

**RESEARCH AND DEVELOPMENT, TECHNOLOGICAL
ADVANCES IN KEY INDUSTRIES, AND CHANGING
TRADE FLOWS WITH CHINA**

HEARING

BEFORE THE

U.S.-CHINA ECONOMIC AND SECURITY
REVIEW COMMISSION

ONE HUNDRED TENTH CONGRESS
SECOND SESSION

JULY 16, 2008

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WASHINGTON: AUGUST 2008

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**HEARING ON RESEARCH AND DEVELOPMENT,
TECHNOLOGICAL ADVANCES IN KEY
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WITH CHINA**

WEDNESDAY, JULY 16, 2008

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Washington, D.C.

The Commission met in Room 385, Russell Senate Office Building, Washington, D.C. at 9:00 a.m., Chairman Larry M. Wortzel, and Commissioners Dennis Clarke Shea and Michael R. Wessel (Hearing Cochairs), presiding.

**OPENING STATEMENT OF COMMISSIONER MICHAEL R.
WESSEL (COCHAIR)**

HEARING COCHAIR WESSEL: Good morning. We'll get started. Congressman Michaud, thank you for being here this morning. It's unusual for us to start exactly on time.

VICE CHAIRMAN BARTHOLOMEW: That's a reflection on us.

HEARING COCHAIR WESSEL: Yes. We will delay our opening statements so that we can get right to your testimony.

The Congressman was sworn-in in January 2003 to represent the Second Congressional District of Maine. He is a co-founder of the House Trade Working Group, a bipartisan organization committed to advocating for fair trade policies.

The Representative, whose district includes a very long border with Canada, still our largest trading partner although that is changing a bit these days, is quite familiar with trade and international competition, all the more so since he worked for the Great Northern Paper Company for 30 years.

He also served in the Maine legislature and at one time presided over the Maine Senate.

Congressman, thank you for being here and please begin.

PANEL I: CONGRESSIONAL PERSPECTIVES

STATEMENT OF MICHAEL H. MICHAUD A U.S. REPRESENTATIVE FROM THE STATE OF MAINE

MR. MICHAUD: Thank you very much for having me here this morning. I'd love to hear Representative Jones' remarks, but I have a markup in the Veterans Affairs Committee, and I've got seven bills from the Health Care Subcommittee that I--

CHAIRMAN WORTZEL: Take good care of us.

MR. MICHAUD: I intend to.

So that's why I want to make sure I get back there. But I do want to thank you for having me here today. It's an honor to testify and have an exchange of views with this distinguished group of experts on U.S.-China relations. Your work has been invaluable to those of us in Congress who are concerned about economic, political and security implications of the U.S. relationship with the People's Republic of China.

Central to those concerns is the subject of this hearing: R&D in China, China's technological advances in key industries, and the changing nature of trade that has flowed between the two countries.

According to the recent survey released by the School of Business at Duke University, the offshoring of product development increased from an already large base by more than 40 percent in the one-year period of 2005 and 2006.

The study surveyed 530 companies as to their offshoring activities. The respondents to the survey reported that in the period between 2007 and 2010, they forecast that offshoring of product development would increase 65 percent for R&D and by more than 85 percent for engineering services and product design.

Much of this investment is going to China that, as your prior work has documented, is a nation that is making spectacular gains in its R&D capacity. While U.S. investors increasingly depend on their China-based operation for R&D, they also expect patent protection there for their innovations. Otherwise, such investment will become impractical and uneconomic and quickly will go to other nations that respect patent rights.

Currently, however, U.S. innovators are plagued by Chinese piracy, counterfeiting, and unauthorized, uncompensated use of their intellectual properties.

Without proper safeguards here and in China, the infringement of patents will worsen as more companies outsource more of their R&D

and design work. The issues of providing such domestic protection, notably the details of U.S. patent laws, are one of the most controversial matters that was before the 110th Congress. While a bill passed the House in September of 2007, patent legislation stalled in the Senate because of the inability of the various interests to find a compromise on key issues.

Some variant of patent legislation that was considered in the 110th Congress will probably return in the 111th Congress next year. In anticipation of that debate, the Congress would benefit greatly from the advice of this Commission on two points: protection of U.S. patents in China and premature publication of U.S. patent applications.

These issues will play a major role in determining whether the U.S. will continue to have a first-rate patent system that nations such as China can aspire to attain or whether we will lower U.S. standards in a misguided effort to harmonize our patent system to the lower levels found in the rest of the world.

Accordingly, our request that you prepare recommendations for Congress on how it can provide legislation and oversight designed to defend the rights of U.S. patent owners involved in the U.S-China trade.

These and other questions are in my full written testimony that I submitted:

What improvements in the monitoring of patent violations in China are appropriate?

Second is should the enforcement of U.S. global patent rights continue to be a responsibility of the USTR or would that process be more effective if the negotiation of trade rights and enforcement of such rights were separated?

The second issue on which I seek advice for my congressional colleagues and myself concerns prepublication of U.S. patent applications. I noted that this Commission in its 2005 Annual Report recommended that Congress mandate the U.S. Patent and Trademark Office to stop publishing patent applications 18 months from the earliest filing date.

This matter was central to the debate of the patent bill in Congress. The idea of such prepublications was first considered in the United States in the 1960s and was acted into law in the Patent Act of 1999.

As the issue was debated in Congress, it has become clear that while prepublication before a patent is granted or not granted was an idea that may have been appropriate before the Internet, its appropriateness today in a global economy plagued by piracy and counterfeiting has not been carefully examined. It probably is an idea

whose time has passed.

The big question is why should the United States government release the most intimate secrets of an inventor's application before the Patent Office decides whether or not it will grant protections for the patent?

Today, the average time for the United States Patent and Trademark Office to process a patent is 32 months. If that patent application is published 18 months after filing, it is available to pirates, counterfeiters and competitors for an average period of 14 months before the United States Patent and Trademark Office acts on it.

However, if the United States Patent and Trademark Office does not grant the patent, the inventor loses the ability to utilize the innovation as a trade secret because once published, the information is in the public domain.

An intellectual property judge in China illustrated the best way to observe the bill that was before the United States Congress when we were considering it, and I just would want to quote the judge, and I quote, "friendlier to the infringers than to the patentees in general as it will make the U.S. patent less reliable, easier to be challenged, and cheaper to be infringed."

Stronger U.S. patent laws including protecting the secrets of innovators until they have a patent or not revealing the contents of rejected patents are vital for U.S. innovation and job creation.

The 1999 Patent Act included a security carve-out that gives the Patent Office authority to keep secret those patent applications and granted patents it deems vital to national security. Yet, several examples have emerged where applications concerning technologies the U.S. bans for export are being fully published at the 18-month period and available on the Internet.

It seems contradictory to ban the export of vital national security technology and then reveal on the Internet all the inventor's insights and best mode to product the innovation.

Thus, I request the Commission to advise Congress on the appropriateness of the 18-month publication rule as it now exists and identify what changes in current law and practices, if any, are appropriate.

Specifically, it would be of great assistance in your examination if you could address the following questions including those in my written testimony:

Number one, what are the economic/ competitive implications of prepublication of U.S. inventors and to the creation and retention of U.S. jobs?

What are the national security implications in prepublication of patent applications for technologies that are denied export licenses?

Three, some other nation's publish abstracts of patent applications at the 18-month point, leaving out virtually all technical data. What are some practices in other nations and how appropriate are those practices for the United States?

The answers to these questions will greatly help Congress when we consider the U.S. patent legislation in the next Congress.

I would want to be clear the patent legislation that passed the House was and is very complex. Controversial provisions such as damages, post-grant review, first to file, et cetera, were contentious issues on the floor.

Fixing the 18-month publication alone is not the answer. We need to look at a comprehensive solution. We need to look at ways where we can work with you to find those solutions.

Again, I want to thank this Commission for your work and your contributions over the years. Congress needs your advice and your assistance. These are very complex issues, and when you look at what's happening with the U.S.-China relationship, what's evolving there, it's great, and we need your help, your assistance in that area, and look forward to working with you as well as continuing working with my good friend and good colleague, Mr. Jones, who is also a member of the Trade Working Group.

We work in a very bipartisan manner, not only on this issue, but other issues that affect globalization here in this country and around the world, and I also look forward to continuing working with Mr. Jones in these different areas.

So once again I want to thank you very much for hearing me out this morning and look forward to hopefully your recommendations for the next Congress.

[The statement follows:]

**PREPARED STATEMENT OF MICHAEL H. MICHAUD
A U.S. REPRESENTATIVE FROM THE STATE OF MAINE**

Thank you for having me here today, Mr. Chairman. It is an honor to testify and have an exchange of views with this distinguished group of experts on U.S.-China relations.

Your work has been invaluable to those of us in Congress who are concerned about the economic, political, and security implications of the U.S. relationship with the People's Republic of China. Central to those concerns is the subject of this hearing – R&D in China: China's technological advances in key industries and the changing nature of trade that flows between the two countries.

The importance of these changes is highlighted by last year's report "Next Generation Offshoring: The

Globalization of Innovation,” released by the Fuqua School of Business at Duke University. The study surveyed 530 companies as to their offshoring activities. It found that corporations – large and small – are rapidly shifting core business functions offshore, including product design, engineering, and research and development. These high-value activities are following manufacturing offshore.

The arithmetic of this change is disturbing. According to the survey, the offshoring of product development increased, from an already large base, by more than 40 percent in the one-year period 2005-2006. The respondents to the survey reported that in the period 2007-2010 they forecast that offshoring of product development would increase 65 percent for R&D and by more than 85 percent for engineering services and product design-projects.

To put this shift in some context, for instance, only three of General Motor’s eleven design centers remain in the United States today.

According to the Duke study, more than half of all U.S. companies are offshoring jobs. The big new trends are (1) high knowledge, high-pay work is following manufacturing to offshore sites and (2) small companies are increasingly offshoring their production and innovation activities.

Much of this investment is going to China that, as your prior work has documented – a nation that is making spectacular gains in its R&D capacity. Obviously, foreign investment in China is good for the Chinese economy. Such investment, along with Chinese investment in their own R&D, is enabling the Chinese to develop their own innovations, which, presumably, they will wish to protect against piracy and counterfeiting, both in China and worldwide.

While U.S. investors increasingly depend on their China-based operations for R&D, they also expect patent protections there for their innovations. Otherwise, such investment will become impractical and uneconomic and quickly will go to other nations that respect private patent rights.

Currently, however, U.S. innovators are plagued by Chinese piracy, counterfeiting, and the unauthorized, uncompensated use of their intellectual properties. Without proper safeguards, here and in China, the infringement of patents will worsen as more companies outsource more of their R&D and design work.

The issue of providing such domestic protection, notably the details of U.S. patent laws, is one of the most controversial matters before the 110th Congress. While a bill passed the House in September 2007, patent legislation stalled in the Senate because of the inability of the various interests to find a compromise on key points.

Some variant of the patent legislation considered in the 110th Congress will probably, more likely inevitably, return for consideration next year by the 111th Congress.

In anticipation of that debate, the Congress would benefit greatly from the advice of this Commission on two points: protection of U.S. patents in China and premature publication of U.S. patent applications.

These issues will play a major role in determining whether the U.S. will continue to have a first-rate patent system that nations such as China can aspire to attain or whether we will lower U.S. standards in a misguided effort to harmonize our patent system to the lower levels found in the rest of the world.

As to how to strengthen the protection of U.S. patented innovations in China, the United States has long given substantial attention to the pirating of copyrighted and trademarked goods such as music and movies; however, the issue of how to deal with violations of patented innovations has received far less notice.

Accordingly, I request that you prepare recommendations for Congress on how it can provide legislation and oversight designed to defend the rights of U.S. patent owners involved in U.S.-China trade. Specifically:

1. What improvements in the monitoring of patent violations in China are appropriate?
2. Should the enforcement of U.S. global patent rights continue to be a responsibility of the Office of the United States Trade Representative, or would the process be more effective if the negotiation of trade rights and the enforcement of such rights were separated?
3. Are changes needed in the Section 337 intellectual property provisions administered by the International Trade Commission?
4. Is the United States making effective use of the WTO dispute process to defend U.S. patent rights in China, as well as globally, and what changes in such policy and practices do you recommend as being appropriate?

The second issue on which I seek advice for my Congressional colleagues and myself concerns the pre-publication of U.S. patent applications. I note that this Commission in its 2005 Annual Report recommended that Congress mandate the USPTO to stop publishing patent applications 18-months from the earliest filing date.

This matter was central to the debate of the patent bill in this Congress. The idea of such pre-publication was first considered in the United States in the 1960s and was enacted into law in the Patent Act of 1999.

As the issue was debated in Congress, it has become clear that while pre-publication before a patent is granted or not granted was an idea that may have been appropriate before the Internet when paper and microfiche was the medium of information distribution, its appropriateness today, in a global economy plagued by piracy and counterfeiting, has not been carefully examined. It probably is an idea whose time has passed.

The big question is why should the United States Government release the most intimate secrets of an inventor's application before the Patent Office decides whether or not it will grant the protections of a patent? Today, the average time for the USPTO to process a patent is 32 months. If the patent application is published 18 months after filing, it is available to pirates, counterfeiters, and competitors for an average period of 14 months before the USPTO acts on it. Moreover, if USPTO does not grant the patent, the inventor loses the ability to utilize the innovation as a trade secret, because once published the information is in the public domain.

The 1999 Patent Act gave patent applicants an exemption from publication if an applicant when filing agreed not to seek a foreign patent. Some 40,000 U.S. inventors elect that option each year. This option, however, comes at the cost of foregoing global patent protection, a restriction that impedes U.S. inventors' ability to compete in the global economy.

Interestingly, some of the unintended, unanticipated consequences of what many Members believe are caused by the premature publication of patent applications were probably best identified by Yongshun Cheng, former senior judge and Deputy Director of the IP Division of the Beijing High People's Court. In a paper written in Mandarin for the benefit of Chinese patent authorities, Judge Cheng observed that the bill the U.S. Congress was considering was, "*friendlier to the infringers than to the patentees in general as*

it will make the (U.S.) patent less reliable, easier to be challenged and cheaper to be infringed.”

In hearings conducted by this Commission in 2006, you received testimony that the Japanese patent office had discovered that people in China were accessing by computer published Japanese patent applications an average of 18,000 hits per day. Almost assuredly, the same thing is happening at the USPTO, although the Patent Office does not keep similar records.

Stronger U.S. patent laws, including protecting the secrets of inventors until they have a patent or not revealing the contents of rejected patents, are vital for U.S. innovation and job creation.

These issues, moreover, go beyond putting U.S. inventors at a commercial disadvantage in global competition. There are also national security implications.

The 1999 Patent Act included a security carve out that gives the Patent Office authority to keep secret those patent applications and granted patents it deems vital to national security. Yet, several examples have emerged where applications concerning technologies the U.S. bans for export are being fully published at the 18-month point and are available on the Internet.

It seems contradictory to ban the export of vital national security technologies and then reveal on the Internet all an inventor’s insights and best mode to produce the innovation.

Thus, I request the Commission to advise Congress on the appropriateness of the 18-month publication rule as it now exists and identify what changes in current laws and practices, if any, are appropriate. Specifically, it would be of great assistance if your examination could address the following questions:

1. What are the economic/competitive implications of pre-publication to U.S. inventors and to the creation and retention of U.S. jobs?
2. What are the national security implications of the pre-publication of patent applications for technologies that are denied export licenses?
3. Some other nations publish abstracts of patent applications at the 18-month point, leaving out virtually all technical data. What are such practices in other nations and how appropriate are those practices for the United States?
4. What are the current inter-agency security classification practices of U.S. technologies between the Patent Office and the export licensing functions at the Departments of Commerce, State and Defense, NSA, and CIA, and are changes required?
5. Japan and Europe publish patent applications at 18-months after filing. If the U.S. does not publish an application for national security reasons, will the Europeans and Japanese honor that decision and not publish as well? If not, what changes of U.S. law may be needed?

The answers to these questions will figure greatly when Congress next considers U.S. patent laws.

Let me be clear – the patent legislation that passed the House was very complex. Controversial provisions such as damages, post grant review, first to file, etc. were contentious issues on the floor. Fixing 18 month publication alone is not the answer; we need to look at a comprehensive solution. I look forward to working with you on that solution.

Again, I thank this Commission for its work and many contributions in helping Congress understand these key issues in the rapidly evolving U.S.-China relationship.

I look forward to your comments and questions.

HEARING COCHAIR WESSEL: Thank you, Congressman, and thank you -- both of you -- for all your work on the House Trade Working Group. As one of the more active informal organizations, you've made a real impact on the process over the last several years as you've been working, and thank you for all your comments.

We will certainly, as we get into our report writing phase shortly, be considering those questions.

We're pleased to have Representative Walter Jones join us this morning. He came to the House in 1995 after serving ten years as an elected member of the North Carolina General Assembly. Currently serving his seventh term in Congress, Representative Jones is a member of the House Committees on Armed Services and on Financial Services.

As a member of the Financial Services Committee, Representative Jones has earned a reputation for fighting for small business and for helping individuals gain greater access to capital and credit in addition to all the great work you've done on trade over the last couple of years.

We look forward to your statement.

**STATEMENT OF WALTER JONES
A U.S. REPRESENTATIVE FROM THE STATE OF NORTH
CAROLINA**

MR. JONES: Mr. Chairman, thank you, and I want to thank the Commission for this opportunity, and I want to say in the beginning that Congressman Michaud and others of us thank you for your work, and we will continue, as Congressman Michaud said, to try to implement some of your recommendations.

I'll read my prepared statement. It won't take but four or five minutes, but last year, I testified before you on the problems with U.S. trade policy towards China.

I was pleased to see many of my concerns reflected in the Commission's 2007 Report to Congress. I only wish Congress and the administration would take action on more of the report's thoughtful recommendations. I remain troubled that the United States government does nothing to level the economic playing field with Communist China--does nothing to level the playing field.

China uses a variety of predatory trade practices including rebating value-added taxes on exports, manipulating the currency, handing out loans at below-market value rates, and rampant theft of intellectual property.

China also ignores its own labor laws and destroys its environment for economic gain. As a result, America has lost over one million manufacturing jobs to China since the year 2000, and our trade deficit with China over the past decade is nearly \$1.1 trillion, including \$271 billion in 2007 alone.

The Chinese government has used the proceeds of their trade surplus to buy up over \$437 billion of our public debt and to triple their military spending since 1994.

Today's hearing is timely, as many elites are arguing that losing America's manufacturing base to China is not a problem. They claim our economic future lies in moving up the value chain and focusing on engineering, research and development, and the production of advanced technology products. That argument is fundamentally flawed, and I urge the Commission to examine the reasons why, including the following:

First, there is ample evidence showing that when an industry's manufacturing capability goes to China, its suppliers, engineering and R&D capability soon follow. Many leading United States multinationals have made no secret of their plans to move as much of their operation to China as possible.

John Chambers, the CEO of Cisco Systems, was quoted in 2003, saying, and I quote: "China will become the IT center of the world. What we're trying to do is to outline an entire strategy of becoming a Chinese company."

And Cisco is not alone. In a 2006 survey of 200 multinationals, the National Academies found that, and I quote: "More companies say they plan to decrease R&D employment in the United States and Europe than plan to increase employment."

Second, any economic blueprint for this country that rejects manufacturing condemns rural America to a future of limited economic prospects, and this Commission pointed out in its 2007 report that losing manufacturing jobs to China disproportionately impacts rural areas.

The report did an excellent job of explaining China's impact on my home state of North Carolina saying, and I quote: "Laid-off workers in North Carolina also tended to be from rural areas. Just less than half the rural dislocated workers laid off in North Carolina in 2002 were able to find work within a year.

"When displaced manufacturing workers in North Carolina found

new employment, often it was in part-time work. Even if the hourly wage levels were equal--and often they were lower--such jobs obviously produce lower total wages. Also, part-time jobs seldom provide such benefits as retirement or health insurance.

"The better-paying factory jobs making textiles, clothing and furniture were replaced by lower-paying service-sector work, including jobs waiting tables, cleaning hotel rooms, and caring for hospital patients. Average compensation for employment in the manufacturing sector was 128 percent of North Carolina's average wage in 2005, while that for health care workers was 91 percent, and compensation in the leisure and hospitality sector was considerably lower.

"For example, compensation in hotels and resorts was just 50 percent of the average statewide compensation, while restaurant work paid just 34 percent of the average."

Mr. Chairman, the bottom line is that manufacturing is the magnet that attracts all facets of production. Without a strong manufacturing base, the United States will lose its preeminent position in engineering and research development, and it will lose the defense industrial base that has allowed us to be the world's arsenal of democracy.

If this government does not act to save United States manufacturing by fixing our broken trade policy with China, I fear for the future of our children and grandchildren.

I appreciate the Commission's efforts in helping the Congress and the American people understand what is at stake in this debate, and I urge you, and I thank you, to keep up the very good work that you're doing to try to inform the American people of the fact that we are seeing this country decline as a great economic nation, and I thank you again for this opportunity to testify.

Thank you.

[The statement follows:]

**PREPARED STATEMENT OF WALTER JONES
A U.S. REPRESENTATIVE FROM THE STATE OF NORTH
CAROLINA**

Chairman and Commissioners – Thank you for holding this hearing today. Last year I testified before the Commission on the problems with U.S. trade policy towards China. I was pleased to see many of my concerns reflected in the Commission's 2007 report to Congress. I only wish that Congress and the Administration would take action on more of the report's thoughtful recommendations.

I remain troubled that the U.S. government continues to do nothing to level the economic playing field with communist China. China uses a variety of predatory trade practices including rebating value-added taxes on exports, manipulating its currency, handing out loans at below-market-value rates, and

rampant theft of intellectual property. China also ignores its own labor laws and destroys its environment for economic gain. As a result, America has lost over 1 million manufacturing jobs to China since the year 2000, and our trade deficit with China over the past decade is nearly \$1.1 trillion, including \$271 billion in 2007 alone. The Chinese government has used the proceeds of their trade surplus to buy up over \$437 billion of our public debt, and to triple their military spending since 1994.

Today's hearing is timely, as many elites are arguing that surrendering America's manufacturing base to China is not a problem because our economic future lies in moving up the value chain and focusing our resources on engineering, research and development (R&D) and the production of advanced technology products. That argument is fundamentally flawed, and in today's hearing, I urge the Commission to examine the reasons why that is the case, including the following:

First, there is ample evidence to suggest that when an industry's manufacturing capability goes to China, its suppliers, engineering, and research and development capability soon follow. In fact, many leading U.S. multinationals have made no secret of their plans to move as much of their operations to China as possible. John Chambers, the Chief Executive Officer of Cisco Systems, was quoted in 2004 as saying: "China will become the IT [Information Technology] center of the world.... What we're trying to do is outline an entire strategy of becoming a Chinese company." And Cisco is not alone. In a 2006 survey of over 200 multinationals, the National Academies found that "more companies . . . said they planned to decrease research and development employment in the United States and Europe than planned to increase employment."

