers of beginning, conducting, and ending war. Hamilton served as co-chair of the Iraq Study Group, a forward looking, bi-partisan assessment of the situation in Iraq, created at the urging of Congress. Hamilton served as Vice-Chair of the 9/11 Commission and co-chaired the 9/11 Public Discourse Project, established to monitor implementation of the Commission's recommendations. He is currently a member of the President's Foreign Intelligence Advisory Board, the President's Homeland Security Advisory Council, the FBI Director's Advisory Board, the Defense Secretary's National Security Study Group, the US Department of Homeland Security Task Force on Preventing the Entry of Weapons of Mass Effect on American Soil, co-chair of the Aspen Homeland Security Group, and co-chair of the National Advisory Committee to the Campaign for the Civic Mission of Schools with Justice Sandra Day O'Connor.

Hamilton is a graduate of DePauw University and Indiana University School of Law. Before his election to Congress, Hamilton practiced law in Chicago, Illinois, and Columbus, Indiana. He is the author of *A Creative Tension - The Foreign Policy Roles of the President and Congress*; *How Congress Works and Why You Should Care*; and co-author of *Without Precedent: The Inside Story of the 9/11 Commission* and *The Iraq Study Group Report*.

KATHERINE HAUSER is the Executive Director of the Trans-Atlantic Business Dialogue, an organization of chief executive officers from American and European businesses working together with government leaders to strengthen transatlantic economic relations. Ms. Hauser manages TABD's policy development agenda and serves as liaison with the U.S. Government, the European Commission and Member States. She organized the meeting between TABD CEOs and President Bush, Chancellor Merkel and President Barroso at the conclusion of the 2007 US-EU Summit and secured the TABD's position as the pre-eminent business organization providing advice to the U.S. Government and E.U. Commission on transatlantic economic issues.

Prior to assuming her current position in February 2005, Ms. Hauser was Associate Vice President for International Regulatory Affairs for the Pharmaceutical Research and Manufacturers of America. She was responsible

for developing and executing strategies to achieve regulatory reform and address burdensome regulations in foreign markets.

From 1998 to 2003, Ms. Hauser was Senior Vice President of the Information Technology Industry Council, which represents the major information technology companies. She represented the association's global technology and trade agenda before Congress, the Executive Branch and international organizations. She also served as the association's Secretary and Treasurer and had overall responsibility for the $5 million annual budget, membership, and daily operations of the 27 member staff.

From 1994 to 1998, Ms. Hauser was co-founder and partner in two successive financial advisory and investment firms, East Wind Partners and Millennium Capital Development. She provided strategic, communications and business planning advice for startup ventures focused on infrastructure projects in emerging markets. Ms. Hauser was the Executive Director of International Affairs for Bell Atlantic Corporation (now known as Verizon) between 1987 and 1993. She launched the corporation's international government affairs function, opened the company's office in Brussels, served as Vice Chair of the Telecommunications Task Force of the U.S. Chamber of Commerce, and played a principal role on numerous bids and acquisitions.

Ms. Hauser served in the Office of the U.S. Trade Representation between 1979 and 1987. Her final post was Deputy Assistant USTR for Multilateral Negotiations, where she was responsible for US preparations for the Uruguay Round of multilateral trade negotiations. She also was assigned to the Senate Finance Committee Trade Subcommittee to help prepare the implementing legislation, the Trade Act of 1988, and manage outreach to the business community.

Ms. Hauser holds a Bachelor of Arts degree from the University of Southern California and a Master's degree from Columbia University.

CHRISTOPHER HILL is Professor of Public Policy and Technology and the George Mason School of Public Policy. His primary interests are in the history, design, evaluation, and politics of federal policies and programs intended to stimulate technological innovation in the commercial marketplace. After early education and experience in engineering in industry and at Washington University in St. Louis, he has devoted more than three decades of his professional career to science and technology policy.

From 1997 to 2005, he served as Vice Provost for Research at George Mason. He has held senior positions at the RAND Corporation, the National Academies, the Congressional Research Service, MIT and the Office of Technology Assessment.

Professor Hill's extensive consulting includes work over the last decade with Japanese government agencies regarding reform of Japan's national R&D, higher education, and human resource development systems. He is a co-editor and contributor to *Technological Innovation for a Dynamic Economy* and is currently writing a book with the working title, *All Proper Means: Foundations of U.S. Technology Policy*.

Professor Hill received his Ph.D. and M.S. in Chemical Engineering at the University of Wisconsin, Madison and his B.S. in Chemical Engineering at the Illinois Institute of Technology.

GARY HUFBAUER is the Reginald Jones Senior Fellow at the Peter G. Peterson Institute for International Economics. He was formerly the Marcus Wallenberg Professor of International Finance Diplomacy at Georgetown University (1985–92), senior fellow at the Institute (1981–85), deputy director of the International Law Institute at Georgetown University (1979–81); deputy assistant secretary for international trade and investment policy of the U.S. Treasury (1977–79); and director of the international tax staff at the Treasury (1974–76). He has written extensively on international trade, investment, and tax issues.