Second, any economic blueprint for this country that rejects manufacturing condemns rural America to a future of limited economic prospects. As this Commission pointed out in its 2007 report, manufacturing job losses to China are having a disproportionately negative impact on rural areas. The report did an excellent job of explaining China's impact on the people of my home state of North Carolina, saying:

"Laid-off workers in North Carolina also tended to be from rural areas . . . Just less than half of rural dislocated workers laid off in North Carolina in 2002 were able to find work within a year. When displaced manufacturing workers in North Carolina found new employment, often it was in part-time work. Even if the hourly wage levels were equal—and often they were lower—such jobs obviously produce lower total wages. Also, part-time jobs seldom provide such benefits as retirement or health insurance.

"The better-paying factory jobs making textiles, clothing, and furniture were replaced by lower paying services-sector work, including jobs waiting tables, cleaning hotel rooms, and caring for hospital patients. Average compensation for employment in the manufacturing sector was 128 percent of North Carolina's average wage in 2005 while that for health care was 91 percent and compensation in the leisure and hospitality sector was considerably lower. For example, compensation in hotels and resorts was just 50 percent of the average statewide compensation while restaurant work paid just 34 percent of the average."

Mr. Chairman, the bottom line is that manufacturing is the magnet that attracts all other facets of production. Without a strong manufacturing base, the United States will lose its preeminent position in engineering and research development, and it will lose the defense industrial base that has allowed us to be the world's arsenal of democracy. If this government doesn't act to save U.S. manufacturing by fixing our broken trade policy with China, I fear for the future of our children and grandchildren. I appreciate this Commission's efforts in helping the Congress and the American people understand what is at stake in the

debate, and I urge you to keep up the good work.

PANEL I: DISCUSSION, QUESTIONS AND ANSWERS

HEARING COCHAIR WESSEL: Thank you, both, and thank you for recognizing our work. You're our clients. We were created by Congress to advise Congress, and many of us have worked there, and all of us have worked very hard to try and make sure we are being responsive to you. Thank you for your comments.

I know that you both have other schedules, and if you have a moment or two, if there are any questions from any of my colleagues? Mr. Reinsch.

COMMISSIONER REINSCH: Not a question, but I just want to respond to Representative Michaud about one thing. I think the prepublication patent point that you made is an important one. It's something that we've looked at previously. There is, as I understand it, a national security carve-out in this case, but it seems to be widely ignored.

I had an awful difficult time even finding out that it existed and finding government officials that knew that it existed. I certainly think it's something that we ought to look into, and in particular I appreciate your questions to the Commission. I think we'll do our best to answer them.

Thank you.

MR. MICHAUD: Thank you very much.

HEARING COCHAIR WESSEL: Chairman Wortzel.

CHAIRMAN WORTZEL: I also want to thank both of you for being here, and both the comments on prepublication as well as the impact of the loss of manufacturing in rural areas are critically important.

We have seen this in our field hearings in, I guess, five states around the country. North Carolina was a great example of TAA and what it could do and what it didn't do. It was an excellent field trip for us.

I want to make the point that Congress has passed both an espionage law and an economic espionage law that gave the Department of Justice and the FBI the chance to prosecute crimes that were not direct national security classical espionage cases, and there have been a number of prosecutions on those, and suggest that as you approach this prepublication issue, while I agree with Commissioner

Reinsch that there is a national security carve-out, there is this problem of the economic loss. I think there are parallels there that you might think of at least to justify legislation.

Thank you.

HEARING COCHAIR WESSEL: Thank you. Commissioner Mulloy.

COMMISSIONER MULLOY: Thank you both for being here and for the important work you're doing on that trade working group.

I've been involved with this Commission most of the time since it was set up and I've been following this issue, and I can't understand, why--when the United States is running these huge current account deficits year after year and losing high-tech industries and losing these jobs, what is it that holds the Congress back from becoming much more aggressive and trying to say what is happening to this country is not good and we've got to turn it around?

I would be very interested in your perspective, one Republican and one Democrat, as to what is the problem here?

MR. JONES: You want to go first?

MR. MICHAUD: Go ahead.

MR. JONES: Sir, being a Republican, but I'm an American first--that's more important than my party affiliation--we don't have the leadership in the White House. I've been very disappointed that whether it be trying to enforce the laws that the Congress has passed that the countries would respect and treat each other from the intellectual properties perspective fairly, they don't do it. And yet we do nothing.

I am concerned. I hope that the next president and whomever that is--and I will tell you that Mr. Obama has made some points in North Carolina with the fact that he is saying in his ads that it is time that we reward companies that stay in America and do not reward companies that move overseas--I think it starts at the White House.

I think it has to be strong leadership. I think they have to say to the American people we've got an economic problem, and we're going to try to fix that problem. It will not happen overnight. But if I, the new president, not Walter Jones, but I the new president, that if you will work with me, both Democrat and Republican in the Congress, we're going to do everything we can to try to fix the economic problems, and it's not going to happen overnight.

But if they took some of your recommendations, it would be a tremendous help in getting us back on the right road.

MR. MICHAUD: Speaking as a member who has only been here six years, I think part of the problem is the fact that members of Congress, there are so many issues out there, and our schedule is so

tight, that it's very difficult to really focus on these issues other than the committee of jurisdiction, and that's why the work that the Commission does is so, so, so valuable.

Part of the problem, as I see it, is also when you look these big issues, if you have one committee who has complete jurisdiction over it and you don't have adequate public hearing, that's the other problem.

If you look at the Peru trade deal, for instance, after that was negotiated with labor and environmentalists, they never had a public hearing on it.

And you have those in leadership who are either for or against some of these issues. The process is designed unfortunately here in Congress that the adequate public input is not there. It's whoever is in control of the committees or in leadership. They control the agenda, and the public is out of the process quite frankly.

If you look at, however--I'll use the Peru trade deal as an example agreement--if you look at the freshmen members of Congress who actually voted against the deal, and they were very vocal about it, 73 percent of them voted against it despite the fact that every member of Democratic leadership was in support of it on the Democratic side.

So I think it's being able to get out there in the public and really discuss what's going on, whether it's trade policy, China currency manipulation, the value-added tax. These are complex issues, and we got to have that open dialogue between the public, members of Congress, and how to move forward.

One of the bills that actually both Congressman Jones and I are sponsoring is the Trade Act to look at trade policy in a whole different light, which will involve more of the committees who have jurisdiction or are affected by trade such as the Agriculture Committee, Transportation and other committees who are involved, so we can have that open dialogue back and forth, and that's what's extremely important.

I really appreciate your question because the American people are way ahead of elected members in Congress when it comes to what's happening around the world in globalization, what's happening when you look at Trade Adjustment Assistance, what's really happening there on the ground.

I can tell you from the state of Maine, a state that's lost over 23 percent of our manufacturing base, my home community, when the mill filed bankruptcy and was shutting down, the fact that the senior class from the high school that I graduated did not know whether they were going to be able to have graduation that year because the mill paid 80 percent of the tax base, which they have not paid.

And when you take 80 percent of the funding part way through a

school year, accreditation was at stake, and these are human aspects, not just jobs, what's really happening to individuals that people don't see. And if you look at some members of Congress and the district that they represent, they don't see what's really happening out there in the real world, what trade is really doing, and I think that's very important.

And that's why the American people are way ahead of elected officials here in Congress because they actually see what's happening because it affects them in their lives in their community. It's more than just numbers. It's human beings, and I don't want to, and I'm not a protectionist, but I think we got to make sure that we have fair trade policies here in this country, and it's my hope that with the new administration, that we will start debating this publicly, openly, and that we'll be able to really put this country back on track on where we should be as a nation.

COMMISSIONER MULLOY: Thank you both very much.

HEARING COCHAIR WESSEL: Thank you. I know you both have appointments in the House, but if you have time for one quick question from our vice chair.

VICE CHAIRMAN BARTHOLOMEW: Thank you. Thank you, gentlemen, both for appearing before us today, but more importantly for your service to our country. I think you're doing good jobs representing the interests of your people, and as Chairman Wortzel said, as we travel around the country, it's really clear when you see the impact of what's going on in the communities.

I wondered, some people now seem to be saying that we're seeing a revitalization of our manufacturing base as foreign companies are starting to open plants here. Of course, that has to do with the fact that the dollar is doing so poorly anywhere.

But I wondered how you respond to people who are saying this problem is solving itself?

MR. MICHAUD: I can tell you from the state of Maine--I'm not sure about other states--it's not happening. Matter of fact, we just got news a couple weeks ago where another mill in my district is closing its doors. Originally, it was July 28. They moved that back until September.

So I have not seen that happen in the state of Maine, and I'm not sure about other states, but in Maine it definitely has not happened.

MR. JONES: I agree with Congressman Michaud. I think that is a fallacy. I think it is a statement that does not understand the reality.

They might believe that, yes, these companies are coming back into America creating jobs again, but it's not happening.

My state of North Carolina, the strength of the state was

manufacturing, and we have the Research Triangle which is great to have. It's wonderful to have in the state of North Carolina, but when you talk about the manufacturing jobs, they're not coming back even if these companies are coming here. They're making investments, buying part of companies or owning them. It's just not happening.

I think again--I'll be real quick--but I think again that it's got to have the leadership in the White House that's got to acknowledge to the American people there is no easy fix, there is no easy answer, but why can't we just start for two years, have no new trade agreements. Let's just stop it. Let's take some of your recommendations and other groups and take these recommendations.

As Michael says, let the Congress debate some of these issues, but let a commission decide where are we going, what are we going to do, and let the president listen to them. Instead of taking your fine recommendations and putting it on a table and say, well, I'll get to it in three or four months, let's force the next administration to deal with these problems because once we go down the hill, we're not coming back, and we're on the way down.

VICE CHAIRMAN BARTHOLOMEW: Thank you.

HEARING COCHAIR WESSEL: Thank you both for your time and we look forward to working with you and your able staff over the coming months. Thank you.

MR. JONES: Thank you very much.

MR. MICHAUD: Thank you.

HEARING COCHAIR WESSEL: We'll take a five minute break and then go into the rest of our agenda.

[Whereupon, a short recess was taken.]

PANEL II: CHANGING NATURE OF CHINA'S TRADE FLOWS

CHAIRMAN WORTZEL: Good morning. Welcome to this hearing on "Research and Development, Technological Advances in Key Industries, and Changing Trade Flows with China."

My name is Larry Wortzel. I'm the chairman of the U.S.-China Economic and Security Review Commission for the 2008 reporting year. The hearing will be cochaired by Commissioners Michael Wessel and Dennis Shea, who have done a great job in putting together the panelists.

For those of you who are new to the hearings, I just want to remind you that we're a bipartisan Commission composed of 12 members selected by the Minority and Majority Leaders of the Senate and the Speaker and the Minority Leader of the House. Each commissioner serves a two-year term although some have been--I guess

most everybody has been reappointed for the most part.

Congress has given our Commission the responsibility to monitor and investigate the national security implications of bilateral trade and economic relations between the United States and China.

And we fulfill this mandate by conducting hearings such as this one, undertaking our own related research, and sponsoring independent research. We also travel to Asia, and we receive briefings from government agencies and departments, and we produce an annual report that is our major charge that provides recommendations to Congress for legislative and policy change.

So far this year, we've looked into military and security issues, the activities of Chinese sovereign wealth funds in the United States market, and Chinese exports of seafood products to the United States and generally food safety. We've examined China's expanding global influence, its controls on information and the media, and its use of prison labor.

As I said, today we're going to look at research and development and China's production of advanced technology products.

Now each of the panelists will get seven minutes, and you'll see hopefully that timer will work--it will go red--for your oral remarks, and then we'll go to questions. We'll put your written statements into our record and on the Web.

Let me now introduce my cochairman or vice chairman. It's really Cochairman Carolyn Bartholomew.

VICE CHAIRMAN BARTHOLOMEW: Thank you very much, Chairman Wortzel. I guess I get to do logistical mop-up. Welcome to our panelists. We've just heard from several distinguished members of Congress. I'm supposed to invite all of you to feel free to visit our Web site, uscc.gov, where you will find what, we hope, are many useful things, including our 2007 Annual Report and its conclusions and recommendations. It was published last November. It was adopted unanimously by the 12 commissioners.

Today's transcript will be published on our Web site and the written testimony will be published on our Web site as well, and come November 20, our 2008 Annual Report will appear on the Web site and in the form of a bound paper copy.

CHAIRMAN WORTZEL: If the Government Printing Office gets it printed.

VICE CHAIRMAN BARTHOLOMEW: If the GPO gets it printed in time.

Today's hearing will add a wealth of information to our annual effort. A few details about our schedule today. We've obviously heard from several members of Congress. This afternoon we're expecting

Senator Debbie Stabenow of Michigan, and as is our practice for members of Congress, we'll suspend temporarily our regular panel to allow Senator Stabenow to speak.

For those of you who will be with us for the entire day, I'll note that we'll break for lunch at one and will resume promptly at 1:45. There's a snack bar and carryout in the basement of this building and cafeteria in the basement of the Dirksen Building, but that requires a congressional ID when Congress is in session.

Today's hearing is the seventh that we've held this year. Our final hearing will be on Wednesday, August 13, and the topic of that one is "China's Energy Policies and Environmental Impact." With that, I'll move to Commissioner Mike Wessel, who is one of the cochairs of the hearing.

HEARING COCHAIR WESSEL: Thank you. We've already heard from two members and appreciate their and all of the other interest that members of Congress have had in our activities since, as I said earlier, they are our principal clients.

Today, we will hear from witnesses who will speak on various aspects of research and development in China, particularly the R&D being carried out by U.S. multinational-based companies. We'll also hear about China's increasing production of advanced technology products, and in addition we're going to be examining the changing nature of China's trade flows, principally since WTO accession in 2001.

We will look in particular at China's automobile industry and its aerospace industry, as well. China has expressed considerable ambitions in these areas. Recently, for example, China announced plans to build a large passenger jet by 2020. We want to examine whether China's industrial policy and practices in these areas are in keeping with China's WTO commitments to practice free and fair trade.

The Commission will take all views into account when it later formulates its own recommendations to the Congress. We appreciate the work of the many distinguished witnesses we've had in preparing their statements, and thank them for appearing here today in what we know are very busy schedules.

We'd also like to thank our very able staff in putting together this hearing and all the other work they do to keep us in line and things running on time, and I'd also repeat Chairman Wortzel's request that we limit the opening remarks--all the statements will be made part of the record--so that we can have a good give and take.

**OPENING STATEMENT OF COMMISSIONER DENNIS C. SHEA
HEARING COCHAIR**

HEARING COCHAIR SHEA: I'm Dennis Shea, a member of the Commission and a cochair of this hearing. I'd like to join my colleagues in thanking everyone for being here today and a special thanks to the Senate Rules Committee for providing today's hearing venue.

Science and technology are now at the center of China's modernization efforts. China's spending on research and development activities has grown dramatically over the past ten years and greater investment in corporate R&D is a key element of China's plan to expand its capacity to innovate indigenously.

What this means for the United States and how the U.S. should respond to these developments is the focus or one of the focuses of today's hearing.

Among the many things we'll do today is try to assess the progress that China has made in complying with its WTO obligations. Specifically, we'll explore whether China's efforts to develop advanced technology products are compatible with its agreement to forego export subsidies, forced technology transfers and intellectual property violations.

We'll also be examining the nature of China's research and development efforts. Is China increasing its basic scientific research or is the increase in research due to efforts by foreign multinationals to tailor their products for the Chinese market so-called applied research?

We'll also hear whether U.S. efforts in R&D are adequate to maintain our own international competitiveness.

Now, finally, the commissioners are going to stop talking, and we're going to get to our second panel, which is two distinguished individuals who are going to discuss the changing nature of China's trade flows.

Our first witness is Dr. Charles McMillion, who is President and Chief Economist of MBG Information Services, an analytic and forecasting firm based in Washington, D.C.

He is a former Associate Director of the Johns Hopkins University Policy Institute where he researched business and economic policy issues and projects in the U.S. and abroad. He is also a former contributing editor of the Harvard Business Review.

Welcome, and thank you for being here.

I'll just introduce our second witness. Dr. Mary Amiti is a Senior Economist in the International Research Department of the Federal Reserve Bank of New York. Prior to joining the Federal Reserve Bank of New York, she worked at the International Monetary Fund, the

World Bank and the Australian Treasury.

She has also taught at the University of Melbourne, University of Pompeu Fabra Barcelona--did I pronounce that correctly--and the London School of Economics.

Dr. Amiti graduated with a Ph.D. in economics from the London School of Economics in 1997 with a specialization in international trade.

Again, thank you both for being here, and Dr. McMillion, you're the first one to go.

**STATEMENT OF DR. CHARLES W. McMILLION
PRESIDENT/CHIEF ECONOMIST
MBG INFORMATION SERVICES, WASHINGTON, D.C.**

DR. McMILLION: Thank you very much, commissioners, for inviting me to testify today. First, a few words of context. I've been asked to talk about the big picture of China's rapidly changing trade flows.

China's GDP growth has soared since it gained admission to the WTO in January 2002, averaging 10.5 percent per year and 11.9 percent last year. This is twice the growth rate of the global economy and four times the growth in the United States. This has many important consequences, but economists normally expect countries growing faster than the world economy to have trade deficits, while countries growing slower should have trade surpluses. It's remarkable that China has a trade surplus at all.

China's domestic spending and investing by government consumers and business has been extremely strong over the last seven or eight years. Growth in industrial production since 2002 in China has averaged eight times the U.S. growth rate. Yet, despite the soaring growth, China's global current account surplus rocketed from 1.3 percent of its GDP in 2001 to 12.3 percent of its GDP in 2007.

China has accumulated global current account surpluses of over a trillion dollars since it joined the WTO. These current account surpluses, strong foreign investment in China and other factors has built China's war chest of foreign currency reserves from \$212 billion when it joined the WTO to now a point where it will soon reach \$2 trillion.

In April alone of this year, China added more than \$100 million per hour in April, each hour of April, to its foreign currency reserves.

Together with China's newly restructured and healthy financial systems and their large firms' new access to equity and bond markets, China is now uniquely capable of cherry-picking, cherry-picking--I

hope we get to discuss this--today's worldwide fire sale opportunities for patents, talent, natural resources, brands, distribution channels, and so much more.

Because of its huge import bills for mineral fuels and ores, its global surplus in manufactured goods is larger than its surplus for all goods or even than its current account surplus. China edged out Germany last year to become the world's leading exporter of manufactured goods and China is now the largest manufacturing exporter to the U.S., the EU-25 and Japan.

China's global surplus for manufactured goods soared from \$31 billion before the WTO to \$401 billion last year and may reach the unprecedented level of over \$500 billion this year, although oil and food prices are lowering China's overall global surplus for goods this year by 11 percent. So far in 2008, China's surplus in manufacturing goods is up 34 percent.

China's manufacturing trade surplus rocketed over the recent years as it moved away quickly from its historic role as a processing center, merely assembling imported parts, and has localized modern dynamic supply chains in almost every industry. China has also dramatically shifted its manufacturing sector emphasis from more traditional to modern technology-driven industries.

Textiles and apparel accounted for all or most of China's global manufacturing surplus before 2004. Now its surplus is dominated by machinery and electronics.

Trade flows are affected by the loss in the value of the U.S. dollar. From time China was admitted to the WTO until last month, the yuan strengthened against the dollar, but it weakened against the Japanese yen and it weakened sharply against the euro.

These currency changes together with China's strong effective set of trade and industrial policies have transformed China's economy and its trading patterns. China's auto production has almost quintupled--its auto production almost quintupled since WTO admission. It will likely become the world's largest producer next year and could rapidly extend its leadership thereafter.

China's domestic auto sales have soared and it's now the world's second leading auto market after only the United States. Nonetheless, China's auto and parts sector achieved a global trade surplus in 2005, and that surplus is surging by 83 percent last year and by 44 percent this year so far.

China's auto surplus is now driven by its soaring surplus in auto parts with its export of assembled vehicles expected over the next three years.

China's market for aerospace, especially commercial airlines, is

also one of the fastest growing in the world. Nonetheless, rapid growth and modernization of its parts industry has limited China's overall aerospace trade deficit and has created a global surplus in aerospace parts last year and again so far this year.

Information technology has been a key focus of China's economic and trade modernization. China's production of computers rocketed past that of Japan in 2003, rocketed past the U.S. in 2004, to become the world's evermore dominant producer.

Again, despite world-leading domestic sales growth of over 20 percent per year, the localization of IT component parts producers allowed China to increase its global surplus in computers and parts from eight billion before WTO to perhaps 83 billion this year.

An important indicator of China's modernization is the loss of a long-held U.S. surplus in advanced technology products. Globally, the traditional U.S. surplus in ATP turned to a deficit for the first time ever in 2002. Since then, the U.S. has suffered ATP deficits that in nominal value are far larger than any past U.S. surplus.

China accounts for more than the entire U.S. global deficit in ATP, concentrated in advanced machinery and electronics. U.S. import payments to ATP from China are almost four times as much as export earnings. The U.S. ATP deficit with China is more than eight times the U.S. deficit with Japan, and it is 30 times the size as all U.S. intellectual property earnings in China.

Finally, the U.S. no longer accounts for China's entire global trade and current account surplus. Because of currency movement, trade and industrial policy and other things, China now has a soaring surplus with the EU-25 that more than offsets China's large politically instrumental deficits with Taiwan and other Asian neighbors.

The EU-25's deficit in traded goods with China has worsened from \$46 billion before the WTO to \$216 billion last year, and as with the U.S., China's surplus with the EU is almost entirely in manufactured goods, dominated again by modern machinery and electronics including information technology products.

The enormous external imbalances in China's rapid economic and trade modernization now adversely threatens not only the U.S. but the EU as well. This would seem to be an opportune time for bold and cooperative policies with our allies in our common interest.

Thank you very much, and I look forward to the questions.

[The statement follows:]¹

HEARING COCHAIR SHEA: Thank you, Dr. McMillion. Dr. Amiti.

¹ [Click here to read the prepared statement of Dr. Charles W. McMillion](#)

**STATEMENT OF DR. MARY AMITI
SENIOR ECONOMIST, FEDERAL RESERVE BANK
NEW YORK, NEW YORK**

DR. AMITI: Thank you. I'd like to thank the Commission for the opportunity to testify today. I want to start off by saying that the views expressed here are my own views and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

So now turning to China, over the past 15 years, China's exports have jumped more than tenfold, far exceeding the tripling of world trade that has taken place over the same period. As a result, China has recently surpassed the United States as the world's second-largest exporter, just behind Germany.

My discussion will begin with some background on the nature of China's trade flows and how this has changed over time, and then I'll address the following questions:

Is China climbing the quality ladder? And what are the driving forces behind changes in China's export prices to the United States?

China has experienced dramatic changes in its export composition. Within manufacturing, it has moved from labor intensive goods such as apparel, textiles, footwear and toys, to more sophisticated manufactured machinery goods, which now comprise more than 50 percent of its world exports.

The strongest overall export growth has been in machinery, and within this broad category, the largest export shares are in computers, telecoms and office machinery. So this suggests that China is exporting higher capital intensive, more sophisticated products. However, measuring quality or sophistication of a product is quite difficult.

The most rigorous approach is to assess detailed information on quality attributes such as defect rates in production. But this information is very expensive to collect and thus there are only a handful of case studies available. So whilst these case studies are informative, it's not really possible to draw general conclusions from them.

Various other approaches have been developed looking at export shares of advanced technology products or looking at the similarity of China's exports with other developed countries, and these studies conclude that China's exports are becoming increasingly sophisticated.

For example, Dani Rodrik concludes that China's export bundle is that of a country with an income per capita level three times higher

than China's. Consistent with this, my research has shown that the skill content of China's total exports has been increasing.

These findings imply that China is producing more sophisticated products with more skill intensive production techniques. However, this raises the question of how much value-added or Chinese exports is actually produced in China? A large and increasing share of China's exports involves assembling duty-free imported inputs for export, a practice known as processing trade.

This comprises 55 percent of total exports. And the share of processing trade varies widely across industries, and so within this high export growth machinery sector, most of the growth is indeed due to growth in processing trade. So the increase in the skill content of China's exports could just be due to China importing intermediate inputs with very high skill content that it assembles for exporting, and in fact, my research shows that for China's non-processing exports, there was no change in the skill content, thus all the skill upgrading that I observed in the total exports was due to the higher skill content in the processing trade.

Now, of course, non-processing exports excludes around half of China's total manufacturing exports. So, although imported inputs account for a large share of the value of processing exports, of course, some of this value-added processing trade is performed in China.

However, there is a recent study, a very careful study, that calculates the total domestic value-added in China's processing exports, and so including the direct value-added and the indirect value-added that comes through the materials that are produced in China, they find that in the processing exports, the domestic value-added in China is as little as 25 percent.

That study also shows that there is great variation in the proportion of domestic value-added by industry. For example, in the electronic computer industry, it's almost all processing trade and in that industry, only five percent of the value of these exports are attributed to Chinese value-added. The rest is all imported.

So I think this is a really important point to keep in mind when we're assessing the similarities of China's exports with those in developed countries and talking about it moving up the quality ladder and how sophisticated the exports are that it's producing.

Turning to China's export prices, as China increases its supply of goods on world markets, this is likely to put downward pressure on world prices. It's been argued that a large country like China could offset some of these price pressures by exporting new product varieties.

However, my research shows that recent export expansion is

mainly driven by goods that it was already exporting before. More recently, the U.S. Bureau of Labor Statistics has reported that the price of imports from China has increased by 4.6 percent over the last year.

Reports in the media have speculated about the reasons why this turnaround may have been occurring. And the increasing import prices have been attributed to higher wages in China and the appreciation of the RMB against the U.S. dollar.

My study shows that the largest import price increases from China were in industrial supplies. Higher industrial supplies prices are a global phenomenon rising with world oil and commodity prices.

But when we compare prices of U.S. imports from China with those from the rest of the world, within the same product categories, the data show that the import prices from the rest of the world rose even faster than those from China.

The relatively higher price increases from the rest of the world could be due to the strong euro and Canadian dollars and the relatively lower price increases from China may be due to oil subsidies in China.

Turning to consumer and capital goods, the data show a more modest price increase in these goods than industrial supplies with the turning point in 2005, which coincides with the beginning of the appreciation of the RMB against the U.S. dollar.

So although consumer goods prices from China have been rising recently, again this increase is lower than import price increases from the rest of the world.

Another question is whether higher wages in China are driving these price increases? Media reports and anecdotal evidence indicate that strong wage pressures in China have led to higher recent export prices. However, the wage bill is only a very small share of the export value. The largest value of the sale price is actually due to the cost of materials, and as I mentioned earlier, a lot of these are imported.

To sum up, China's export growth has been spectacular. It is moving out of the more traditional labor intensive exports to high capital-intensive sophisticated goods like consumer electronics, and when you compare its export patterns with OECD countries, it shows an increasing similarity.

Yet, a large part of China's exports are in processing trade relying heavily on imported intermediate inputs. The value added in China continues to be in the more labor intensive parts of the production process.

Up until recently, price of goods exported to the United States from China have been falling, exerting downward pressure on world prices. However, in the last few years, there's been a change in this

trend with prices from China now increasing.

As I mentioned, the biggest price increases in U.S. import prices from China are in industrial supplies categories, which is largely due to global increases in oil and commodity prices.

The more modest increases in consumer goods prices are likely due to China's exchange rate appreciation against the U.S. dollar, but most importantly, these price increases for U.S. imports from China are still much lower than the price increases for imports from the rest of the world.

[The statement follows:]²

PANEL II: DISCUSSION, QUESTIONS AND ANSWERS

HEARING COCHAIR SHEA: Thank you, Doctor, and thank you both for your testimony. I'm going to ask the first set of questions and then will go on to my colleagues.

I'd like both of you to comment. What is, in your view, the relationship between R&D investment in China, particularly by foreign-invested firms, and the recent increase in Chinese ATP and the U.S. deficit in ATP?

DR. McMILLION: I'll take that first. Commissioner, I think it's a very complex relationship, and I think you've got to go at least industry by industry, if not company by company.

The competitive environment in China is really intense, and so the world's leading companies have found over the last ten years that they can't make money in China making junk, making old products. So they moved their better products, they moved their better processing technologies, their better products, to China to be made. That's where the money is made. So they have been moving ATP products.

International companies have been moving the production of ATP to China in order to meet the market.

Remember, in China, they have almost a billion telephone subscribers. They have 600 million mobile phone users, growing at the rate of eight or 9 million a month. So Motorola and Nokia, everyone, wants to get over there and make their--they use the very best products to compete with Chinese producers, who are really good, certainly a little bit down the product cycle.

So that's one of the important things. The other is, of course, as the OECD and others have pointed out, that much of the R&D that's done in China is on the "D" end. They don't do very much basic research. They do the development work, and China seems to be very

² [Click here to read the prepared statement of Dr. Mary Amiti](#)

happy to let others drill dry holes.

And they will, now sitting on \$2 trillion of foreign currency reserves and the ability for all stock buys from many of their huge companies now, they have the wherewithal to acquire the patents and the products that they need in those occasions when the world's leading companies don't bring them there on their own.

And then, of course, there are a few cases, now and increasingly, where China's own companies, often as a result of joint venturing with American companies or European or Japanese companies, are beginning to develop really first-rate technology products.

HEARING COCHAIR SHEA: Dr. Amity, do you have a response?

DR. AMITY: So when looking at ATP products, one has to be very careful about the definitions used for a number of reasons. One is that they differ across different countries so the U.S. uses a different definition for ATP than China uses.

And, in fact, China's statistics show a higher exports growth of ATP products than the U.S. statistics.

Also, they change over time. So it's not clear whether the goods are changing, whether you're showing a higher ATP because the classifications have changed, or the goods in those same classifications have increased. But nevertheless, there is a study that shows that there is a big increase in China's exports of ATP products, but again 90 percent of that is processing trade, and most of it is by foreign firms that are located in China.

HEARING COCHAIR SHEA: Okay. I have about a minute. I'm going to read you a conclusion by Kathleen Walsh who is a professor who will be testifying later today. I'm going to ask her whether she still believes this. This was written five years ago, and I would like you to respond to it.

She says: "On balance, although foreign R&D centers are contributing to China's impressive recent high tech growth and increasing competitiveness in information and communication technologies industries, they are contributing as much or more under newly consolidated wholly foreign-owned R&D enterprises to foreign companies' high tech development and production capabilities and thus to the U.S. economy."

Do you have a response to that? Do you agree with that?

DR. McMILLION: I don't agree with that. That would go, I guess, to the profitability of the company, the stock value or whatever. The value, the jobs that are created, the taxes that are paid, the incomes that are earned, are overwhelmingly not from profits, even the--in fact, do I have it here--the total--now I'm getting tied up here.

But the total earnings from private companies, U.S. companies in China, is something just over \$2 billion a year.

Total intellectual property earnings is significantly less than two billion a year. Yet, here in the United States, we paid last year, I think it was \$64 billion for advanced technology products from China.

So it's hard to see if we, you know, it could conceivably help the bottom line of an individual company. I know Apple makes this argument. But it is very difficult to see how when you're paying 64 billion in order to earn less than two, that's helping the U.S. economy.

Let me also speak to this value-added thing which I have a hard time with. In, for example, the computer and parts industry, which is harmonized series 8471, before China's WTO admission, the ratio of exports to imports was--I've got it, I think, in my prepared testimony--2.4 to 1, I think. In other words, China earned \$2.40 for every dollar that it paid for imports.

The latest data, and again this is 2.6, the latest data--this again is Chinese data, and it's global--is that in 2007, China paid for all computer and parts, again HS 8471, China earned \$4.70 for every dollar it paid for imports.

Now, if by processing trade, you mean that a lot of this is done by international companies, Flextronics or whatever, that's certainly true, but it is done in China. They're not importing these parts, they're not paying for imports, certainly not remotely close to what they are earning from exports. That's what after all this \$400 billion manufacturing surplus last year reflects and the \$500 billion projected manufacturing surplus this year.

HEARING COCHAIR SHEA: Dr. Amity, would you like to respond quickly? I'm a little bit over. I'm going to be scolded for exceeding my time here. But I'm the chair so--

VICE CHAIRMAN BARTHOLOMEW: You're the chair so scold yourself.

HEARING COCHAIR SHEA: Slap myself there.

DR. AMITY: Yes. I'll have to disagree with Dr. McMillion on that point. The recent study that came out was using data by the Chinese and they do split trade into processing trade. Processing trade doesn't include goods that are produced within China by international firms. Processing trade is defined as trade where you import intermediate inputs duty free for the purpose of exporting.

The study uses this Chinese trade data. You cannot just look at the one code, the one international code and say how many imports and exports do we have in this code to work out China's valued added. What you have to do is get an input-output table because to produce a particular product, you don't only use components from that same

product code; you use components from many other product codes.

So this study, and it's done industry by industry, and I reference it in my written testimony, has taken into account which parts are processing trade, which parts are ordinary trade, looked at a very detailed input-output table to work out what components are needed to produce those exports, and then what parts of those are imported and what parts of those are produced in China.

But it's even gone one step further. It hasn't even just looked at what's directly produced in China. Then out of the materials that are produced in China, how much of that is produced, again, in China. So looked right through the vertical chain.

So there are some industries like, for instance, the motor vehicle industry that has high domestic value-added of about 60, 70 percent.

But the one with the lowest domestic valued added is electronic computing and it's five percent, and this is based on a very detailed recent study.

HEARING COCHAIR SHEA: Thank you very much. Commissioner Wessel.

HEARING COCHAIR WESSEL: Thank you both for your testimony, and I'd like to follow up on the last line of questions in this. I had enjoyed your testimony, both of your testimony. I have to say it's been awhile since I've dealt with Gini coefficients, vector price analysis and T-indexes and everything else so you'll have to bear with me and help me through this.

What I hear you saying, Dr. Amiti, essentially is that many of these products are industrial tourists, that they are traveling to China for processing and coming back. As I read your testimony, and please, again, correct me if I'm wrong, you were dealing mostly with China's exports and not necessarily looking just at the bilateral flow with the U.S., and we are the U.S.-China Commission.

So while, you know, I can question the contents of your testimony as it relates to the quality, if you will, or the composition of the trade with China, I want to get down and look at what's happening with the U.S. We've been, or I've been, to the Seagate facility in Thailand. Much of what you're saying in processing may be products that used to be made here have moved to Asia and now are inputs into Chinese products.

This goes back to the questions we had regarding NAFTA many years ago about the propensity of Mexico to use U.S. inputs. As you look at this issue with your data, can you give us more information on how the U.S. fares vis-à-vis that? Because it's the ATP deficit with China that we're talking about, just U.S. and China.

You know one of our major exports to China, and growing

rapidly, is scrap metal and paper. That's not necessarily a value-added product. So your data may all be correct as we look at U.S.-China flows. Have you looked at that? How does that affect it? What's the changing nature of composition of trade, and Dr. McMillion, if you could respond on that as well?

DR. AMITI: Shall I go first?

HEARING COCHAIR WESSEL: Please.

DR. AMITI: So, yes, I was looking at world flows, but also of course with an interest in what's going on with the U.S., and if you look at the import share for the U.S., China's share is now--imports from China do account for about 20 percent of our non-oil imports, whereas it wasn't that long ago that it was about five percent.

But one of the biggest falls in the import shares is Japan. We used to import a lot more from Japan, and so the point that I'm making is that instead of importing things directly from Japan, goods from Japan are going to China and being assembled and then sent to us.

HEARING COCHAIR WESSEL: Understand, but again going back, if I could, to when WTO accession was passed here in Congress, it was viewed that through PNTR we were going to be serving the Chinese market, that China was not simply going to a be processing zone.

What's happened? The quality and composition of trade between U.S. and China, how has that changed vis-à-vis those other countries?

DR. AMITI: Okay, so China is, as I said, exporting more goods to the U.S. The type of goods it's exporting to us is changing. As I mentioned, we were importing a lot more in terms of apparel and textiles, but now we're importing a lot more in terms of machinery, electronics. So the composition has changed.

So the question is what types of goods are we competing head-on with China? And the way to look at this question, what people have looked at, is looking at the similarity of the things we import from China with the things that we import from other countries, particularly say OECD countries, to see whether they are getting more competitive in those sectors.

It is true that the similarity of their exports has increased, but it's still only about 20 percent of the categories that we import from China that are similar to other OECD countries. There is still a lot of very distinct products. The question is how finely you go down in the data. So if you look at broad categories, it looks like a lot more similarity, but if you look at the very specific categories they are still very distinct.

You mentioned that we're exporting scrap metal. I don't know about that, but we're also exporting a lot of very high capital intensive

goods. So China is not competing on the whole range of goods that we are producing as well as the goods that we're importing from OECD countries. There is about 20 percent of overlap.

HEARING COCHAIR WESSEL: Dr. McMillion, any quick comments, I guess?

DR. McMILLION: Oh, for me?

HEARING COCHAIR WESSEL: Yes, please.

DR. McMILLION: China accounts for more than half of our \$500 billion manufacturing trade deficit, and it is very heavily concentrated in machinery and electronics. As this Commission knows, I deal in the ten digit HS data with ATP and have for as long as it's been provided, since 1989, I think.

What my research has found is that the share of ATP products that the U.S. has deficits with China in has grown from 51 percent, I think it is, when--again, this is at the ten-digit level--we had a deficit, and 51 percent of the 800 ATP products in 2001 to 59 percent to 60 percent in the most recent data in 2007.

When you look at more aggregated figures, the U.S. trade relationship with China is just the reverse of what you would expect. This year, our major surplus with China is not going to be aircraft, which is our one really strong export. It looks like it's going to be soybeans. After soybeans, you get to wheat and corn and other commodity products, as you say, Commissioner, minerals and other commodity products.

When you look at where we have our biggest deficit with China and where it's gotten much worse since their WTO admission, it is in sophisticated electronics and machinery. And now again increasingly in auto parts.

So I'm a little bit at a loss. I'd love to read this other detailed study about input-output data from China. I'm not aware of input-output tables in China, but I will read these studies and submit a comment for the record.

HEARING COCHAIR WESSEL: Thank you.

HEARING COCHAIR SHEA: Thank you. Chairman Wortzel.

CHAIRMAN WORTZEL: Dr. McMillion, Dr. Amiti--

DR. AMITI: Amiti.

CHAIRMAN WORTZEL: Amiti. I'm sorry. Thank you both for being here and for your time.

I'd be interested in both of your views on the implications for the United States of the changing trade balances between China and the European Union, South Korea and Japan. And what are the implications for the U.S. in the shift of this balance?

Also, how has the appreciation, such as it has been, of the

renminbi, China's currency, affected U.S.-China trade relations?

DR. McMILLION: For me first? Okay. That's a great question, Commissioner, and I wish I had a long time to respond to it. Let me just try to be brief than I have been. I apologize.

CHAIRMAN WORTZEL: I could be like him and say take all the time you need.

DR. McMILLION: The panels behind us would not appreciate it, I'm sure.

You know one of the things that so distinguishes right now, and there are so many things, but one of the things that so distinguishes China from Japan is that in China domestic demand, investment, government spending on infrastructure, consumer demand, is just booming. In Japan, it's been pretty much dead in the water for 15 years. So Japan has continued to export even though the growth in production, overall industrial production, in Japan has been very, very weak for 15 years.

So, because of, you know, as they have productivity growth and whatever, they either have to close it down or export it, and so their exports have held up, and their exports to China have held up, and they've been, they were late coming to the party. They really only joined in the rush, the relationships, that U.S. and European companies had with China, Japan really didn't start that until WTO admission. It's really changed the dynamics in a lot of interesting ways.

So that's one of the reasons that Japan's data says they have a trade deficit with China, and I trust Japan's data more than I trust China's for allocation between countries. But it's not a large one.

And Japan's trade profile with China is much more like you would expect. They ship heavy machinery, sophisticated, certainly semiconductors and other things.

For the U.S. and China, I think we just have an enormous problem in virtually every industry and now including services industries and including the financial services industries because we have our major financial institutions now getting involved with Chinese state-owned financial services firms in exactly the same way that manufacturers did ten and 20 years ago.

They've taken minority positions in huge firms and, in my view, they're getting their pockets picked. And so I think it is not simply in manufacturing. We could talk at the ten digit level, but at any level that you talk about, U.S.-China relationships, we are exporting less highly value-added products and importing much more highly value-added products.

DR. AMITI: I haven't really looked into the specific trade balances of all the countries you've mentioned so I'm not going to have

much to say about that.

But I think in terms of trade balances, I don't think that we should just be focused on what does the U.S. export to China. It's the global flows that matter. So, if we're exporting more sophisticated products, high capital intensive, to other countries rather than to a poor country, I think it's the overall trade that matters.

In terms of the appreciation, as I mentioned in my testimony, the RMB appreciation against the U.S. dollar does seem to have increased prices of goods that we pay from China a little now. But besides that, I haven't really explored other implications.

CHAIRMAN WORTZEL: Will you allow me a very brief follow up?

HEARING COCHAIR SHEA: Sure, Mr. Chairman, of course. Of course.

CHAIRMAN WORTZEL: Is there a public policy or legislative difference in approach in Japan that helps their exports that might serve as a model for the U.S., or is it just the nature of the product?

DR. McMILLION: Thanks, Commissioner. Yes, Japan is different. They manage their trade very, very carefully as does China, as does most of the rest of the world. I might also say that I agree that it is the overall balance that is important, and what is important is that since 2002 the United States has had a large and growing deficit globally in advanced technology products for the first time ever in our history, and that until it was revised just last month, our deficit in advanced technology products was larger than our surplus in all intellectual property revenues around the world for our companies.

And if I could just, one more little thing just so it will be on the record, and that is that, yes, the prices, import prices from China have been rising, but there are serious questions about BLS ability to measure the quality of our imports from China, and it certainly appears that the quality of those imports from China is rising very rapidly and is certainly the cause of at least some of that increase in price which BLS is not capable of picking up.

HEARING COCHAIR SHEA: Thank you.
Commissioner Videnieks.

COMMISSIONER VIDENIEKS: A quick question. I understand from both of your testimonies that the problem could be one of the U.S. running a trade, a net deficit regionally as opposed to with China alone. And if that's the case, would the accounting be more accurate if we were to measure the value-added in our trade assessment calculations, not just the total value of the end item? And if we're measuring the total value of an end item, then we should say maybe it's a regional situation, not a country specific situation. That's basically

a question to both of you. I'm not an economist so please make it fairly simple.

DR. AMITI: I think being able to, if we could measure the value-added in each item it would be very useful and interesting statistic, but it would just be impossible because the global production network is getting more and more complicated.

So goods get shipped to multiple countries going through various production stages before they reach their final destination. So trying to work out exactly the value added is difficult, and that's why, you know, you need kind of very detailed studies, as I mentioned, but it wouldn't be feasible to do that for the whole world.

COMMISSIONER VIDENIEKS: So it's a difficulty of calculation, not necessarily accuracy of the picture of that situation? The picture would be more accurate if we were able to do that?

DR. AMITI: Yes, I think so. You know for the point that I've been making earlier, that people say, oh, look, China is exporting computers, you wouldn't expect a country like China to be exporting computers, so we're all in trouble, but then as I said, when you go to these kind of more careful studies and see, well, yes, they're exporting computers, and they're exporting a lot of value, final value of computers, but then they've only contributed five percent of that value-added, I think that that changes the picture a little bit or a lot.

COMMISSIONER VIDENIEKS: Dr. McMillion?

DR. McMILLION: I think we have a fairly easy way of determining value added, and that's called trade balance. The trade balance for the United States in computers is something like \$35 billion deficit. It's some enormous--

COMMISSIONER VIDENIEKS: Global, you're saying global?

DR. McMILLION: Globally. And it's been worsening. For China, again, the global trade surplus in computer and computer parts doesn't include--it doesn't include semiconductors and semiconductors is obviously an important component part. Semiconductors is really a key issue for China in all kinds of ways. And I'd love to talk with this Commission about what's going on in the semiconductor chip game right now with China. It's very, very important for all kinds of reasons.

COMMISSIONER VIDENIEKS: Is that a high value-added item?

DR. McMILLION: Absolutely.

COMMISSIONER VIDENIEKS: Chinese value-added?

DR. McMILLION: Absolutely. And China has an enormous deficit, and again this is the way you tell value-added. China makes a lot of semiconductor chips, but they're about, their most modern, 130 nanometer chips are maybe four years, three or four years old. So they

are older technology.

So they still import much of the more modern technology. But the way to evaluate value-added is how much do you pay when it comes in whether it comes in duty free or otherwise? How much do you pay for the product when it comes in? And how much do you sell it--

COMMISSIONER VIDENIEKS: Plus labor.

DR. McMILLION: And how much are you able to sell it for when you ship it. That's the value added.

COMMISSIONER VIDENIEKS: Processing appears to be excluded from your analysis. But I--

DR. McMILLION: No, that is the process. You pay a dollar for something when you bring it in, you process it, you do whatever you do to it, and then you ship it on to the next place, and if you pay a dollar and you ship it out for three dollars, then the value of your processing is two bucks.

COMMISSIONER VIDENIEKS: Thank you.

HEARING COCHAIR SHEA: Thank you. Commissioner Fiedler.

COMMISSIONER FIEDLER: Thank you.

I heard a lot of numbers on increases since the WTO accession by China. Are either of you aware of any sources of information that allocate those percentage increases to state enterprises versus the private sector? I know that's a lot of trouble--and then we're talking about foreign enterprises on top of that. First question.

DR. AMITI: Yes, China does collect in their trade data, they do distinguish between--as well as distinguishing between type of trade like processing and non-processing, they also distinguish between type of firm. So the categories they have of wholly foreign-owned firms, joint ventures, state-owned enterprises, private enterprises. So you could use that data to work out the growth of the different types of firms.

I don't have that information with me. But I would say that the growth of the foreign firms is very high, and I would have to look at the data, but I would guess it's more private firms than the state-owned enterprises because they are trying to privatize those.

COMMISSIONER FIEDLER: The reason I'm asking the question is because of their not-so-long ago decision to support and emphasize heavyweight industries and definitionally strategic industries, which the rest of the world would not define similarly. I.e., auto industry. Right. And still, yes, there are lots of foreign joint ventures, but it's still deemed a national security interest industry for some odd reason.