Dr. Hufbauer is coauthor of *US-China Trade Disputes: Rising Tide, Rising Stakes* (2006), *The Shape of a Swiss-US Free Trade Agreement* (2006), *NAFTA Revisited: Achievements and Challenges* (2005), *Reforming the US Corporate Tax* (2005), *Awakening Monster: The Alien Tort Statute of 1789* (2003), *The Benefits of Price Covergence* (2002) and *World Capital Markets* (2001), and coeditor of *The Ex-Im Bank in the 21st Century* (2001), *Unfinished Business: Telecommunications after the Uruguay Round* (1997) and *Flying High: Liberalizing Civil Aviation in the Asia Pacific* (1996). He is author of *Fundamental Tax Reform and Border Tax Adjustments* (1996) and *US Taxation of International Income* (1992), and coauthor of *Western Hemisphere Economic Integration* (1994), *Measuring the Costs of Protection in the United States* (1994), *NAFTA: An Assessment* (rev. 1993), *North American Free Trade* (1992), *Economic Sanctions Reconsidered* (2d ed. 1990), *Trade Policy for Troubled Industries* (1986), and *Subsidies in International Trade* (1984).

KENT HUGHES is the Director of the Program on Science, Technology, America and the Global Economy (STAGE) at the Woodrow Wilson International Center for Scholars. Prior to joining the Center, Dr. Hughes served as the Associate Deputy Secretary at the U.S. Department of Commerce. At Commerce, he worked to define and implement a long-term competitiveness strategy emphasizing the close links among trade, technology and training.

Before joining the Clinton Administration, Dr. Hughes served as President of the Council on Competitiveness, an action-oriented leadership organization composed of chief executives from America's business, labor and academic communities. Under Dr. Hughes' leadership, the Council took the lead in putting technology policy on the national agenda.

Previously, Dr. Hughes held a number of senior positions with the U.S. Congress, where he focused on international economic issues and the question of long-term American economic strength. Among other positions, Dr. Hughes has served as Chief Economist to U.S. Senate Majority Leader Robert Byrd, Senior Economist of the Congressional Joint Economic Committee and Legislative and Policy Director in the office of U.S. Senator Gary Hart during the Senator's first presidential campaign. Prior to his congressional service, Dr. Hughes served as a staff attorney for the Urban Law Institute, a poverty law firm established to provide counsel to national and local groups. He was also an International Legal Center Fellow and Latin American Teaching Fellow in Brazil where he worked on a reform of Brazilian legal education.

Dr. Hughes holds a Ph.D. in economics from Washington University, a LL.B. from Harvard Law School and a B.A in Political and Economic Institutions from Yale University. Dr. Hughes has written several articles and books, including: "View from Brazil: Ending Their Dependence on Foreign Oil," *TransAtlantic* (May/June 2006), "A View from America: Demography and Deficits: Cowboys and Pioneers," *TransAtlantic* (September/October 2005), "Facing the Global Competitiveness Challenge," *Issues in Science and Technology* (Summer 2005), *Building the Next American Century: The Past and Future of Economic Competitiveness* (Woodrow Wilson Center Press, 2005) and *Trade, Taxes, and Transnationals: International Economic Decision Making in Congress* (Praeger 1979).

MARK LEHRER is an Associate Professor of Management at the Sawyer Business School at Suffolk University. His research and expertise are in international business and comparative management systems, R&D and innovation, knowledge management, and strategic management. He is a regular visiting scholar at the Kiel Institute of World Economics in Germany and was a Visiting Professor at the Vienna University of Economics and Business Administration in 2005–6.

Professor Lehrer's publications include: "Organizing Knowledge Spillovers When Basic and Applied Research are Interdependent: German Biotechnology Policy in Historical Perspective," (*Journal of Technology Transfer*), "Science-Driven vs. Market-Pioneering High Tech: Comparative German Technology

Sectors in the Late 19th and Late 20th Century," (Industrial and Corporate Change), "Pushing Scientists into the Marketplace: Promoting Science Entrepreneurship," with K. Asakawa, (*California Management Journal*), and "Managing Local Knowledge Assets Globally: The Role of Regional Innovation Relays," with K. Asakawa (*Journal of World Business*).

Professor Lehrer received a Ph.D. in Management from INSEAD (Fontainebleau, France) and another Ph.D. in German at the University of California at Berkeley. He received his B.S. in Economics from MIT.

THOMAS PALLEY was formerly the Chief Economist with the U.S. – China Economic and Security Review Commission. Prior to joining the Commission he was Director of the Open Society Institute's Globalization Reform Project, and before that he was Assistant Director of Public Policy at the AFL-CIO.

Dr. Palley has recently started a project, Economics for Democratic & Open Societies. The goal of the project is to stimulate public discussion about what kinds of economic arrangements and conditions are needed to promote democracy and open society.

Dr. Palley is the author of *Plenty of Nothing: The Downsizing of the American Dream and the Case for Structural Keynesianism* (Princeton University Press) and *Post Keynesian Economics* (Macmillan Press). He has also published articles in numerous academic journals, and written for *The Atlantic Monthly, American Prospect* and *Nation* magazines, including: "External Contradictions of the Chinese Development Model," (*Journal of Contemporary China,* February 2006); "The Questionable Legacy of Alan Greenspan," (*Challenge*, November-December 2005); "The Economic Case for International Labor Standards," (*Cambridge Journal of Economics*, January 2004); and "Asset Price Bubbles and the Case for Asset-Based Reserve Requirements" (*Challenge*, 2003).

Dr. Palley holds a B.A. degree from Oxford University, and a M.A. degree in International Relations and Ph.D. in Economics, both from Yale University.

STEVEN PEARLSTEIN writes about business and the economy for *The Washington Post*. His journalism career includes editing roles at *The Washington Post* and *Inc.* magazine. Mr. Pearlstein was founding publisher and editor of *The Boston Observer*, a monthly journal of liberal opinion. He got his start in journalism reporting for two New Hampshire newspapers—the *Concord Monitor* and the *Foster's Daily Democrat*. Mr. Pearlstein has also worked as a television news reporter and a congressional staffer.

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