DR. AMITI: Yes. They do have a very complicated industrial

policy.

COMMISSIONER FIEDLER: It becomes a much more important problem or informationally much more important to look at as you go up the value chain because these are not apparel companies. These are heavy industrial companies and machine companies and lots of other things where they're trying to attract capital.

I have to presume that they want these companies to be internationally competitive and one part of the definition of international competitiveness is that you sell your stuff to people including us more than somebody else does.

Do we at the Federal Reserve, for instance--I know you're not speaking for them--but just on the sourcing, do we make those distinctions? Do we look at these trends within China's trade and economic activity, how it's divvied up?

DR. AMITI: The Federal Reserve doesn't as a policy monitor those specific trends. But I do have that data from my own research, but I only have it till 2005. So I could look at that data, and so what I'm saying is that the data is available. China obviously--

COMMISSIONER FIEDLER: Just Chinese data though?

DR. AMITI: This is Chinese data. I don't know about other countries, but I do know that China has this data because I've got it for I think '97 until 2005 or something like that, and I know that the categories that it breaks down. So you can cut the data any way you like. You can see what share of the growth has been in foreign enterprises, state-owned enterprises. They do have those divisions.

But unfortunately I don't have the calculations. So I probably shouldn't guess at what the numbers will show, but there is another case study that might be of interest to the Commission that I also reference in my written testimony by John Sutton. That's the only example I know of, a very detailed case study of the automobile industry.

COMMISSIONER FIEDLER: Yes.

DR. AMITI: Where they look at the defect rates at different stages, the automobile and the machine components industry, and they do find for car makers that the quality is of international standard in China, but for many of the components, it's not. The defect rates were much higher than the rest of the world.

It's about 80 pages long. It's a very detailed study on exactly the different types of the stages, but as I mentioned, it's very difficult to kind of draw a general conclusion about the quality of all of China's exports from that. That's very specific industries.

COMMISSIONER FIEDLER: Yes.

DR. AMITI: But I think it's informative and interesting.

COMMISSIONER FIEDLER: Thank you.

HEARING COCHAIR SHEA: Commissioner Mulloy.

COMMISSIONER MULLOY: Thank you, Mr. Chairman. Thank you both for being here.

I have two quick questions to Dr. Amity, and then a third question on which I would like to Dr. McMillion to comment.

Dr. Amity, on page five of your testimony, you talk about that we've had relatively higher price increases from the rest of the world for imports than we've had of imports from China. And you say this may be due to the strong euro and Canadian dollars.

In other words, the dollar has fallen dramatically against the euro and the Canadian dollar. And then you say it may be--you don't talk about the Chinese currency at all--you say the relatively lower price increases from China may be due to oil subsidies in China.

Did the currency in China have something to do with the fact--they prop up the dollar; don't they? And that that means that the price increases from China have not been as dramatic as those from the euro and the Canadians. Is that correct?

DR. AMITY: I do talk about the RMB in the testimony as well. So the point that you were referring to was just on the industrial supplies, but then when I talk about the consumer goods and capital goods, the reason I mentioned the RMB appreciation there is that when you graph the exchange rate against the changes in the prices, you do see that the turning point is almost the same period that the prices of these goods, consumer goods started to increase around 2005, just when the RMB appreciated, whereas if you look at, actually if you turn to Figure 4.

COMMISSIONER MULLOY: Let me just ask. Have the price increases from China have been of the same magnitude of the price increases from Canada and Europe?

DR. AMITY: No, they haven't.

COMMISSIONER MULLOY: No. Now is that tied to the fact that the Chinese are under pricing their currency, in your view?

DR. AMITY: I'm not sure. As I said--

COMMISSIONER MULLOY: Okay. If you're not sure, that's fine. Now, the second question I have for you is you mentioned, I thought, about Japan and that they now ship more parts to China, which get assembled, and that therefore some of the trade deficit we previously had with Japan may show up now in the China figures.

I've heard that about Asia trade in general.

DR. AMITY: Right.

COMMISSIONER MULLOY: That somehow or another, we have a smaller trade deficit with the other Asian countries and a bigger one

with China.

I've had staff look at the figures, and I don't think those are--I don't think that's accurate. I think we have a bigger trade deficit with almost all the Asian countries and a much bigger one with China. Do you have data that you can submit for the record on that point because I think it's a very important one?

DR. AMITI: Yes, I agree it's an important point. I wasn't specifically talking about deficits. What I was talking about was imports. So just on the import side. So what I was saying is that if you look at the trade shares say for import shares from Japan relative to China, Japan has decreased. Our share of imports from Japan have decreased quite a lot, and they've increased from China.

And then there's a study looking at the vertical specialization and processing trade, but I was talking about by country, looking at where are these intermediate inputs coming from into China and I've got for 2005 I've got the graph here that 16 percent come from Japan--China's intermediate inputs come from Japan. 33 percent come from, they're called the Four Dragons.

COMMISSIONER MULLOY: Yes, right.

DR. AMITI: Singapore, Taiwan, South Korea and Hong Kong--but then there are also imports from the EU and the U.S. into China. So what I was saying is that given that a lot of China's imported inputs are coming from these Asian countries and Japan, and if you look at the U.S. import shares falling from Japan, but increasing from China.

COMMISSIONER MULLOY: Shares. But the total value, the total trade deficit with all of these countries has increased.

DR. AMITI: As I said, I'm sorry, I haven't looked at the deficit so I wasn't commenting on the deficit. I was commenting on just the import side.

COMMISSIONER MULLOY: Can you get the deficits and submit that for the record? That would be enormously important.

DR. AMITI: I can try.

COMMISSIONER MULLOY: Because it puts it all in a bigger context. I think it's very important.

DR. AMITI: Right. As I said, the focus here of my testimony wasn't on the deficit so I didn't look at that. But I will make a note to see if I can--I think Dr. McMillion is focused more on the deficits.

DR. McMILLION: I think it's important to look both at imports and exports.

DR. AMITI: Oh, absolutely, but I was focusing on imports.

COMMISSIONER MULLOY: Thank you.

HEARING COCHAIR SHEA: Thank you.

Vice Chair Bartholomew.

VICE CHAIRMAN BARTHOLOMEW: Thank you. Thank you very much. Thank you to our witnesses who are demonstrating once again that it's difficult to come to the same conclusion about data or even which data to focus on, let alone talking about the theories that might be underlying all of this, and I was tempted to ask you both about Ricardo's Theorem, but I think I'm going to leave that if perhaps there's another round.

I also wanted to note one of the interesting things that I learned today, although I've known Dr. McMillion for years, is that he was a Peace Corps volunteer in Ethiopia, and it's always interesting to see different kinds of backgrounds like that.

But I have what I think is, I hope, a simple question, and then have a couple of other questions. Could the Chinese have gotten where they are in the aerospace and automotive industries without U.S. technology?

DR. McMILLION: Absolutely not.

VICE CHAIRMAN BARTHOLOMEW: Dr. Amity.

DR. AMITI: Yes. I don't know.

VICE CHAIRMAN BARTHOLOMEW: Okay.

DR. AMITI: They definitely have imported a lot of knowledge, but not just from the U.S., from other countries as well, I think.

VICE CHAIRMAN BARTHOLOMEW: Dr. McMillion, any sense of what percentage of the technology expertise that they've gotten might have come from the U.S. in those industries?

DR. McMILLION: No, I don't have any. I don't think that's a quantifiable sort of thing. But China has a strategy for the aerospace industry that is simply remarkable, and you may have seen just yesterday or the day before China has announced new joint ventures with Bombardier and also with others, and so it's not only the U.S. that they're working with. They're working with really all the aerospace, the best aerospace in the world, and that again puts a lot of pressure on Boeing and on U.S. aerospace.

One of the big changes that occurred in my view with China's admission to the WTO was that Japan started acting more like the Europeans and the Americans. That is moving their best products and their best process technologies to China and they came to the table to deal in a way they hadn't before.

That puts enormous pressure now on American and European companies to up the ante. So the ability to play Japanese, European and American companies against one another is just remarkable, and they've done a fabulous job.

VICE CHAIRMAN BARTHOLOMEW: It's not as though we haven't seen this coming. The machinists put out a study in 1994, I

think it was, called "Jobs on the Wing," where you could see it coming. One of the frustrations, of course, is that people have been sort of complicit in the transfer of technology and the transfer of production, even though we've known what's going on.

But I want to go back to something that you said, Dr. McMillion. I want to make sure I get this right. In April, China's foreign currency reserves increased at the rate of \$100 million an hour; did I get that correct?

DR. McMILLION: Right.

VICE CHAIRMAN BARTHOLOMEW: Okay. Then I'm going to take up your challenge on the cherry-picking. Can you talk a little bit about what the Chinese government is doing with those foreign currency reserves in terms of where they are investing here in the United States?

DR. McMILLION: The first thing, Commissioner, that I think is very important, is it's not just this close to \$2 trillion now. Now, apparently in the last couple of months they've started sending it out into some of their state-owned banks, so it's not all in the same pot now, but close to \$2 trillion within the next few weeks in hard currency.

It's not only that two trillion dollars. It is also that again since WTO admission, China has allowed their state-owned and other companies to get involved in equity markets and the bond markets. So they have enormous potential resources to do all-equity or whatever kinds of deals for just about anything they want. So it's not just the two trillion dollars in currency reserves. I don't want to minimize the two trillion, but it's not just the two trillion.

But they do have very strong ambitions in information technology. One of the things that, I know this Commission knows that I follow very closely, and I think is extremely important, is this TD-SCDMA standard that they have for telecommunications. For all sorts of reasons, Commissioner, they've had interesting problems getting it going, and it may not even be up and running seamlessly for the Olympics next month.

But it is a very important area for their economy and for their military security and for ours. So I think information technology is extraordinarily important. Aerospace and biomedical... They've got a list that I'm happy to give you. But in their tenth Five Year Economic Development Plan, their focus was to gain access to patents and technology. Now, in their eleventh Five Year Plan, it's to control it, and I think they're really looking in a very sophisticated way at a large laundry list of new technologies to control.

VICE CHAIRMAN BARTHOLOMEW: Then let me just follow

up quickly. Dr. Amiti, how do we reconcile that kind of strategy and that interest in building something like the information technology sector with this issue of imported intermediate inputs? Because it would seem to me that it's in those very sectors, the technology sector, that China wants and needs to move up the value chain.

So I understand that you're doing a snapshot of what's taking place now, but if we look a little bit out, do we expect that there would continue to be this processing trade in these sectors or is this something where we should expect that the Chinese will be moving themselves up and moving up rapidly up the chain?

DR. AMITI: The picture I was presenting wasn't just a snapshot. It was actually looking over the last ten years.

VICE CHAIRMAN BARTHOLOMEW: Back.

DR. AMITI: Back, yes. But, yes, I don't have any forecasts about the future. But I can tell you that the trend has been increasing like the processing, share of processing trade over the last ten years has increased, not decreased, but I can't say what's going to happen in the future.

VICE CHAIRMAN BARTHOLOMEW: You're saying overall the share of the Chinese economy that is coming from processing other people's increased.

DR. AMITI: Has increased, yes.

VICE CHAIRMAN BARTHOLOMEW: Has increased.

DR. AMITI: Yes. It increased from--I actually put it in my testimony, my written testimony--from 47 percent in 1992 to 55 percent in 2005.

VICE CHAIRMAN BARTHOLOMEW: Right.

DR. AMITI: Was the share of their processing trade, and in fact, their share of processing trade with the U.S. is even higher than 55 percent, so--

VICE CHAIRMAN BARTHOLOMEW: There're still so many questions. But what I'm grappling with is as that share has increased, the overall manufacturing and exporting has also increased. We're talking about exponential increases here.

DR. AMITI: Oh, sure, the levels have increased. This is about the shares, yes.

VICE CHAIRMAN BARTHOLOMEW: Right.

DR. AMITI: Yes.

VICE CHAIRMAN BARTHOLOMEW: Okay.

DR. AMITI: So both their ordinary trade and their processing trade is increasing, absolutely.

VICE CHAIRMAN BARTHOLOMEW: Which gets me back to the Ricardo's Theorem question that I won't ask you, which is what we

know about China is that it all moves so quickly, it's moving faster than we expected, and at a rate that we've just never seen before. Okay.

HEARING COCHAIR SHEA: I'm going to use my prerogative as the cochair of this hearing and intervene and ask a question here that just follows up immediately after you, and I know you said you don't predict the future, but has China cornered the market on processing trade? Do you see a potential competitor to China in this area?

DR. AMITI: I don't know what it means to corner the market in processing trade. It's just basically giving, allowing firms to import inputs duty free if they're specifically for export, and there are other countries that have those kind of policies as well, like Indonesia, for instance, also has some duty free zones. So if firms are located there, they can access intermediate inputs duty free.

But the share of their export, Indonesia's share of exports in processing trade is nowhere near as big as China's. So I'm not sure that I understood your question.

HEARING COCHAIR SHEA: Okay. Commissioner Esper.

COMMISSIONER ESPER: Thank you both for your testimony. We've talked a good deal this morning about where we are today and how we got there so I have a different question. And that is, if you both could snap your fingers and create a healthy trade relationship between the United States and China, what would it look like statistically?

DR. AMITI: I can really only discuss stuff from my research. That's kind of asking for a normative.

COMMISSIONER ESPER: Would there be an equal share of export and imports?

DR. AMITI: I'm going to defer to Dr. McMillion on that because, as I said, I can only really discuss what the data is and what my research shows. I can't really say what should be. Sorry.

COMMISSIONER ESPER: Dr. McMillion.

DR. McMILLION: I don't think that it has to be a balance with any individual country. I think that any country needs to pay its bills at some point. We're discovering lately, sadly, the problem with not paying our bills, developing too much debt over too many years. So I do think it's important that we pay our bills.

We don't have to have a balance with any individual country. But we do, I think, have to have an overall balance or somewhat rough balance. It doesn't have to be every year. But 4.5 trillion dollars over the last seven or eight is probably too much deficit.

I think with China, a healthy relationship would be because of the relative standard of living between the United States and China, I

think I would expect to see that the U.S. imports mostly textiles and apparel, and other relatively low value-added products, and that we export cell phones and computers and airplanes and high technology products.

We can compete with China, of course, or with any other country, but we can only compete when we are far more productive and when we make more advanced products in more productive and more advanced ways.

And what concerns me with our relationship with China and frankly with the world now is that we're losing our technological advantage, which is the only thing that sustains our high living standard except debt. And we're losing it at a very rapid rate, and we're particularly losing it to China where the cost of producing is much, much less.

COMMISSIONER ESPER: I'll ask my question again. Relax the terms. Maybe Dr. Amiti will have an answer. Could you describe it in non-statistical terms or other terms as well?

And the reason why I ask this question is the charge of the Commission is to make recommendations to the Congress about the U.S.-China relationship, particularly in trade, and we hear a lot of complaints in the halls of Congress, and before our committee, that the U.S.-China trade relationship is imbalanced, it's unfair, so forth and so on, but if you don't know what it should look like, how do you know how to get there. And so my question is, again, how, can you define for us how you would like to see the U.S.-China relationship?

Dr. McMillion, the question for you would be how would you recommend we recommend to the Congress that they get from where we are today, to the situation you're describing in terms of a better trade relationship between the U.S. and China which is composed the way you described it and functions the way you describe it?

Is it a matter of China floating its currency or enforcement of WTO rules? How do we get there, to this normative, so to speak, situation?

DR. AMITI: Yes, I understand the role of the Commission, and what I'm hoping to do is be able to give you information about what's going on to help you with your objectives, but I'm not in a position to make normative statements or predict the future. But I can definitely interpret what's been happening now and discuss what the research shows.

COMMISSIONER ESPER: Okay.

DR. AMITI: I'd have to limit my answers to that.

DR. McMILLION: I think the first thing the Congress could do, as the Congressman before said, is implement all of your policy

recommendations from last year's annual report. I think that would be an outstanding first step.

Commissioner, there are so many proposals, but I think, and the way I ended my testimony today, let me just stop with that, which is to say that I think there are many things which we can do with China directly, many of which you have recommended in your annual reports year after year.

But I think it's also important, and I know you do, in this Commission, appreciate that it's really a global problem, it's not just a bilateral problem with China, as I indicated. We don't have to have a trade balance or certainly surplus with China. Trade deficit with China is fine as long as overall it works for us and works for them.

But one of the real problems that we have right now is because, and I indicated this earlier, that the dynamism that China has developed and now the wealth that they have developed, the concentrated wealth that they've developed, and they've got lots of problems, and they've got to create lots of jobs.

So we have created a dynamism where it's almost a zero sum game where they must provide ten or 12 million jobs a year to keep order in their country. It really is beginning to adversely affect the United States and our military security as well as our economic security, and Europe, and I think soon Japan as well.

So it's a global thing, and they are playing companies off one another in a complete reversal of the way it's been for many, many years. In the past, transnational companies could pick and choose between countries, and now China because of this really unique situation--and India doesn't have this--just China--because of the way they're governed, because of all sorts of things, they can play companies against one another and countries against one another, and that's what needs to be addressed.

That's not a very specific policy recommendation, but as I said, I think if the Congress would implement all of your past proposals, that would be a good start.

COMMISSIONER ESPER: And just if I can, a quick follow-up.

DR. AMITI: Okay. I was going to say something following on that, if I can? I just wanted to say that you do hear a lot about, you know, China's driving everyone out and causing all these problems, you know; what should we do?

But I think if you look at the research, it does show that there are a lot of benefits that the U.S. is getting from trade with China, and I think that these are overlooked, and that specifically in terms of lower priced goods, more varieties of goods, also the competition they provide, we also are getting lower-cost goods from other countries as

well, and competition does encourage firms here to look for better ways to do things and increase efficiency here as well.

So just looking at saying--and then in terms of jobs being lost in the U.S., there have been some studies looking at which sectors where we've lost the most jobs, and whether this is related to competition from low wage countries. And it is true that there have been job losses in sectors like textiles and apparel here, but there have been big gains in other sectors, the more high capital intensive sectors like scientific equipment and instruments.

So it's not that these jobs are lost and then there's nothing else. As trade economists always emphasize, you always have a comparative advantage in something. It's not that we're just going to be wiped out.

COMMISSIONER ESPER: I know you want to respond. Let me just ask my question, and you can respond to that, because I want to pull on this thread just a little bit more if I may. In a healthy trading relationship with China, or any other country for that matter, would you define it as one where no U.S. technology is transferred and no U.S. jobs are lost?

DR. McMILLION: No, no, absolutely not. No. Now, I just have to respond. You can take any period that you would like, but let's say over the last eight years, the United States--I follow these things very closely--over the last eight years, the U.S. has produced a net of about 6.5 million jobs. All of them have been in health care, bars and restaurants, all of them.

We've lost jobs in precision equipment. We've lost jobs in aerospace. We've lost jobs in autos. We've lost jobs not only in textile and apparel. Actually, one of our biggest percentage loss of jobs is in semiconductors. We've lost jobs in every manufacturing sector and every sector that is easily outsourced or faces foreign competition, everyone.

And if you have any data otherwise, I would love to see it. I'm sure the Commission would as well.

DR. AMITI: Yes. The thing is that most developed countries have a shrinking manufacturing base and an increasing services sector.

That's just called moving to their comparative advantage. That's not just because of China. This is technological change. Even the studies that tried to look at whether the labor market effects in the U.S. were due to trade or technology mainly found it was due to technology. So should we just stop technological progress?

So I think that it just needs to be looked at in a broader context in terms of the facts. I've also done a lot of work on outsourcing, and I have looked at the employment effects of outsourcing and also productivity effects. In fact, the U.S. has gained higher productivity

as a result of outsourcing, and there haven't been any net job losses.

The big focus is on service outsourcing. The U.S. has a net surplus in services trade, and where is the trade mostly taking place? It's not with India and China. It's with Canada and the European Union. So you do get the media talking about Indian call centers and things going out to China, but when you look at the statistics the share of services trade is very small. We have a net surplus in services which is increasing.

So I think that's just showing the kind of forces that you'd be expecting from a Ricardo model that you were mentioning earlier.

HEARING COCHAIR SHEA: Okay. Thank you.

COMMISSIONER ESPER: Thank you, both.

HEARING COCHAIR SHEA: Commissioner Reinsch.

COMMISSIONER REINSCH: I wasn't going to ask a question, and then this last exchange prompted one. On the question of manufacturing jobs. Dr. McMillion, how do you define the health, if you will, of the American manufacturing base? Is it defined by job gain or job loss?

DR. McMILLION: No, it is defined by whether or not we're meeting demand and we're not.

COMMISSIONER REINSCH: Elaborate on that. Whether we're meeting demand by domestic production?

DR. McMILLION: Right.

COMMISSIONER REINSCH: So we're only healthy if we're not importing anything from any country?

DR. McMILLION: No, we can have deficits in some sectors and surpluses in the other, but demand growth for manufactured products in the United States, again, you know, take any period, the last six years, eight years, has been something like 50 percent again, more than our productivity growth in manufacturing, much more than our productivity growth in consumer electronics or any of those kind of things.

But if our demand is here and our production is here, we don't have a healthy manufacturing sector.

COMMISSIONER REINSCH: Dr. Amity, would you agree with that definition of manufacturing health?

DR. AMITI: No, I wouldn't. I don't think that we have to meet our own demands. Are you saying that we should go to autarky? I actually didn't really understand the answer. But it wouldn't be a definition that I would use.

We need to look at overall jobs, not just in the manufacturing sector. If workers lose their jobs in the manufacturing sector, we need to see whether they can easily find a job somewhere else.

So I think net gains in jobs is important, and we don't need to only meet demand from here. We're also exporting. So we're producing for the rest of the world. Looking at things like productivity growth, I think is important. Looking at net job creation, those kind of things, I would say, are a sign of a healthy economy, but I wouldn't just focus on one sector. I'd look at the overall economy, both manufacturing and services.

DR. McMILLION: Commissioner, if I could put that a different way. I would say that we have a healthy manufacturing sector--that was your question.

COMMISSIONER REINSCH: You would say that we do?

DR. McMILLION: No, no. I would say that we have a healthy manufacturing sector when we can pay our way. I would say the same thing for the economy--

COMMISSIONER REINSCH: I don't know what that means.

DR. McMILLION: --for the economy overall. If we have to borrow, as we are now, \$2 billion a day, I would say that our overall economy is not healthy. Borrowing \$2 billion a day, day after day, in my view, is not healthy.

COMMISSIONER REINSCH: Well, that would mean that if any time we have a trade deficit, we're sick?

DR. McMILLION: No, I think if it, these things, and as you know, I know, in trade theory this is supposed to ebb and flow with business cycles. If we had a, we are in or close to a recession now, and we're still borrowing \$2 billion a day. I don't know. We could get to your Ricardo question pretty soon, I think.

But in my view, when you are in a recession and in the middle of the largest financial crisis that we've had in this country in quite some time, and still we have to borrow \$2 billion a day from China and others around the world, that to me says that we don't have a healthy economy. And that's the overall---

COMMISSIONER REINSCH: I'm certainly not arguing that we do.

DR. McMILLION: Okay.

COMMISSIONER REINSCH: My assessment of a healthy economy is pretty much the same as yours. I'm trying to figure out what the standard of good health is, and--

DR. McMILLION: To me, it's paying the bills, which is when production meets demand.

DR. AMITI: We should also keep in mind that an increasing part of the deficit is due to oil imports and that's a global problem that we're all facing.

DR. McMILLION: And, of course, everybody has to pay for oil,

too. So that's a very good example. We don't have to have a surplus with Saudi Arabia, but we have to have a surplus with someone in order to pay Saudi Arabia. That was really what I was saying earlier, which is, of course, precisely the opposite of autarchy.

HEARING COCHAIR SHEA: This panel is supposed to end at 11:15, but with your indulgence, could we ask you two more questions?

DR. McMILLION: Please.

HEARING COCHAIR SHEA: Commissioner Wessel.

HEARING COCHAIR WESSEL: Thank you. This has been very interesting, and I hope that we have an opportunity at some point for follow-up.

I wanted to ask a question about your data, Dr. Amiti. You said it stops in 2005. Is that because the data doesn't exist beyond that? Are you going to be doing updates to that to look at that? And as you disaggregate that data, did you do the time period as a whole or can you tell us whether since China's WTO accession, there has been a change in the quality of those jobs?

The reason I ask, during our investigations and our work, we've seen China move much more towards platform and systems integration. This isn't just taking a screwdriver and putting circuit boards or a motherboard into a computer. We see them now coming out, Lenovo, many others, they're putting high tech, high value-added products together. They're now about to have, or may already have, the ARJ21, a regional jetliner.

That's not taking knockdown kits with no skills addition. This is platform integration, systems integration. This is really what makes them a world-class consumer and accelerates them up the food chain, if you will, to many of the jobs that we would like to have here and many of the members of Congress have in their districts.

Can you comment on that, and Dr. McMillion, as to your view on that, but how you looked at that data? How going forward you're going to look at this, the systems integration issue?

DR. AMITI: The reason I only have the data to 2005 is that I actually got the data when I was at the IMF, and the Chinese customs were willing to give it to the IMF and the World Bank, but now that I'm at the Fed, it's harder to get. You have to pay a lot of money for it, and it takes a long time to get it.

HEARING COCHAIR WESSEL: The Fed doesn't have a lot of money? Okay.

DR. McMILLION: Not these days.

DR. AMITI: So the data does exist, but I'm not sure how it would answer your question about platform and systems integration.

HEARING COCHAIR WESSEL: Your data, and again, I haven't read your testimony for a couple of days, but as I remember, it took the ten-year period essentially as a whole and didn't look at changing patterns that much since 2001. Is that correct?

DR. AMITI: Right, right. I looked at '97 until 2005.

HEARING COCHAIR WESSEL: Right. And I'm interested in whether since we've seen a dramatic increase in investment in China--

DR. AMITI: Right.

HEARING COCHAIR WESSEL: --in I believe a quality--and we'll hear later on some of the panels about the dramatic increases in R&D facilities and expenditures in China--whether your '97 to 2001 data changes in the next period, that what your conclusions are, in fact, if you were to disaggregate and take time periods might actually change that. We'd see that they really are moving up the food chain, and it's not just--and I don't remember the terms--you know, skills, processing, et cetera, that the five percent would be a different number and would be changing over time now?

DR. AMITI: I see. So you want to know whether the increase in processing trade took place in that first period or the later period?

HEARING COCHAIR WESSEL: And what the nature of post-2001 accession--

DR. AMITI: Right.

HEARING COCHAIR WESSEL: --what the impact has been? Because from what we've seen, many trips the Commission has taken, things have changed on the ground dramatically in terms of FDI, in terms of R&D, et cetera.

DR. AMITI: Right.

HEARING COCHAIR WESSEL: And I think your conclusions may be weighed down, if you will, by '97 to 2001 data, and in fact, we see that, in fact, they are really becoming much more of an export powerhouse in the value addition, not just the industrial tourism approach, if you will.

DR. AMITI: Right. Yes, certainly, I can look at that.

HEARING COCHAIR WESSEL: Okay. That would be helpful. Dr. McMillion, do you have any comments?

DR. McMILLION: Although it may be beginning to change a little bit with \$140 a barrel oil, industry has been globalizing for quite some time, and it's been globalizing very rapidly in China. So to the extent that processing trade is defined that anything you export has some import component in it, I would suspect that as here in the United States, that China's processing trade in the sense of globalized production will likely continue.

HEARING COCHAIR SHEA: Okay. Thank you. Last question,

Vice Chairman Bartholomew.

VICE CHAIRMAN BARTHOLOMEW: Thank you very much, and thank you to both of our panelists for a very interesting discussion, proving once again--what is it--that for every two economists, there are how many, there are different interpretations.

Dr. Amiti, I want to close with you, which is this idea that it's all okay if the number of jobs lost is equal to the number of jobs gained, and we're pulling you into a normative discussion, which I know you didn't want to go into, but--

DR. AMITI: No, but I did say net job creation. I didn't say no job creation.

VICE CHAIRMAN BARTHOLOMEW: No, but you said net job creation. In other words--

DR. AMITI: So that means increasing.

VICE CHAIRMAN BARTHOLOMEW: --that essentially it's okay as long as the losses are tolerable, as long as there is creation, but to me that makes it a numerical issue and doesn't deal with the fact that the quality of the jobs that are lost versus the quality of the jobs that are gained--wages, benefits, health insurance, all of those things that go along with it.

And how do you take that into account in a model? Because somebody who has been working at a fairly high technical level in a tool and die job and ends up working in a McDonalds, okay, so there's as job loss and there's job creation, but that's a pretty significant difference that that person is experiencing and that community is experiencing. So how do you fold that in?

DR. AMITI: Okay. So I want to clarify that I wasn't saying that so long as job losses equal job gains, there's no problem. So I was asked to look, mention some characteristics you'd look at to see whether an industry was healthy, saying you could look at what the net job creation was, what the productivity growth was, how easy it was for workers to find another job, and of course the quality of the jobs and the income they earn is important as well.

So what I was saying earlier, too, was, for instance, we in the '80s and '90s and even now, we've been having a huge increase in the skill premium. So it's the low-wage workers that are losing out relative to the high-wage workers.

There was a huge research literature on this, looking to see whether it was trade that was causing this inequality, and in fact as hard as people tried, they found it very difficult to attribute it to trade, and it was, many attributed it to new technologies that was causing this because it was increasing with the new technologies, the demand for more skilled workers increased, and that was increasing the

relative demand for these skills, pushing up their wage.

So you can't just look at, oh, these two things happened at the same time so it must be trade. You have to do more careful studies to look at what's causing these things, but yet there is evidence, too, that shows that workers, some workers in these industries that are facing a lot of low-wage competition from abroad have lost their jobs and have ended up with lower-paid jobs.

And yes, that is an issue. I don't think any trade economist would argue there are no distributional effects from trade, but generally they argue that you should address these issues with other policies, not by saying let's stop trade.

VICE CHAIRMAN BARTHOLOMEW: So I want to just clarify one thing, which is this definition of health then is it's within an industry or within a sector that you're talking about? The jobs--

DR. AMITI: I haven't really thought about how to define the health of an industry. I was asked the question, and I just mentioned a few things that came into my head, things like net job creation. Obvious things like productivity and net job creation, but I think that to get a comprehensive definition, I would need some more time to develop one.

VICE CHAIRMAN BARTHOLOMEW: Thank you.

HEARING COCHAIR SHEA: Thank you, Drs. Amiti and McMillion, for your valuable testimony and lively discussion. Would you be willing to take a question or two in written form from the Commission and respond at your leisure? Would that be okay?

DR. McMILLION: Sure.

HEARING COCHAIR SHEA: Thank you. We will reconvene in five minutes for our second panel.

[Whereupon, a short recess was taken.]

PANEL III: R&D: DOMESTIC AND FOREIGN FUNDED

HEARING COCHAIR WESSEL: Thank you. Our third panel for today is going to address, among other things, the specific sources of funding for R&D in China.

That includes foreign multinationals that are transferring their R&D operations to China and Chinese government entities that are dictating the nature and scope of R&D.

Our chairman never listens when we speak. This is a constant problem. It's the power of the chairman not to listen to his members.

Kathleen Walsh is Assistant Professor of National Security Affairs in the National Security Decision Making Department of the Naval War College. Welcome back. Her research focuses on China

and the Asia-Pacific region, particularly issues related to international security technology transfer and globalization, nonproliferation and arms and export controls.

Prior to joining the war college, Professor Walsh was a Senior Consultant to Washington, D.C. area think tanks, CSIS, the Monterey Institute, and the Stimson Center, as well as to the Los Alamos Technical Associates.

Dr. Kent Hughes, an old friend, is Director of the Program on Science, Technology, America and the Global Economy at the Woodrow Wilson International Center for Scholars.

Prior to joining the Woodrow Wilson Center, Dr. Hughes was Associate Deputy Secretary of Commerce, President of the Council on Competitiveness, and Chief Economist to Senate Majority Leader Robert C. Byrd.

In prior life, author of the Yellow Brick Road, which most people haven't read in many years, but commend to their attention.

Our normal rules are that your statements, prepared statements, will be entered into the record. If you could speak for roughly seven minutes so that there can be a good give and take with the commissioners, we'd appreciate it, and Ms. Walsh, if you could start.

**STATEMENT OF MS. KATHLEEN WALSH
PROFESSOR OF NATIONAL SECURITY AFFAIRS
U.S. NAVAL WAR COLLEGE, NEWPORT, RHODE ISLAND**

MS. WALSH: Thank you, commissioners, and Commission Chairmen Shea and Wessel, and members of the Commission and staff.

Thank you. I'm honored to be here again with you today and very excited to see that the discussion today and also for this afternoon is something that I think the Commission has helped to push forward the debate quite a bit over the years, and so I've learned a lot just sitting here thus far this morning, and I commend the Commission's persistent interest and attention on these types of issues taking place in China over many years which obviously affect a wide range of U.S. interests.

As I see it, and these, of course, are my views and only my personal views and don't represent any official government views whatsoever, the ultimate question is how do we ensure U.S. interests in the face of these fast-paced economic dynamics, rising power and influence around the globe that China has pursued and has to some extent proven, growing attraction as a high-tech investment and potential innovation hub and amid very ambitious and long-term

modernization plans?

China has conveniently laid out its long-term plans and strategies for becoming a more innovative society over the coming decades. We cannot be sure that China will fully achieve these ambitious aims, but we can be sure that they will try.

As outlined in their 11th Five-Year Plan through 2010 and the complementary Medium-to-Long-Term Plan through 2020 on Science and Technology Development, China has moved into a new phase in its long-term development strategy that now prioritizes science and technology as the main driver of China's continued modernization drive.

This represents a continuation of a decades-long plan and continued state-sponsored efforts to advance and accelerate China's economic development. Shifting into this phase is, I think, significant because, as with China's persistent efforts to advance and reform its agricultural and then industrial sectors over the past three decades, during this latest third period of modernization, China can be expected to steadfastly pursue and support S&T and R&D advances as the focal point of its modernization efforts, probably for decades to come.

In other words, this is no fleeting, fanciful or frivolous undertaking but a serious, systematic, long-term investment and implementation strategy.

The question becomes then not one for China of sustaining the necessary political will to pursue such a bold approach, which I believe is almost certain, but of China's actual ability to achieve its aims and how rapidly these goals can be reached.

Given the rate of China's development to date, past, present and future challenges notwithstanding, and of course barring any major global catastrophe, one cannot help but be bullish about China's prospects in this regard.

As widely reported in the press, China's spending on R&D has been rising quickly. The China Business Review even notes that China's R&D spending has been growing about 17 percent annually over the past 12 years. In 2007, spending on R&D reportedly amounted to over 300 billion RMB, or 1.49 percent of GDP, placing China among the world's leaders.

As the National Science Foundation recently reported and observed, "when set against China's rapidly growing economy, the rise in the R&D to GDP ratio is remarkable." I'd have to agree.

China's stated goal is to become an innovation-oriented society and to develop the capacity to conduct indigenous innovation. This means increasing R&D expenditures to 2.5 percent of annual GDP by 2020.

PRC officials also acknowledge the need for more of this funding focus to be on basic and applied R&D so as to foster sustainable innovation. Currently, most R&D in China is focused on experimental and developmental efforts.

Yet officials are also cognizant of the need to spend R&D funds in a way that will produce more innovative results and return on investment than the already extensive state support for R&D has produced in the past. This is a considerable debate going on in China today.

Other challenges persist as well, including the growing demand for highly skilled workers with an understanding of modern business management and innovation practices.

At present, however, China possesses what would appear to be a significant capacity to continue its support of R&D investments over the long term. While the PRC government has long invested state funds in S&T and R&D-oriented projects such as the Torch, 863, 973 and other programs, the current influx of foreign investment, foreign exchange holdings, developing venture capital system, rising trade volumes and growing public prosperity all seem to me to point to even more financial resources being available for continued government and private sector support for R&D initiatives in China over time.

Meanwhile Chinese officials continue to support and to reform R&D funding process to more closely align it with global best practices and funding levels in order to promote a more productive return on investment than the PRC has experienced in the past.

As important, the rise in Chinese R&D spending by both state and private sector enterprises has been accompanied by a conceptual, what I think is a conceptual sea change among senior policymaking circles that R&D expenditures should be more market or demand driven than the strictly interpreted mandates of the past.

For instance, when describing China's present plans for S&T and R&D investments and modernization, Chinese officials characterize these more as, quote, "guidelines" than hard and fast end-points to achieve while emphasizing an understanding of some flexibility and even the occasional failures.

I think to the extent that this latter approach takes hold in China, particularly a cultural acceptance of some failure as an inherent risk when it comes to S&T and R&D investments, this could signify a new era in Chinese technological development and potentially a more innovative spirit and unique innovative style.

It is something worth watching as its emergence or lack thereof could be an important indicator of considerable changes and/or progress to come in China.

In terms of foreign R&D, if figures published by Chinese officials are accurate, the number of foreign R&D centers in China by the end of 2007 numbered 1,160. This would mean that they have nearly doubled in the last three years and almost tripled since 2002, according to official figures.

What are we to make of the sustained and now widely recognized trend, and what is the U.S. strategy for addressing it? Although recognition has grown in the U.S. and internationally that this is an important trend and worth collecting more data on, current data collection methods and reporting, in my view, remain limited and too time delayed as to be most useful in contemporary corporate or government decision-making.

Making this trend more intriguing and perhaps even more significant is that it appears that foreign R&D investments in China are being promoted and indeed expanding into new and traditionally heavier industry sectors such as commercial shipbuilding, which I'll talk to a bit more in Q&A, although this appears still be in the early stages.

At the same time, it is clear that it is an objective of PRC policy to exploit such commercial and dual-use opportunities to enhance its defense industrial sector as part of ongoing military modernization efforts, not unlike the defense sector in the United States and other countries, which rely in part on commercial market investments and innovations.

In other words, China's economy is beginning to look more and more like our own, though China still lags behind in critical areas, particularly defense.

China's grand ambitions and expected large-scale R&D funding initiatives over the coming years, if not decades, raise the question of what will be the U.S. strategy to ensure our own innovative and competitive edge in the face of a potentially more innovative Chinese economy?

Will it require ramped-up support for existing policies and practices or something more, something new, or entirely different approach? Is it an unprecedented opportunity for the United States that we can and must exploit more fully or does it represent a growing concern against which we would be wise to defend further against or some mix of each?

It is likely to fall to the next administration and Congress to make this critical decision. This Commission's continued work and attention on the issue, therefore, could serve as an important input into this process and aid development of a comprehensive strategy that will preserve and hopefully enhance our own innovative competitive

advantage over the coming decades in both the commercial and defense realms.

The PRC has entered into a new and important phase in its long-term development plans. China's current strategy for becoming a more innovative economy and society is clear. The means and ends have been outlined, leaving only the question of whether or not China can fulfill these ambitions.

For the United States, the path is less clear. What does the rise of a potentially more innovative Chinese economy suggest in terms of U.S. means and ends when it comes to pursuing science and technology? This is a vital decision that the next U.S. administration and Congress must face head on and articulate a strategy that will support and sustain U.S. innovation.

I'm struck by testimony so far today and in reading some of the prepared statements that there seems to be a clear consensus that there is a need for some type of U.S. national strategy to address the comprehensive nature and the interlocking nature of a lot of these trends, and to deal with what the evidence is clearly showing increasingly to be a durable trend of R&D and globalization, and how we deal with China on a number of fronts.

So I am happy to be here and look forward to taking any questions the Commission might have, and I thank you for inviting me to this forum.

[The statement follows:]³

HEARING COCHAIR WESSEL: Thank you.

Dr. Hughes.

**STATEMENT OF DR. KENT H. HUGHES
DIRECTOR, PROGRAM ON SCIENCE, TECHNOLOGY,
AMERICAN, AND THE GLOBAL ECONOMY, THE WOODROW
WILSON INTERNATIONAL CENTER FOR SCHOLARS,
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DR. HUGHES: Thank you very much, Mr. Chairman. I want to express my pleasure and a sense of privilege at being before you. I have followed the work of the Commission for a long time including what was in a sense a predecessor commission, the Trade Deficit Review Commission, and I would second some of the earlier comments suggesting that Congress should move on a number of your recommendations.

Let me also say that this morning I am expressing my personal

³ [Click here to read the prepared statement of Ms. Kathleen Walsh](#)

views. The Woodrow Wilson Center as an institution does not take positions on public policy questions. Its mission is to bring the best of the academic and the public policy worlds together in a way to clarify the choices for Congress and other public policymakers.

I would very much second what Professor Walsh has just said, in fact, I would recommend her book to everybody. I learned a great deal reading her book, and she's clearly updated her figures and her thinking since that time.

China certainly is ambitious; it is growing rapidly, not only in terms of its economy but in terms of its commitment to research and development and even more rapidly in terms of its aspirations for the future.

They are not only building on a series of programs that they have announced over the last two decades, but very much adding funding to what they see as their future. By one measure, in 2006, China was ranked fifth in terms of R&D spending. The OECD came out with a figure putting China ahead of Japan by a very slight measure to be number two in R&D spending based on a purchasing power parity measure that has been controversial. But the basic point is the same: they are talking aspirations and they are funding them.

They are also working extensively at building their talent pool. The number of undergraduates, the number of graduates from Chinese universities, and the number of graduate students as well has risen rapidly. Recent figures would suggest about 40 percent of those undergraduates majored in a STEM discipline, science or engineering in this case, and they are clearly hoping to expand that talent pool both by continuing to add to the undergraduate and graduate students in China and by upgrading their universities, but also by working to attract talented Chinese individuals who have studied abroad, in many cases studied and worked in the United States.

In terms of my summary remarks, I would just say that China is intent on becoming a knowledge economy: that there has been this rapid increase in the number of R&D facilities established by global companies with American companies often in the lead: that these foreign direct investments in R&D complement China's desire to become a knowledge society and also complement in many cases other national economic and national security goals.

China's rise, I think, poses enormous opportunities for the United States and some very key challenges. We will need to adopt a strategy and several policies to achieve that strategy to make the most of those opportunities and also to respond to those challenges.

Let me try to respond briefly to the five questions that you posed in your letter:

Number one: are they shifting to more basic than applied research? I think that is their intent, but as Professor Walsh indicated, most of the R&D in China is still on the applied side. This makes very good sense for China. They are not at the frontiers in most technologies. They have a lot to gain from moving to those frontiers and that suggests continued borrowing and adapting of applied research.

Can they capitalize on foreign R&D? Prior to the WTO accession, most R&D facilities took the form of some kind of joint venture with a Chinese entity. In that case, the borrowing and the learning was easier. Since joining the WTO, more of the foreign-based R&D facilities in China have been wholly-owned facilities, in which case some Chinese fear that the transfer of technology is more difficult and the learning is more difficult. They also fear that there's actually a competition in some cases with domestic firms, that the best talent goes to those foreign R&D centers.

I think, on the other hand, there's a great deal of fluidity in the Chinese labor market, particularly in the high-tech R&D sector. So I think you would see people learning in the foreign-owned facility moving to other facilities in China, and it's my view that they are able to capitalize on that foreign R&D in a learning sense.

"Does the government dictate R&D?" was your third question? I think it's clear that R&D in China is put in the context of key national goals including national security. But it's also my sense they moved a long way from the earlier Soviet central planned model. There is more and more flexibility in choosing individual projects, but it is as it often is, in the U.S., a goal-oriented or mission-oriented research.

Your fourth question dealt with the degree to which they were achieving their economic and national security goals, and how do their R&D activities contribute to those goals?

I think China's R&D serves a three-fold strategy. On the one hand, they are working to strengthen industry and also rural development. And they are selectively looking at areas where the future is not so well-defined, in which case they are putting some money into advanced research. Nanotechnology is a good example where they actually rank number two in the world in terms of published papers.

Your fifth question was about the ties between the military, the universities and the state-owned enterprises. I know less about that the military field. I do know that the U.S., two or three decades ago, entered an era where we talked about spinning on civilian technologies to strengthen the military. As China has emerged as a significant subcontractor to Airbus and Boeing and a major manufacturer of

electronics, that should give them an opportunity to take some of those dual-use technologies and strengthen their own military.

What should be the U.S. policy response? As earlier panelists have suggested, there are some obvious gains in areas of global research where we share an interest with China. Energy security would be one. Climate change potentially would be another. Global pandemics would be a third. The more smart people you have working on those problems, the better.

For us, I think the question, however, is also that we see manufacturing leave the U.S., the design work following, and following that is R&D. The fundamental question for us is: as our industrial base to some extent shifts overseas, primarily to China but increasingly to India and other places, is that shift weakening our overall innovative capacity?

Next, I am seconding what Professor Walsh said about seriously monitoring these trends in as real-time a way as possible. That means adequately funding the Bureau of Economic Analysis and cooperating agencies in the government.

I would like to see the GAO follow these trends. I think restoring the Office of Technology Assessment in the Congress would be another productive thing to do.

In terms of participating in what is increasingly a global innovation enterprise, I think the U.S. needs to prepare its research community with fluency in key foreign languages including Chinese. We also really need to think about supporting advanced manufacturing here. We need to balance our international accounts, not specifically with China necessarily, but to have an overall balance, and we need to think about not only committing ourselves to an innovation strategy, but also thinking about the incentives and the economic climate that will translate those innovations into investment and job creation in the United States.

[The statement follows:]⁴

PANEL III: DISCUSSION, QUESTIONS AND ANSWERS

HEARING COCHAIR WESSEL: Thank you, both. I'll take the prerogative of the chair and begin. My apologies.

HEARING COCHAIR SHEA: No apologies necessary.

HEARING COCHAIR WESSEL: In the past, the Commission has looked at the question of how to gain better access to some of this information, and you've both given us some great information here

⁴ [Click here to read the prepared statement of Dr. Kent H. Hughes](#)

today, but you've both also indicated we have more to know.

You've indicated, Dr. Hughes, some entities that may need some additional support or resuscitation, shall we say, OTA. What tools, what information would you want to have? And this may be a recommendation that the Commission can make to Congress as to information that our entities going over to China can supply us.

My understanding--I'm not an export control expert--is that when it's a deemed export, when it's an individual from here or information going over rather than an indigenous research facility in China that develops the R&D, they don't have to report back to the U.S. on that, if it's wholly developed there.

But because these are U.S. entities under U.S. corporate law, is there some ability to gain access to information which would be done on a BPI basis to understand what they're doing, what they're accelerating, whether it's simply preparing a product for a different market or whether, in fact, it's developing wholly new products that are really sort of the crown jewels that we would want to do here?

If you can give me some ideas about what, you know, you would want to know to be able to further examine this issue?

Dr. Hughes, if you'd like to start?

DR. HUGHES: I would do two things. I am not sure of the details about deemed exports. I know in Professor Walsh's book, she mentioned this as a question and a problem--just exactly the question you're posing.

I would be surprised, however, if U.S.-based companies would be reluctant to share that information if requested by the government.

Second, I think you really are going to need people on the ground, doing interviews with these companies and getting a sense of what really is happening, and the degree to which you really have indigenous technologies, indigenous in the sense that, while inside the foreign-based facility, they did not depend on the technology that had its origin in the United States. But beyond the attempt to control, which you are implying, I think we simply need to know the direction in which these trends are going. You are going to have to be interviewing the key technology people on the ground to get a sense of the degree to which the whole innovation system is going global.

IBM is a prime example. GE increasingly. Microsoft. So that you see bits and pieces of a project develop in a series of countries. Right now, I believe the U.S.-based companies are attempting to control what they would view as the key technologies or the core technology and keeping them in areas with very strong intellectual property protection, which is not yet the case in China.

HEARING COCHAIR WESSEL: Ms. Walsh.

MS. WALSH: What I would want to see ideally is a more real-time or closer to real-time data on the flows, as I think Dr. Hughes was suggesting, rather than looking back academically, which is helpful and interesting to people like me, but on a year-by-year basis, what are the numbers? Who has these numbers? The Chinese are collecting them themselves now. It seems to me that if we want good numbers, one way is, of course, use our own, exploit those more fully.

That's a given, but also to work with the Chinese who are now also very interested in collecting this, the OECD and other international organizations also now are interested in collecting this, and it seems to me the sort of haphazard ad hoc collection methods that we've had to date are good and encouraging and yet just not sufficient to have the kind of information on not just the numbers, but what are the dynamics that underlie these numbers of course?

And it may well take consistent surveys, and you see this in magazines and technology magazines and so forth, associations trying to get to what are the push and pull factors, for instance. Why the change from joint ventures to wholly foreign-owned enterprises? What are the companies getting out of it? How are they reacting to changes in China's regulatory system and so forth?

It's something that is going to have to be frequent and I think regular in order to be really useful to U.S. companies, of course, to also see dynamics in the region. You talked about this in the last panel--Japan, Korea, India, what are they doing in China because China does serve, to some extent, as a vessel for globalization.

So I think it really will require cooperating with the Chinese government in this sense, and I think that that would be something that they would be interested in too because this is happening in their backyard. They want to understand more of it as well. So that's ideally what I would suggest that we try to do, and I think it is doable.

HEARING COCHAIR WESSEL: Commissioner Shea.

HEARING COCHAIR SHEA: Yes. Thank you both for your very, very valuable testimony. My question is for Ms. Walsh, Professor Walsh. You said a few things in your written testimony that didn't come out, I think, in your oral testimony.

You kind of took a contrarian view. A lot of people view R&D investment, Chinese increases in R&D investment as a threat. But you say in your written testimony that this is a real opportunity for the United States or could at least be an opportunity.

I'm going to quote some of your words back to you: "China's more advanced R&D and rising innovative capacity could be a tremendous opportunity to promote U.S. interests in both commercial and defense-related spheres if we determined to exploit it effectively

as part of a national strategy."

Then you go on to say, "It is not China's R&D success that is innately worrisome; rather, it is whether or not the United States can find ways to effectively exploit this phenomenon in promotion of our own interests."

And then you go on and say, "Why should U.S. companies and populace not benefit from what are likely to be extensive PRC government investments in R&D over the next decade or more, much as the rest of the world has reaped the benefits from U.S. government R&D investments made over the past half century?"

So, as Commissioner Esper pointed out in the last panel, we're in the business of trying to make recommendations to Congress. Could you, beyond improved data collection and real-time data collection, what would you recommend that we recommend to Congress to best able to exploit this increase in Chinese R&D investment?

MS. WALSH: Sure. Let me first state that in looking over Dr. Hughes' statement, I agree with every specific recommendation that he suggested. So in addition to those, I appreciate your quoting that part of my testimony because this is an issue that I've been looking at, working on for over a decade now, so I do probably have a contrarian view. I always have. The book I published in 2003, nobody read it. Not even my mother read it. Now people are looking at it, and so take it in that vein, if you will. But--

HEARING COCHAIR SHEA: I'm going to ask you a question about that as well.

MS. WALSH: Okay. I deliberately worded that part of my testimony, and the key words being "if" and "exploit effectively." This is happening. The evidence is piling up that this is a durable, enduring--

HEARING COCHAIR SHEA: It's going to happen.

MS. WALSH: Long-term, it is and it will. Also what we know because China has been extremely transparent, believe it or not, on the S&T side, what China plans to do to become an innovative society in both the commercial and the defense realms.

Right. Why are we not exploiting this as much as humanly possible, is my question? I think there's a lot more that we could do, and that would require public-private cooperation here in the United States, some sort of comprehensive national strategy, what do we aim to get from not only China but from globalization. I have yet to see that discussion and that plan laid out.

HEARING COCHAIR SHEA: Do you have any specific recommendations? You mention listening posts, foreign countries, foreign companies that put listening posts in Silicon Valley. They

open offices just so that they're around.

MS. WALSH: Yes. I think, China has gone--the term I use is "all in" on globalization. There is no turning back. They're trying to exploit the hell out of this. I would like to see, and I'm not sure exactly what measures are most appropriate, but again a public-private partnership to exploit the heck out of this, and I don't see that, and I don't know why that is, because I don't think we can reverse it. It's not going to stop. It may slow a bit with the recession and so forth, but I think this is now the reality, and there's a growing consensus of that.

HEARING COCHAIR SHEA: Yes, I agree with you. I just, if you could get some more thought to some specific things that we could recommend to Congress that ought to be done in order to exploit what you and I think I believe as well as an explosion. It's going to be over the next ten to 20 years, more and more investment and greater technological development.

MS. WALSH: And let me be clear. I think if we continue what seems to be a more laissez-faire approach to this, that it will become a threat, that we will fall behind, that we won't maintain our competitive edge in innovation.

One of the things I did highlight in the testimony is higher education system. That seems to me a clear area where we have now and likely for some time a clear competitive advantage over the Chinese. They have more demand than supply. It's going to take them generations to establish more Tsinghua-like universities in other parts of China.

It seems to me that's a clear area of focus here to maintain that capacity. But working more with the Chinese to understand more of this and with our other partners in Asia, clearly are also early steps we could take.

HEARING COCHAIR SHEA: Dr. Hughes, do you have any thoughts on that?

DR. HUGHES: I would second that emphasis on education. I would actually like to see us have a whole before-the-cradle to post-conventional-retirement rethinking of American education.

On the higher education side, we face a double challenge. The Sputnik generation is nearing retirement or is about to retire. When you talk to scientists my age, which I'm not prepared to reveal, and ask them, "why are you a scientist?" they will often say it was Sputnik, the excitement of the space program, even though most of them became specialists in some other scientific field.

Second, since the rise of fascism, we have had this enormous wave of imported talent in all kinds of fields, but certainly in science,

technology, engineering.

For the first time we face competition for that talent. I knew it was serious when I heard that a French laboratory had changed its language to English so that it could attract Chinese and Indian scientists. China and India both want to keep more of that talent at home. China is very aware of a past brain drain and is now focused on turning that into a brain gain.

All of that says that over time, even as we want to continue to attract the best and the brightest from everywhere, we are going to need to depend more on ourselves and do a better job of developing and attracting American talent to these fields.

HEARING COCHAIR SHEA: Thank you.

HEARING COCHAIR WESSEL: Chairman Wortzel

CHAIRMAN WORTZEL: Dr. Hughes, Ms. Walsh, thanks for being here. I guess you were here in 2002 also; is that right?

MS. WALSH: A couple times.

CHAIRMAN WORTZEL: Yes. Ms. Walsh, you were cited in, I guess it was, the Information Brief on U.S.-China R&D Linkages for the National Science Foundation, and of course, you were the author of that 2003 study for the Stimson Center on Foreign High Tech R&D in China.

Both those studies comment on the general trends in R&D, and your study, in particular, comments on just how good these R&D investments are for China, what they've done for China, what they can do for China.

I have to say that both studies, in my view, are value-laden, you know, data-laden. There's a lot in there. But both are seriously lacking in that they're catalogues and blueprints of what's good for China, but neither considers or comments on the national security implications for the United States of these R&D shifts. And I haven't heard that from your oral testimony.

Can you give the Commission, either of you, given the Commission's mandate, the national security risks for the United States of these R&D shifts, and can you make concrete recommendations that you would make to Congress to ensure that American R&D in China does not adversely affect U.S. security?

You may not be able to do that at the table today, but in writing. This is from page 23 of your book, Dr. Walsh: "It is unclear whether China has the capacity to effectively exploit commercial technologies for military application."

Is that more clear now?

MS. WALSH: Yes. Let me start, if I can. I would, sir, respectfully disagree with you because all my work on China R&D has

often been from the perspective of what is best for U.S. national security.

I do not have a corporate background. I do not have any investments or interests in corporate investments in China. I'm looking at this from a U.S. national security perspective. And so in my book and other articles that I write, I try to understand what's happening in China in order to say what does that mean for us. And so that has been my focus and remains my focus.

The question I raise in that book and still today is, you know, it's one thing what's good for U.S. companies, and we can debate whether that should or should not be the case, and what's good or not for China. In terms of what's good for us, this is a trend that I think increasingly we've learned is occurring. It's not likely to reverse. Therefore, we need to deal with it in terms of what does this mean for the defense industry in this country in particular.

I know that you had hearings and testimony about this last year, which is extremely helpful. That's a step in the right direction. Understanding this trend is what we need to do first, and then find, again, ways to exploit it, and I saw evidence in testimonies last year, what do we do about this that will serve U.S. defense sector interests, to serve our own military and security needs?

This is the kind of debate we need to be having, and I think come up with a strategy. That's the most concrete thing I can suggest at this point. Put smart people together, public-private sector, and look at what U.S. national security interests are in this regard. And it's a big, complex issue as you know very well. And so that's what I would suggest, and if you want more concrete ideas, I can provide those as well.

For the record, I've always considered this from a U.S. national perspective. I've said that it can be a threat; it can also be an opportunity. I argue, why are we not making this more of an opportunity from our defense and security considerations? The answer may well be that we want to put more walls up and put more defenses up. And that's an obvious potential option.

But I don't think we've had this full debate yet, to know what --it was mentioned earlier--what does a healthy economy look like? What does healthy U.S. innovation look like? What does a healthy U.S. defense sector look like? Until we answer that, you know, what we're doing seems to me a one hand on the gas, one hand on the brake approach. I don't think that serves U.S. national security interests at this stage, given the trend and given how durable it seems to me.

What I'm advocating simply is that we have this debate, more openly and more all encompassing. Do we stop this activity? Do we

break it – the trend? Do we go all in ourselves? And that's what I'm advocating from a U.S. perspective.

In terms of military benefits, I think that has become more clear, simply because we've seen advances in China's defense sector based on the digital triangle model that James Mulvenon has written a lot about, the shipbuilding sector, Evan Medeiros and Ti-Ming Chung's works. The evidence there is also growing again, that China's civil-military integration strategy for enhancing its defense sector to serve its military needs is the model and is showing some success.

In fact, that's one of the reasons I've started to look at the shipbuilding sector because the commercial shipbuilding sector follows similar dynamics. What does this mean for military modernization? There are at least a dozen or more R&D centers there.

This may be some, you know, expansion of this trend. So we need to understand it to serve our national security needs.

HEARING COCHAIR WESSEL: Mr. Hughes.

DR. HUGHES: There are two things that Professor Walsh emphasized and reiterated that I would absolutely second and third.

Number one, that we need a strategy. We need to think about what kind of country we want to be, where we are going, what are the opportunities, what are the risks? You mentioned the Council on Competitiveness. In their Innovate America report, one of the key recommendations is that we needed a national innovation strategy. We don't yet have one.

Second, I strongly support the emphasis that Professor Walsh puts on public-private partnerships, public-private dialogue. We should sit down with the key companies--where they are going, what are their interests? If we find them investing in China or elsewhere around the world, why? If we think it is important to have the R&D geographically based here, let us think about a strategy and a set of policies to make that happen.

About two and a half years ago, the Defense Science Board expressed a concern about the semiconductor industry. The Semiconductor Industry Association shared the concern that so many of the key facilities were being transferred outside the country. I have not seen any serious discussion of it, and certainly there's been no action in response to it.

MS. WALSH: Could I just add very quickly, one of the areas, too, that I think we need to focus on is in terms of tools. It seems to me we're using tools from 20, 40, 50 years ago, export controls being one. They may be necessary, but they may not be sufficient. We may likely need a whole new set of tools to make this something that is in our interest and also to better exploit, and I would just also say it's

something I read--I would recommend to the Commission--I read after my own testimony, but a report just out by the Information Technology and Innovation Foundation.

They looked at the last 40 years of R&D Magazine's main innovations, top ten innovations, recognized every year. The findings from that I think are really interesting in that they found that the collaborative innovation is what has really been remarkable and has led to more of these innovations in the United States over the past 40 years.

It's not just GE and Intel and these hierarchical vertical enterprises that are being most innovative, but horizontal collaboration across laboratories, universities, industries, right, technology clusters.

Is this now becoming a global phenomenon? If so, again, this closer cooperation or at least understanding with China may be serving that greater dynamic for the United States. It's something that I think we need to ask, find out which is in our best interests.

HEARING COCHAIR WESSEL: Commissioner Fiedler.

COMMISSIONER FIEDLER: On the manufacturing side, we have looked into components of weapon systems and where they were manufactured with little success. The Defense Department has even admitted that they don't know where the components are originating from, which on some level is extremely shocking.

On the R&D side, and then let me make one comment on the export control side, I do listen to my friend, Mr. Reinsch, about the complicatedness of dual-use and the gray area that is rapidly overtaking old thoughts about export controls.

Therefore, actually, is anyone following U.S. defense companies' R&D offshoring to China, ostensibly its commercial R&D, and its dual-use implications? In other words, if there is no longer a clear line in dual use, but clearly an application, a commercial, a defense application of technology, are we tracking our own companies' behavior in China? Do you know anybody? Are you?

MS. WALSH: Not to my knowledge.

DR. HUGHES: Nor mine.

COMMISSIONER FIEDLER: Is that unimportant or important?

DR. HUGHES: I think it is a mistake not to do so. As Professor Walsh has said, we ought to know what these trends are, get a sense of the implications, and think about what our national interest is in pursuing them or slowing them.

COMMISSIONER FIEDLER: Aah. I'll tell you why I'm so concerned. I'm very familiar with McDonnell Douglas' death knell as a company and its relationship with China. So as it was tanking, McDonnell Douglas became extremely susceptible to selling off its

assets including the machine tools of the B-1 bomber factory in Columbus, Ohio. Despite the fact that everybody else wanted to buy them, they sold them to the Chinese company CATIC that then sent it to the Shenyang Aircraft Factory which primarily produced military aircraft.

So, I have a little or no confidence in American companies' decision-making as they are buffeted by world economic conditions. So if we're not looking at them and they're not, and you say that they'll be reluctant to disclose to us their R&D, I am actually coming away from this a little more concerned that we don't have enough information. We don't even have basic information to make policies day-to-day, much less to put together for a strategy. Am I off base here?

MS. WALSH: I'm going to agree with you and then also be contrarian and say do we want to spend our time and energy and efforts walking through the production chain of commercial and defense firms to find out what pieces and parts and innovative ideas might have come from China, directly or indirectly? That is something we may want to do, and it would be good information to know certainly.

I think we've already acknowledged or realized that it's there and it's growing. So the question again seems to me is this something we want to try now and stop or do we want to think in a broader sense of maybe this is good in the sense that if there's ways we can exploit it better rather than focusing our energies on stopping it and try to do something else.

COMMISSIONER FIEDLER: Let me refine the question. I'm not concerned about innovative technologies. I'm concerned about crucial--okay--crucial to the maintenance of our defense. Let's just take the weapons systems--crucial to the maintenance of the supremacy of the defense systems. We don't know, as far as we can tell, we do not know what our vulnerabilities are.

MS. WALSH: And it extends down to the mineral material level as well.

COMMISSIONER FIEDLER: Yes.

MS. WALSH: Frankly. We're dependent on China increasingly at that level, the more fundamental level, not just the parts.

COMMISSIONER FIEDLER: I am less concerned perhaps about the Chinese than I now, logic compels me to be concerned with our own decision-makers.

DR. HUGHES: I think there are many examples where, even in a commercial context, a company may be looking at price and quality, but not at its long-term commercial security. So let us say that it turns

out that you're drawing key parts from one particular part of one particular country. It may make sense in the short-term commercial sense, but you can have an industrial accident. You can have a terrorist incident. You can have a union strike which causes a stoppage.

So it really goes back to the most common sense idea of investing--don't put all your eggs in one basket or don't depend on a single hen, I guess, around the world.

MS. WALSH: This is a global problem, not just China, is the point.

DR. HUGHES: This is not China specific. An example happened in the mid-1980s. One Japanese firm made a great deal of the packages for semiconductors. They had an industrial accident. They were making something like 80 to 90 percent of the packages. There were not many alternatives. It was a real panic because people had become so dependent on that one supplier. So it really is a dependence question. It is not just a China question.

COMMISSIONER FIEDLER: An irrational dependence is what your point is.

DR. HUGHES: Or it can be a risky dependence.

MS. WALSH: We looked at that exact issue at an effort I was involved in with the National Academy of Sciences, National Research Council, looking at strategic minerals and materials, the more fundamental level. And came up with some concrete ideas on how to monitor and deal with that to minimize risk and so forth.

So if that's of interest, I can refer you to that reference.

COMMISSIONER FIEDLER: Please.

MS. WALSH: But it is a much bigger problem than just China certainly. And again, what are our aims? How do we deal with this phenomenon in the way that best serves our interests?

COMMISSIONER FIEDLER: Thank you.

HEARING COCHAIR WESSEL: Thank you. Commissioner Mulloy.

COMMISSIONER MULLOY: Thank you, Mr. Chairman.

I want to thank the two witnesses for their testimony today and also for their long service to the Republic in different capacities. I've had the good fortune to work with Kent Hughes over many years. I'm delighted to have you here, Kent.

VICE CHAIRMAN BARTHOLOMEW: Back in the Sputnik days, Pat?

COMMISSIONER MULLOY: Back in Sputnik. I was reading a book by David Lampton, who is the Dean and Director of Chinese Studies and Dean of the Faculty at Johns Hopkins School of Advanced

International Studies. It's called The Three Faces of Chinese Power: Might, Money and Mind.

On page one of this book, he tells us: China does have a national grand strategy. And then on page 25, he tells us that this national grand strategy is to make China rich and powerful and to regain the nation's former status as a great power that controls its own fate.

I have no problem with that. They had 150 years of bad times, and Deng Xiaoping came in and said we can't do this ourselves. We need to entice the foreigners to come in and help us rebuild our economy. Ernie Preeg, who is going to be on a panel later, is going to talk about that.

But here is the problem I have. Congressman Jones came in here and testified about John Chambers, the Chief Executive of Cisco, saying that Cisco's goal was, quote, "China will become the IT technology center of the world. What we're trying to do is outline an entire strategy of becoming a Chinese company."

So he was saying my interests are aligned with China's growth. He didn't say America's growth. But this is an American multinational corporation, I believe.

Now, Kent Hughes, in page six of your testimony here, you tell us, quote: "The extensive contribution of multinational corporations in building the Chinese information technology, electronics and aerospace sectors creates the potential for strengthening the Chinese military."

China has a strategy. Part of that strategy is to entice our companies to help build their comprehensive national power. Our companies are focused on making profits for their shareholders. So they're over there doing that.

You both say we need a national strategy. I heard that, I think, from both of you in your prepared testimony or in your oral testimony.

What do we need to do to entice our corporations to put American shirts on rather than Chinese shirts in this competition? I don't think it has to be a zero sum bad relationship, but the way it's going now, it's so one-sided that we need a strategy, and how do we entice our guys to put our shirts on and compete for us rather than compete for the other guys who are enticing them to put their shirts on?

MS. WALSH: I think it's an excellent question. I don't know if I have a good answer for you. I think it's definitely worth asking and asking again. When I hear that statement, I am taken aback as well. I would think of them as a U.S. company, not as a Chinese company, but if that is what is also part of what's changed here, then we need to address it head on and how we're going to address it to serve our

needs.

I appreciate the frankness in which he may have stated that, and yet it suggests we have a problem. So if there's no such thing as a U.S. multinational anymore, we need to address it, and whether it's carrots and sticks, I don't know. It's probably going to be a mix of each to deal with their bottom line, and that's why we need a national strategy to address that significant change if that's true.

DR. HUGHES: I would suggest a five-step strategy here. Number one, as we've talked about, strengthen the innovation system. That is necessary, very necessary, but not really sufficient step. You have had the Rising Above the Gathering Storm report that has been translated into the America COMPETES Act, but it is not yet funded. Still, that is a step in the right direction.

We really do need, I think, to move from significant current account and trade deficits toward rough balance. My personal preference would be to adopt something like the Plaza Accord approach that took place in 1985. We had an overvalued currency. We were running a significant, although smaller relative to today, trade deficit, and then Secretary the Treasury Baker talked with the other key finance ministers.

There was an agreement that the U.S. imbalance was undesirable from many points of view. Over time we moved back, not initially, in fact the deficit got larger deficits initially, but over time we moved back toward a balanced trade approach.

If we had a similar approach now, in addition to the participants in 1985, you would certainly want to have China, India, Brazil, perhaps some others at the table, to talk about maintaining global demand but shifting toward balance in terms of the international accounts. The prospect of balanced trade would tell every American company and international company that the U.S. over time would be producing \$700 billion more of something, not perhaps what we produced before, but we would be producing something, and much of that would probably be in terms of advanced manufactures.

Third, we need to really think about the limited U.S. safety net. After World War II, we were the only advanced country that developed a private sector welfare system. We expect companies, you still see it in the established companies, to carry the burden of health and retirement benefits.

Once we went to an open trade system in the 1970s, it should have been predictable that the established U.S. companies who carried this burden would be at a persistent disadvantage to companies who operate in the context where there was a public shouldering of that burden. So we need to think about how to find a way to reduce that

burden.

We need to have the right kind of incentives, the right environment that encourages investment here whether it's by Cisco, historically American, or whether it's Siemens, the historically Germany company.

Finally, we will need to think, I'm afraid, about countering incentives that are offered by other countries. It is very tough to expect an American or any other company to say no to an entity that's offering them, a billion dollar inducement to build their latest factory or lab in a jurisdiction outside the United States.

I think those five steps would put us on the path toward a strengthened and balanced industrial base, not in the context of in any way being against any particular country, but really creating the environment in which both of us, hopefully, could prosper.

COMMISSIONER MULLOY: Thank you. That's very helpful, both of you. Thank you.

HEARING COCHAIR WESSEL: Commissioner Bartholomew.

VICE CHAIRMAN BARTHOLOMEW: Thank you and I'm going to join Commissioner Mulloy in thanking both of you not only for your testimony but for your service over the years.

Dr. Hughes, I'd like to acknowledge particularly your recognition that learning is a cradle to grave enterprise, and that we need to pay attention to early childhood development just as we need to be paying attention to what is happening with the Sputnik generation, who given what's happening in the markets probably can't retire anyway. So I think that keeping everybody productive is a good thing.

I want to build, I guess, on the theme both that Commissioner Fiedler and Commissioner Mulloy, I think, were all trying to grapple with, but first I want to acknowledge from my own perspective what's probably a politically incorrect position, but I don't think that this is just a matter of dependency. I think there are particular concerns about the fact that China is the country that we are talking about. It is an authoritarian government.

I don't think we would be having these kinds of concerns or commissions if this was the UK that we were talking about, for example. So we have to acknowledge that the nature of China's government, the questions we have about the role that it plays in the world, the responsibilities that it's taking on, and how the future of the world is going to be shaped are really critical to all of this.

But I want to get to the issue of cooperation because, Dr. Hughes, you mentioned pandemics, the global environment, and yet do we balance this need to cooperate with both who're paying the bill on

that one--the Chinese are going to have, as Dr. McMillion testified this morning, within a matter of weeks a \$2 trillion foreign currency reserve--and how do we also balance it with the fact, Ms. Walsh, that a lot of these key companies that you are talking about cooperating, that we need to pull in as part of this cooperating framework that we have, and this public-private partnership are companies, GE, Boeing, Intel, they're companies that have one foot here and one foot in what they perceive as their future.

Even the possibility that the foot that's here gets pulled out, that it becomes insignificant what's happening in the United States. How do we balance those things? This is something that Congress needs to grapple with, but, where do we draw the lines? If we are going to provide incentives for corporations, should they be incentives for companies that don't see their future economic growth being here in the United States?

DR. HUGHES: I think we do need, at times, to think of ourselves as if we were directors or managers in a global company. Maybe it is even helpful to think in terms of a French, German, or other company not based here. What would make us want to invest in the United States? What kind of climate? What sort of policies? What sort of incentives?

I suggest this approach because in fact more and more of our leading companies are becoming global, not only in practice but in the way they look at the world. I know other people that have testified before the Commission here have gone back to contrast today with the era of "Engine Charlie" Wilson, the former president of General Motors. He was famous for saying that what's good for America is good for General Motors and vice versa. The current era is certainly much more complicated. You want to think of your incentives from the standpoint of what is going to build a stronger United States and what is going to encourage investment, job creation and innovation here.

In terms of global innovation, I think really more and more companies do see innovation as a global reality, companies are drawing on good minds wherever they happen to find them. In some cases, that effort will have public support. A number of national governments will say that we are all concerned about a pandemic or we all need alternative sources of energy, that the era of oil is in some sense coming to a close over the next decades. We would need then to think about a fair sharing of the support and a fair sharing of the benefits.

If it were to be an intellectual property question, maybe we should have serious discussions between the WTO and WIPO as to

what a model global, publicly-funded global agreement would look like. Certainly you would expect that if China were a participant, they would want some of those benefits, and if we were, we would want some, too, in some sort of equitable fashion.

MS. WALSH: The reason I struggle is because I think sometimes we may need new tools to better deal with this issue with regard to influencing China as well as these multinational companies which we tend to think of as U.S., but I think more tend to think of themselves as global companies than anything else today.

So maybe new ideas like having companies foster training as they are doing in China for various reasons, send and support U.S. students going to China, you know, lots of scholarships, lots of travel abroad, flood the place with U.S. students in science and engineering and everything else.

There may be different ways of dealing with what is this new phenomenon, whether it would take place in and/or outside China. We tend to like it here, and yet the reality is this is a global phenomenon, a lot of it in China. A think we could get maybe the companies to or incentivize the companies to promote an excitement in science and technology and engineering in the United States. It seems to me that's lacking right now.

What are the next generation projects and why would they be exciting? And we're going to support you in these, and we're going to let you travel the world, China and other places, to train you up quickly and to see these different countries and learn different languages.

It may be something entirely new that we haven't done that much of in the past. So I struggle with specifics, but that type of new idea, out of the box thinking, I think is required and we could ask certainly the companies to help us with that.

They see value in doing that in China for the various benefits that they get with the Chinese government, their partners and others. Can we not feed into that some and work with them to find ways that we can exploit this enormous amount of funding that the Chinese are going to put into S&T and R&D over the next decades? How can we exploit that? How can we help them – the companies - and help them exploit it and how can they help us – the U.S. Government - exploit it?

VICE CHAIRMAN BARTHOLOMEW: Just an observation, and that is the very kinds of strategies that we talk about that the Chinese government is doing because of the nature both of our government and our free market economy, people have always resisted. We can't talk about national economic strategies in this country. We can't talk about these, and the Chinese government has control over things that we

have chosen in this society not to do, which just further complicates it. It doesn't make it impossible, but certainly complicates things.

MS. WALSH: And yet these new findings suggest that the government has played an enormously important role, if not directive, but supportive role over the last 40 years.

VICE CHAIRMAN BARTHOLOMEW: Thank you.

HEARING COCHAIR WESSEL: Commissioner Esper.

DR. HUGHES: May I just add two words?

HEARING COCHAIR WESSEL: Yes, please.

DR. HUGHES: One on the foreign language front. Of course going back to the Sputnik era, there was a National Defense Foreign Language Fellowship where you studied science or economics, and you studied language at the same time. But, starting in graduate school, you were coming at it very late in the game. Most say the earlier the better for learning a language.

I would love to see the federal government, perhaps the Congress, enact a challenge grant program: pick a dozen key languages--Chinese would certainly be one of them--and encourage school systems to start right from kindergarten all the way through 12th grade, so a student is able to build his or her language skills. So you would then have a group of people who picked STEM disciplines who would already be prepared for global collaboration.

The second thought about global companies is that we do need to, I think, accept the reality that the companies do think of themselves globally. There is even an interest in new business models where they sort of adopt the political campaign or Hollywood model. Your core competence becomes an ability to pull together the right people for a specific venture, and then you go on to the next venture and you pull together another set of people, and those people may be here or they may be anywhere around the world. So it really is a very different world that we are thinking about.

VICE CHAIRMAN BARTHOLOMEW: Thank you.

HEARING COCHAIR WESSEL: Commissioner Esper.

COMMISSIONER ESPER: Thank you. I've heard Sputnik mentioned a couple of times, and that's kind of ironic because Sputnik motivated us to make these investments not because of the launch of the satellite, but because we believed that the Soviet Union was an existential threat to the United States, and many in this town and elsewhere are loathe, so to speak, to make that correlation to China. So it's a little bit of irony there.

Ms. Walsh, I want to pull more on this string that Dr. Wortzel talked about because clearly the Chinese are exploiting us for technology in any number of ways, and they have a strategy. And what

you propose makes sense. How do we exploit their R&D?

But I'm wrestling with what you mean by that in terms of concrete examples because it's not clear to me either whether you believe that we should have export controls on high tech dual-use technologies. Can you elaborate any more on that?

MS. WALSH: As I noted earlier, I think that they're necessary but not sufficient. I think they're a useful tool, they may, again, if we look at this objectively and broadly, we may come to the conclusion that we need more export controls--we need to pull a lot of this investment back. We need to put sticks on the company.

That may be the conclusion. I am open to that as a potential. What I'm proposing is that we also ask would it potentially be in our interest to go the exact opposite direction, and I haven't seen that debate happen. Until I do, I'm not sure that the export control or the more defensive approach is really helping because it's one foot on the gas, one foot on the brake, and that doesn't seem to be helping us in terms of innovation in S&T, and the long-term picture doesn't look too good--manufacturing and so forth.

So that's why I'm proposing that you at least, that we at least consider the opposite, and then reach a conclusion.

COMMISSIONER ESPER: And the opposite being?

MS. WALSH: Either more defensive pull it back because that serves our interest or all in.

COMMISSIONER ESPER: All in being de-control?

MS. WALSH: No, not in terms of export controls. There always will be some export controls.

COMMISSIONER ESPER: Yes.

MS. WALSH: Certainly. Where are our military advantages? Certainly we want to protect those.

COMMISSIONER ESPER: Right.

MS. WALSH: But to the extent that we want to better exploit, if we can, China's own advances and the world being in China trying to invest in these new areas, Dr. Hughes said it. The more smart people you have working on hard problems, the better. If these people are in China, let's go there; let's exploit the heck out of it.

Export controls will still be likely a tool, but there may be other tools that help us exploit this trend. So I'm not advocating that we do this. I'm advocating that we consider it as it may be the answer; it may not be.

COMMISSIONER ESPER: Sure.

MS. WALSH: But we have ask the questions.

COMMISSIONER ESPER: But are those mutually exclusive? You keep saying one foot on the pedal, one on the gas. You can have

export controls on one hand to protect sensitive technologies that you want to deny others, but also go all in? Again I'm just asking, I don't know what "all in" means.

MS. WALSH: Right. I guess what I'm getting at is there seems to be fear, as Commissioner Bartholomew suggested, that we don't ask the question because it's a bit of a third rail in terms of military modernization.

COMMISSIONER ESPER: What's the question though?

MS. WALSH: Is it in the U.S. interest to do more trade with China?

COMMISSIONER ESPER: Yes.

MS. WALSH: We tend to fall back on it if it's not good. It's the old argument, we want to keep technology away from them.

COMMISSIONER ESPER: Sure. But to do more trade--

MS. WALSH: That may not be the best way.

COMMISSIONER ESPER: --though in controlled items?

MS. WALSH: The question is what is our objective and then answer what are the necessary tools.

COMMISSIONER ESPER: Yes, but the purpose of export controls is to deny them critical technologies--

MS. WALSH: Right.

COMMISSIONER ESPER: --they can use to advance their military and intelligence capabilities.

MS. WALSH: And if we look at the problem and find that we get more gains, benefits, commercially and defense-oriented, from participating more, then that may answer that export controls should be more limited, or the answer may be--

COMMISSIONER ESPER: Okay. So that's what I'm trying to nail down. What you're suggesting is maybe we should be controlling fewer things and go in the other direction of working with the Chinese on this?

MS. WALSH: Possibly, in order to reap greater gains in the end. But until we ask the question in that form, we're going to keep doing what we've always done, and I think at this point, it's holding us back. It may be holding us back.

COMMISSIONER ESPER: Okay. That's what I'm trying to understand. Of course, we had this debate in 2000 and 2001 up here.

MS. WALSH: Export controls being only one part of the problem.

COMMISSIONER ESPER: Sure. And then I try and put that in the context of what you write on page eight. You say, given the ongoing globalization phenomenon, it seems unlikely that we'd be able to or should even want to limit China's S&T and R&D advances.

Here's the key word, "if," if they serve to promote greater global prosperity and scientific, technological and industrial innovations that can be globally distributed. That's an important "if."

MS. WALSH: Uh-huh.

COMMISSIONER ESPER: With the clause, it talks about greater openness and promote all these good things, but of course the issue that concerns myself and I think several others here is what if they don't, and I think the evidence points that many of them don't? What if they're advancing China's own military capabilities that could be used against their neighbors or worse, against us and our interests?

MS. WALSH: The risks are inherent. I agree with you.

COMMISSIONER ESPER: Exactly.

MS. WALSH: And this will be a threat if we take a laissez-faire approach and hope for the best. Absolutely it will be a threat. But are there ways that we can exploit that that will reap greater gains that trump those risks, that we can accept those risks because the gains will be so great? We have to ask that question is all I'm advocating.

I don't think we have asked that question. We have not looked at it fully, and until we do, I think we'll keep moving along, but it may not reap the greatest gains for commercial or defense interests of the United States.

COMMISSIONER ESPER: Okay.

HEARING COCHAIR WESSEL: Commissioner Reinsch.

MS. WALSH: Are we passing up opportunities that are critical for U.S. defense industry, for instance?

COMMISSIONER ESPER: I know there have been numerous studies.

MS. WALSH: That's what I'm asking. We don't know.

COMMISSIONER ESPER: And there was, of course, extensive debates, as Commissioner Reinsch and I well know, in 2000-2001 on export controls and their value and where do you draw that line, and so on.

So I'm not sure that debate hasn't been had. I'm just trying to find out when you talk about going "all in" or new approaches, I just want to understand so that we can then assess those, convey them to the Congress as appropriate recommendations or not, to go in one direction or the other. So I'm just trying--

MS. WALSH: That's why, I'm not advocating one direction or the other. I'm advocating a debate and a strategy coming out of it.

COMMISSIONER ESPER: Yes, and I'm trying to find illustrative examples of what that strategy may look like. But anyways, thank you.

COMMISSIONER REINSCH: I won all of those debates in 2000-

2001.

I just want to make that point. I have a bunch of cranky questions but they're for my colleagues, not the witnesses. So I'll save those for another day.

Let me commend the witnesses first on laying out clearly the challenges global companies face or the challenges U.S. companies face in operating in the global environment, and also making a compelling case for the inevitability of the challenges they face and the difficulty, if not impossibility of walking back, and I think it's good that you both did that. It's particularly good because you both made the point explicitly and implicitly that these relationships and collaborations can be win-win. Just because somebody does something overseas, that doesn't mean necessarily and inevitably that somebody in the United States has lost. There can be gains on both sides and we ought to be looking for opportunities to do that.

With that said, I confess I feel a tad parental about Ms. Walsh since as I recall when I was in the government, I was one of the first people to fund her research in this area. She's now gone way beyond that relatively small amount of money.

I appreciate your service both to the country and the greater body of knowledge about China in the last 15 years.

I don't feel parental about Dr. Hughes. He's much older than I am, but I appreciate your service nonetheless.

DR. HUGHES: I remember Sputnik.

COMMISSIONER REINSCH: Yes. Unlike Esper, so do I. We were both alive then.

HEARING COCHAIR WESSEL: What's Sputnik?

COMMISSIONER REINSCH: I do have two questions actually-- for Ms. Walsh, which are an attempt to get at what Commissioner Esper was trying to get at in a slightly different way, which is to what "all in" means.

First of all, do you see a role for more formal U.S. government-Chinese government cooperation in science and technology, information sharing, et cetera? And if so, what?

MS. WALSH: I do and having been at a conference preceding the JCCT not too long ago, we talked about where are areas where we might cooperate on S&T with the Chinese. At the end, it came to, well, let's focus more on what are the areas that we can't because the global problem set is so large and the potential to solve a lot of common problems is there, and so you can identify more readily the ones that are more critical and sensitive that you can't work on.

So it seems to me there's an interest in China, there's an interest in the U.S. generally, that we want to solve some of these problems.

The Chinese could be a good partner there.

COMMISSIONER REINSCH: What forms might that cooperation take?

MS. WALSH: Data sharing on these phenomena, much of which is in China; therefore, their numbers are likely going to be a bit richer than ours at this point. But a cooperative data collection so that we have confidence in the data.

Scientific exchanges in the sense of where are the new frontiers that we both think are important to invest in that the Chinese are likely I think to invest in, have money to invest in. Where are they going with this? I think, again, finding ways that we can exploit what they're going to be investing in.

Much as we invested after World War II, the rest of the world reaped the indirect benefits of that, let's identify where there may be indirect benefits from what China plans to do.

COMMISSIONER REINSCH: Are there particular areas that you think are potentially the most fruitful for that kind of collaboration?

MS. WALSH: Certainly, biotechnology, health care, given the type of foreign investment that's in China right now doing studies that appear to be ahead of other countries, is a good area.

Nanotechnology, given China's rapid advances in basic science and research in that area, seems an obvious one.

Space, given the current situation of our space industry, I would expect to be an area where we would want to work perhaps more collaboratively with the Chinese, at least find areas where it might be in our interest, and I won't get there. Shipbuilding is a market area that obviously the U.S. has had difficulties in. Are there ways that we can exploit what's happening in China to serve our interests?

It may well be we want to build the basic parts in China and add the more critical systems, you know, here. There may be new ways of doing what we've always done here using a more global methodology and talking to the Chinese, we can learn more about how we can find ways to exploit that.

COMMISSIONER REINSCH: Dr. Hughes, do you want to comment on her list? Add or subtract or disagree?

DR. HUGHES: I think the list is very good. I would add some areas of energy research. I am probably being influenced by Senator Byrd here, as I would put a lot of focus on the cleanest possible coal technology. Even if we were to choose never to use another lump of coal in the United States, China and India are both sitting on mountains of coal and they feel an almost moral impetus as well as a political impetus to grow. They are going to use that coal. I think China now realizes what a

challenge it has created in terms of its own environment and its own health. That could be an area, I think, of very extensive collaboration.

Were it successful--maybe sequestration is the answer, maybe there is something else--but were it successful, it would translate into almost instant energy independence in the United States since we're the third Saudi Arabia of coal.

COMMISSIONER REINSCH: Thank you very much.

HEARING COCHAIR WESSEL: And if you'd like to, Commissioner Reinsch, submit your cranky questions for the record, we'd be happy to look at them.

Commissioner Videnieks.

COMMISSIONER VIDENIEKS: Just a couple of quick questions. One is when we discuss PRC R&D, we hear the discussion of basic and applied, and I've always also heard that acronym expanded to maybe RD&D, to include design.

When we compare the roughly two percent of GDP for each state, what they're projecting to spend, or what their goal is and what we are spending, are we talking apples and apples? Are we including the little "d" at the end of the PRC R&D?

The other thing is how can one have basic development? How can one have basic "D" like I say basic "R"? Okay.

Related to this whole thing, would be the leapfrogging. Are we really saying that the dollars--besides purchasing power parity--go further in China than they do here? Since their R&D is focused on R&D after taking advantage of leapfrogging, are they getting more out of it in that way?

Those are basically my questions.

MS. WALSH: In terms of R&D, design, I believe that that's generally lumped in with the "D," the development side. My understanding is that there are still difficulties with the data internationally, the way that China calculates R&D, basic, applied, and otherwise, and the way that we do or the OECD does. Still somewhat problematic, but that is being worked out so that you can compare better.

Of course, then the exchange rate becomes the issue still. So this is an ongoing challenge, of course, and so that's one of the reasons I didn't put a lot of statistics in my testimony because you can read those any which way, of course.

As far as leapfrogging, that is an explicit part of China's plan to leapfrog in certain areas, and as I think Dr. Hughes might have pointed out, China is looking for niche areas, frontier type research where they can have the most influence and have the greatest opportunities, where they're not competing head on with the United States, for instance.

So these are areas where they may be, if they're successful, leapfrog, if you will, current science and research, and so again arguing that we want to keep a close hold on what they're doing, whether that's organization to organization, individual to individual, government to government, I would suggest all three, so that we have a good understanding of what's happening on the ground there.

And not just so that we have better numbers and figures and understand the terminology in a common way, but also so we have the listening post and ideas of what's happening quickly so that we can respond, our companies and our government, to changes on the ground.

COMMISSIONER VIDENIEKS: I was just thinking, since the U.S companies that are over there are interested in profits, some of the "D"--the R&D centers could be doing a lot of "D" over there, the second "D," the design effort.

Any comment on that, sir?

DR. HUGHES: I would agree with everything that Professor Walsh just said. I would emphasize that right now we spend, of course, a lot more on basic "R" and more fundamental "D" than China does with the exception of these niche areas.

Looking forward, and not just about China, we need to think way beyond our current mind-set, where we think that if it has been invented, it's been invented here. That we are always the first mover, to use business language. As time goes forward in this century, we also want to learn how to be very fast followers, to take advantage of what happens in Europe, Japan, and, in some cases in China.

Professor Walsh mentioned the exchange rate question, that China is still behind us in terms of standard of living and therefore often the costs for professionals. As they are more successful in building up their indigenous universities and have a larger and larger talent pool, you will find global companies saying we can hire, say, four Chinese engineers to work on this problem or four Chinese scientists to be part of our more fundamental team. Companies will want to pursue that talent if China is successful in building that pool. China's current activities are realistic; they are targeting certain universities to make them world-class. I understand their aspirations are, over time, to have a thousand University of Michigans. If that were true, we would want to be doing a lot of fast following, I think.

COMMISSIONER VIDENIEKS: Thank you.

HEARING COCHAIR WESSEL: Commissioner Slane.

COMMISSIONER SLANE: One of our primary focuses here is what to recommend to Congress, and you've been very helpful in some suggestions here, but it seems to me that our immigration laws are acting as a barrier to encouraging foreigners who have the skill sets

that we need from coming to the United States.

Could you comment on that, and is that something we should think about recommending to Congress?

DR. HUGHES: I have the misfortune of having worked on the H-1B question and still have the scars to prove it. I think we need to have a balance, that we benefit and have benefitted enormously with the flow of international talent. The flow was disrupted for a period shortly after 9/11 where there was a real tightening up on the visas. I think that is less the case now however, and the bigger challenge will be the global competition for that talent.

We want to also balance that flow under H-1B or other shorter-term, temporary provisions against the need to create incentives for native-born talent to move into the STEM discipline. So you need to think about how to balance those two.

But certainly we want to continue to benefit from foreign talent. I think in my written testimony, I cited the work of AnnaLee Saxenian, who suggests that over the last couple of decades, a third of the start-ups in Silicon Valley have been started by either Chinese or Indian immigrants.

In the case of the Indian immigrants, they are really forming transnational networks in a context that hopefully will benefit and I think should benefit both countries. And the Chinese are in a position to do the same kind of thing.

So I think, yes, we want to continue to attract the best and brightest from around the world, but we also have to recognize that there is going to be more competition for that talent and we really do have to take the classic advice to the a doctor, heal thyself, in terms of educating our own.

MS. WALSH: I'd agree. The numbers show that we're losing some potential immigrants to Australia and the UK and other places where it's a little bit easier to get a visa and/or a residence card.

This is obviously an area where we benefitted over the last 40 years, and we would want to in a global environment benefit further, I would expect.

Just a quick anecdote: I have a young cousin who was going into the software industry when it was at its depth, not too long ago, and he asked me for advice. I said go to China, you're young, you're adventurous, you don't need to make a whole lot of money. You just need a good job. Go to China or go to India, and that's what makes me think, well, maybe we can get companies and government to support this. If they don't see an opportunity, they want to be in this field, they want to be in a science and technology industry, but they don't see the opportunity here, let's foster them to go somewhere else for

awhile.

They don't need to make as much as a CEO or a regular full-time employee per se, but foster some support for them to go to other places, learn language, learn cultures, learn how it's being done there.

That I think would be a generational investment on our part to then bring them back home, to take those higher paying jobs and be more innovative here at home. Again, I think some new ideas, some new approaches may be needed, and immigration both directions is an area that needs attention.

HEARING COCHAIR WESSEL: Thank you. Thank you, both, for all of your testimony, both written and oral, and we are going to break now till 1:45 at which point we will resume with our next panel.

[Whereupon, at 1:00 p.m., the hearing recessed, to reconvene at 1:45 p.m.]

A F T E R N O O N S E S S I O N

PANEL IV: CHINESE DEVELOPMENT IN KEY INDUSTRIES

HEARING COCHAIR SHEA: Good afternoon, everyone, and welcome back to our fourth and largest panel. Welcome, witnesses. Our diverse panel of experts will be discussing current Chinese development in key industries and sectors of the economy.

Let me introduce our three panelists. Dr. Tom Tao is Assistant Professor of Management at Lehigh University. He is currently on the editorial board of JCIM. That's the Journal of Competitive Intelligence and Management.

His research interests include strategic alliances in emerging markets, international market entry, and competitive intelligence.

Owen Herrnstadt is the Director of International Affairs for the International Association of Machinists and Aerospace Workers. He develops and implements strategies to confront the challenges of globalization and has built relationships with unions in other countries. He's also been deeply involved in the debate over the relationship between labor standards and trade.

Our third witness today is Dr. Ernest Preeg, who is the Senior Fellow in Trade and Productivity at Manufacturers Alliance/MAPI, Inc.

He is a former career Foreign Service Officer, specializing in international trade, finance and economic development. He is a former Deputy Assistant Secretary of State for International Finance and Development, and Chief Economist at the U.S. Agency for International Development.

He also served as America's Ambassador to Haiti. He's also the author of a book that my colleague Patrick Mulloy shared with me, which is a very good book. I read it last month, Ambassador Preeg, and I commend it to everyone. It's called India and China: An Advanced Technology Race and How the United States Should Respond.

So thank you all for being here with us today. I just want to remind you if you can keep your oral remarks to seven minutes, and we'll start with Dr. Tao.

**STATEMENT OF DR. TOM (QINGJIU) TAO
ASSISTANT PROFESSOR OF MANAGEMENT, LEHIGH
UNIVERSITY, BETHLEHEM, PENNSYLVANIA**

DR. TAO: Thank you, Mr. Chairman and distinguished

commissioners. I'm very glad to get invited to sit here and present my research findings about the development of Chinese automobile industry for the last 20 years, and I have sat through the sessions throughout the day, and I have to say that this is a feast of ideas and it's a great meeting of minds.

I'm really, really enjoying this conversation, especially from the angle that this Commission can take all different kind of views from different perspectives and take that into consideration. And that said, I probably will have to offer a dissident view of what is happening there.

First, I want to give you an overview of the Chinese auto industry. Chinese auto industry has developed tremendously in this last two decades, starting from a very small scale production to the world's number two or number three producer of automobiles in the world.

And China also again starting from a very small demand of automobiles in the world to today it's the world's number two vehicle market, only second to United States.

If you look at the production numbers, in 2008, the projection will be about ten million vehicles this year. And if the current rate of growth will continue, we're going to see 12 million vehicles produced in 2010, which means that China will be the biggest producer of motor vehicles in the world in just about two years.

From 2005 to 2007, China contributed about 40 percent of the total world increase of production. The significant increase in the Chinese auto industry has been contributed partly by certainly strong government support and a strategy to promote automobile industry to be a pillar industry in the country, and the State Development and Reform Commission had a recent policy that is really trying to push China into a leading producer of automobiles in the world.

These are the policies I quote improving overall industry competitive position; developing core technologies based on independent innovation; establishment of venture capital system to offer multi-level financial channels to private enterprise in automobile industry; and follow international practice on technical standards, laws and regulations.

On the other hand, if we look deeper into this number, things may be a little different from what we can imagine. First of all, the majority of these outputs come from the joint ventures that were established between state-owned enterprises with major multinational firms so the biggest part of output is actually coming from the joint ventures.

And internal technology transfer. If you think about the policy

that initially opened China's door the idea behind that open policy is market for technology. That is we offer the market access; you give us the technology. And if you look at the joint ventures, that policy failed.

Most of these biggest state-owned enterprises that used to be the best producers in China, they were not able to produce their own brand. They don't own the brand. They don't have their own capability to design a complete vehicle. So for the last two decades or so, the market for technology policy has failed.

The real breakthrough is actually coming from the recent newly established independent firms that don't have a foreign partner. One case here is a company, very new company, named Chery, C-H-E-R-Y, and they were able to through different ways to develop their own independent R&D and to be one of the biggest producers, and last year, they are the top five or top four producers of cars in China, only from about eight years from the very beginning.

Okay. And their main approach is to outsource some of their key designs. For example, all external designs was outsourced to some of the Italian design houses, and another approach that they use is through staff development, meaning that they attract some of the overseas returnees, some of the people who have overseas training, overseas working experience in design, in auto engineering and going back to Chery and head their R&D institute, and that's a big part of their improvement in R&D.

Another approach that you can see from Chinese firms is some of the bigger state-owned enterprises with deeper pockets. Now, they previously partner with foreign firms. They don't have their own design capability. But they do make a lot of money. So with that deep pockets, they were able to go out and purchase a lot of technologies, and a lot of firms directly. So that's their approach of getting access to key technologies and key capabilities to develop their own brand, their own innovation capability.

Now, in terms of the way of going out to export to the external world, China just started. However, if you look at the speed of that export growth, it's tremendous. Starting from 2004, China exported about 78,000 vehicles, getting about US\$600 million.

In 2007, China is exporting 600,000 vehicles and getting US\$7.3 billion, almost about 90 percent per year for the last four or five years. So the increase rate is very, very strong.

However, there are issues with this growth rate. Again, when they go out, they are targeting at the lower end of the market. When they go out they're mainly targeting at developing country market or emerging markets such as Russia, South Africa and Iran. Okay. They

had a lot of issues along the way. One primary issue in 2006 was several Chinese firms when they export their cars to Europe, they were facing this so-called "crashgate."

They were subject to the crash test in European countries and they failed miserably. One company was able to go back, pick up the results, and do their own tests and improve on that, and they went back to that test. The initial score was one star, which is the lowest, and after their improvement, they were able to get back to three stars, which is relatively acceptable.

And China also at the government level, they also establish a CNCAP, which is a national level crash testing facility.

HEARING COCHAIR SHEA: Dr. Tao, could you please conclude your remarks?

DR. TAO: Sure.

HEARING COCHAIR SHEA: Thank you.

DR. TAO: In summary, we can see that Chinese firms are trying very hard to go outside, especially from independent brands, not from the joint ventures, but they do face a lot of hurdles when they try to go out. And they also tried several attempts to get into the United States market, and they failed, and we can discuss that maybe in the Q&A session.

Another final point I want to make is that in the internal combustion engine based vehicles, China has a long way to go still. It's still about ten to 20 years away from the leading multinational firms, but I want to alert you with a new development that is the great race for the new energy cars which I have offered in my written statement, and several firms have made significant progress in this last two or three years. They may have a potential chance to overcome a lot of the entry barriers that I listed for the ICE-based vehicles.

And that's the area that we have to watch very carefully, and that's the area I think may be an opportunity for the U.S. and China to work together and to make some great cooperation and to deal with actually the biggest challenge of our time, and that's the energy crisis.

[The statement follows:]⁵

HEARING COCHAIR SHEA: Thank you very much.

DR. TAO: Thank you.

HEARING COCHAIR SHEA: Thank you, Doctor.

Mr. Herrnstadt.

**STATEMENT OF MR. OWN E. HERRNSTADT
DIRECTOR OF TRADE AND GLOBALIZATION**

⁵ [Click here to read the prepared statement of Dr. Tom \(Qingjiu\) Tao](#)

**INTERNATIONAL ASSOCIATION OF MACHINISTS AND
AEROSPACE WORKERS, AFL-CIO, WASHINGTON, D.C.**

MR. HERRNSTADT: Commissioners Shea and Wessel, I want to thank you and your colleagues for the invitation to appear before you today. Three years ago when this Commission was holding its hearing in Seattle, I testified about the importance of the aerospace industry to the United States and in particular to the Northwest Region.

At that time, I also testified about the rise of China's aerospace industry. In the interim period, China's interest in developing its own aerospace industry has increased, and its progress in accomplishing this goal is still very much dependent on assistance from Western aerospace companies, although it is obviously moving out on its own as I'll explain in just a few minutes.

The assistance from Western entities has deepened since I last testified on this subject. Aerospace, I hope we all would agree, continues to serve as an especially important industry for the health of a nation's economy and its physical security. Despite the importance of aerospace to the U.S. economy and our own security, the deterioration of the industry at home is continuing at a dramatic rate. Several hundred thousand jobs have been lost in the U.S. aerospace industry in the last 20 years, and many have been lost in jobs in related industries.

And while there is a recent spate of hirings that have occurred in the industry, they do not come anywhere near replacing the job losses that have taken place over the past 20 years. We also ask a very poignant question about what will happen when the turmoil currently being endured in the airline industry hits the aerospace industry as well.

Far from embracing any effective industrial policy, when it comes to aerospace, the U.S. government continues to relegate policy development in this area to private parties.

One activity that is contributing to our decline and to the rise of industries in other countries is the use of offsets. Offsets occur when one country demands a transfer of technology and/or production in return for a sale.

Offsets can also be indirect involving the transfer of production technology or services that are unrelated to the purchase item. The U.S. has yet to adopt a comprehensive policy on offsets.

As reported in my previous testimony to this Commission, a country that truly understands the importance of adopting a comprehensive aerospace policy based on offsets is China. Indeed, this Commission has reported on the use of offsets in China in its past

reports. Other government reports have also reported on this activity.

China's aviation industry is rapidly growing and poses a considerable threat to current producers and suppliers of large and regional commercial aircraft. Its industry consists of more than 200 enterprises that produce and manufacture products for aerospace. The two leading aircraft companies in China, AVIC I and AVIC II, and their subsidiaries have in some estimates well over 400,000 employees, which really leads to the question: how did China develop such a huge aerospace industry?

Well, there are many different and related methods that China has used. A significant one involves offsets. In fact, one of China's initial aerospace joint ventures took place in the mid-1980s with McDonnell Douglas to produce the MD-80 followed by yet another joint venture in 1992, and more work as well. The government was very interested, and some of these programs led to some government reports this Commission has also reviewed regarding technology transfer.

China's aerospace companies have also entered into co-production with Embraer to produce a regional jet, the ERJ-145, in Harbin. Its production has resulted in numerous sales. It's also developing the ARJ21 700 series and 900 series.

The 700 series is the 90-seat jet. The 900 series will be 105 seat jet, which will be manufactured with considerable investment from Bombardier. Several orders have been made with respect to the ARJ21.

In May 2008, China announced that it had, quote, "established a homegrown company to make passenger jumbo jets to become less dependent on Boeing and Airbus."

The China Commercial Aircraft Company was formed with a capitalization reported to be in excess of \$2.5 billion with almost one-third coming from the State-owned Asset Supervision and Administration Commission. Others came from the municipal government of Shanghai and still other state entities.

Of particular concern, of course, is the huge involvement of Boeing in China. I will simply refer you to Boeing's Web site to take a look at the numerous suppliers that are involved with China as well as the activities of the company with respect to joint ventures and so forth. The site mentions that there are over 4,500 Boeing airplanes with parts and assemblies built by China that are flying in the world today.

Airbus, of course, is also involved to a great extent in China. As it says on its own Web site, over half the Airbus fleet and service worldwide have parts produced by Chinese companies with whom

Airbus already enjoys strong relations.

It also states that it has several major technology transfer programs underway. Most notably, Airbus has announced that it will build a final assembly facility for the A320, and there were reports just last month that Airbus shipped the first section to China for assembly on the first aircraft of the A320 in China to begin in August of 2008. To repeat, those were based on recent reports.

The significance of such a development cannot be overstated. As reported by one journalist, the memorandum of understanding between China's National Development and Reform Commission and Airbus meant that China was likely to become only the third country assembling Airbus aircraft after France and Germany.

China is also involved in many aerospace activities involving space itself. The big question for us is, obviously, will the U.S. aerospace industry remain the strongest in the world? As other countries implement industrial policies based on outsourcing and offsets, the question becomes more urgent.

While the U.S. government continues a hands-off approach in many ways to this market distorting scheme, other countries like China are giving their companies significant backing based on well-developed industrial policies.

Some dismiss alarms over the growing threat from offsets and over the growing industries like the aerospace industry in China. For them countries like China don't have the skilled workforce, technology and related ability to produce products of a quality to compete with the U.S. Of course, skeptics made the same argument years ago with respect to Japan, only to see that the "Made in Japan" label became sought after by consumers who believe it represented high quality technologically advanced goods.

And 40 years ago, the notion that Europe would be home of one of the top two commercial aerospace companies in the world would have been hard to believe. No one finds that hard to believe now, however.

Thank you.

[The statement follows:]⁶

HEARING COCHAIR SHEA: Thank you very much.

Dr. Preeg.

**STATEMENT OF DR. ERNEST H. PREEG
SENIOR FELLOW IN TRADE AND PRODUCTIVITY
MANUFACTURERS ALLIANCE/MAPI, ARLINGTON, VIRGINIA**

⁶ [Click here to read the prepared statement of Mr. Owen E. Herrnstadt](#)

DR. PREEG: Thank you. I'm also delighted to be invited to be here today for a very challenging subject. Technological advances in terms of development, production, and exports are moving steadily forward in China in a number of sectors, and the broad inputs include, as we've heard, 20 percent annual growth since 2000 in R&D expenditures and similar percentage increases each year in patent applications and in science and engineering articles.

But when it comes to technology application and development by sector, it's less clear in a number of sectors, and in-depth, up-to-date sectoral assessments are sparse and inadequate. So the best I could do in my written submission is to address six selected sectors to give the basic thrust of where things are going in those sectors. We've already heard about two of the sectors: automotive and aerospace.

Just to add for aerospace, I also understand China has now reverse-engineered Russian jet fighter planes and is now producing them for export, and the Russians are very upset about losing their export markets for military sales.

So let me just comment verbally on two of the other sectors. I also want to give a brief comment on the changing position of foreign firms in the context of the new policy called indigenous innovation.

Let me first turn to nanotechnology. There is rapid technological progress in this sector. A U.S. task force concluded that China is investing heavily in this sector and already leads the U.S. in some areas. There's research going forward in 20 academic institutions with several thousand professional staff. In terms of engineering articles in professional journals, they're second to the U.S. and closing the gap for nanotechnology.

They also are moving ahead on commercial applications. In Shanghai alone, there are 100 to 200 Chinese companies into nanotechnology and development application, and they are also playing a lead role in some markets, including international, in terms of coatings and composites, the initial wave of applications, if you will, in the nanotechnology sector.

Let me now address the pharmaceutical industry. This is also a sector where they're rapidly expanding development and innovation. New product development, thus far, has been through collaboration with multinational companies. For example, Novartis, the Swiss firm, is building a research facility in Shanghai for 500 scientists, which will be a leading-edge integrated research facility in the pharmaceutical sector.

A couple of weeks ago, the Duke/Harvard team headed by Vivek Wadhwa came out with a report based on extensive interviews with 16

Chinese and Indian companies, and they concluded, and I quote: "Big pharmaceutical companies are now counting on these countries, China and India, for research and development. Both nations have become major partners in preclinical and clinical testing. India is playing a more strategic role in early discovery. It's too early to tell whether China and India will become important sources for new drugs. The early progress, however, is promising."

In the written statement there's also discussion of the information technology and telecommunications, and the biotech sectors where the information is not as clear and impressive as for the two sectors I just addressed.

Let me turn now briefly to looking ahead. An important factor is the role of foreign firms in technological development. They are engaged in all of these sectors, but it's just frustrating that we don't have a lot of the basic information. As we heard this morning, after all these years, we still do not have a breakdown in R&D in China between foreign firms and Chinese firms. The Chinese government has the information, but it's not available, even in the aggregate or by sector.

However, it's clear that foreign firms have played a major, in fact, a decisive role in Chinese exports of high technology industries. Last year, and during the first five months of this year, 57 percent of total merchandise exports of China were by foreign companies and joint ventures. And for high technology industries, as broadly defined by the OECD, and as presented in a 2007 OECD study, the share of high-tech exports by foreign and joint ventures was close to 90 percent in recent years.

This is the context within which the new 2006 Chinese policy called indigenous innovation, meaning Chinese innovation, was launched. The development of this new policy favoring Chinese over foreign investors, rather than the other way around, as it had been, particularly in strategic and high-tech industries, was very controversial as it was developed. Its implementation thus far while comprehensive, with many specific objectives, is ill-defined. It is moving slowly, reflecting continued controversy, but already a number of the specific policy initiatives already implemented or in the drafting stage are of growing concern to foreign investors in the country. A couple are mentioned in the written submission here, and the December '07 USTR Annual Report on Chinese WTO compliance has several more.

This new policy is going to make a difference, I believe, in this critical central role of foreign firms relative to Chinese firms. One consequence is going to be a relative decline in competitiveness of the

foreign-owned R&D operations in China compared with elsewhere. They're no longer getting favored treatment, and this can mean more favorable circumstances elsewhere. My book, as you were kind enough to mention, is entitled, "India and China: An Advanced Technology Race." This has definitely been happening during the last year or two.

Two outstanding examples are Nokia and Cisco. Both announced that for the first time they're going to have a comprehensive integrated overseas R&D operation, and that it will be in India and not China.

In fact, somebody mentioned earlier the CEO Chambers' statement 2004, which was in my earlier China book, saying China is the information technology center of the world. I happened to be in India a year ago January, when Cisco made the statement, from Chambers, CEO of the strategic Step to establish and integrated R&D program and several other activities in India. They will have in effect two headquarters, and they're starting manufacturing for the first time.

That's one consequence. Another is a likely slower pace of indigenous Chinese innovation because they're not going to have as much technology transfer and training of Chinese available if, in fact, there's a slowing down of the foreign R&D focus in the country.

These are my basic points. I'll just mention that in the text I do have a final section about the need for improved assessments of Chinese advanced technology performance and innovation by key sector, and how best we could go about getting such improved assessments.

Thank you.

[The statement follows:]⁷

PANEL IV: DISCUSSION, QUESTIONS AND ANSWERS

HEARING COCHAIR SHEA: Thank you very much. Thank all of you for your very interesting testimony. I'll just start with Dr. Preeg. Who is going to win that race? India or China? And is your judgment based in part on the type of governmental structure in each of those countries?

DR. PREEG: Well, I'll be very brief. HEARING COCHAIR SHEA: Right.

DR. PREEG: There is a race. We're in the race, too. Between the two of them, obviously China is ahead in most areas. But India is ahead in a few and closing the gap in others. It is thus a deepening race. India is ahead certainly business services. People are aware of that. Indian growth is also private sector driven often in spite of the

⁷ [Click here to read the prepared statement of Dr. Ernest H. Preeg](#)

government rather than because of it.

I found that in some of the sectors that I've been talking about, Indian companies are more entrepreneurial as multinational companies, including overseas investment. They are also conglomerates--Tata, Birla, Reliance Industries. There aren't such conglomerates in China.

Chinese tend to be less the risk takers, the quick moving entrepreneurs. I conclude in my book that the entrepreneurial MNCs, India is ahead in pharmaceuticals, which was confirmed in what I just quoted. Also, in the steel sector, and in the automotive sector, which is perhaps more controversial. We did chat, Dr. Tao and I, over lunch about this.

So it is a race. It's a deepening race. Certainly India has much catching up to do, but it's going to be more intense, in my view, projecting two to five years, and that's a big factor in how we respond in a number of policy respects, in terms of dealing with India and China, and, of course, dealing with our own competitiveness which is the central challenge for the United States.

HEARING COCHAIR SHEA: Right. Thank you.

Dr. Tao, you began your testimony by saying that I'm going to offer a contrasting view. Is the contrasting view the statement that you made that the original joint ventures established between Chinese partners and foreign name brand automobile manufacturers, they didn't work out as had anticipated in establishing an independent Chinese brand through this technology transfer process?

DR. TAO: Exactly.

HEARING COCHAIR SHEA: And why didn't that occur? What's your view as to why that was not a success?

DR. TAO: When you think about the formation stage of that joint venture, you can take any of the major joint ventures, foreign firms typically bring in technology, the model, the design, their suppliers network, and the Chinese partner side usually provide the land, labor, the facility, and so on.

Think about who's going to control, who really has the control of the key value chain activities in this joint venture. One example, there is no internal designing capabilities in most of these joint ventures, and in effect, in one of the biggest joint ventures, Shanghai Volkswagen, the Chinese partner was Shanghai Auto Industry Corporation. They used to have their own car brand named Shanghai.

After the joint venture, that name brand was killed. The originally design center was dissolved. And for the first 15 years or so in this journey, most of these multinationals were effectively able to keep the Chinese partners from having any real self-designing capability.

HEARING COCHAIR SHEA: And Chery broke out of the mold. You called it an independent company, but isn't it owned by a local municipality?

DR. TAO: It is, but in the sense that it's not really controlled by the central government, and they have their own flexibility of doing things that is not necessarily following the central government's mandate.

HEARING COCHAIR SHEA: Okay. Mr. Herrnstadt, when I was listening to you talk about Airbus and Boeing advertising on their Web sites or at least providing the information that a lot of their parts suppliers are based in China, what type of quality control mechanisms are in place to ensure that those parts are adequately manufactured?

MR. HERRNSTADT: I wish I could answer. I think that's probably a better question for Boeing and Airbus. I think it's obviously a very important question.

HEARING COCHAIR SHEA: Okay. Thank you.

Mr. Wessel, Commissioner Wessel.

HEARING COCHAIR WESSEL: Commissioner, thank you. Gentlemen, thank you for being here. I want to follow up with each of you, but also on your contrarian spark a moment ago.

I didn't find your comment as contrarian as maybe you think. In fact, it enhanced my concerns. It depends on what you're being contrarian to or about, I guess. We've seen, as you know, with GM's announcements over the last several days, over the last months with all the Big Three, a rather dramatic change in the U.S. auto market.

Japan in the 1980s, that was viewed as a major threat to the United States, had to buy their way into our system. They did not have the joint ventures, as we all know. They had to create their own franchises. They had to do all their own brand identification, et cetera.

The JVs that China has with a number of our nameplates, and I think it's Dodge and some others you're talking about actually importing Chinese-made cars into U.S. showrooms, China will not have to invest anywhere near the billions that Japan did in terms of getting access to this market. It's going to be accelerated dramatically.

Owen, you referred to the hearing we had in Seattle. We've had two hearings actually that have addressed autos and auto parts over the years that we've been in operation, and in each of those hearings, we've had assessments, some of them by Wall Street analysts dispassionate about the future of the industry, talking about the rapidity at which changes are happening in China, and China is becoming a world-class producer.

What we heard in, I guess, it was 2005, how far advanced it was

going to be. They've actually shortened that time period to the time they're not only going to do the ARJ21 regional jet, but that they're going to have a large airframe. They're already exporting cars, again third world markets, but they're moving up, and Dodge is expected, I think, to have a Chinese-made car here in the U.S.

Dr. Preeg, in some of the industries you've talked about, we've seen China really leapfrog or accelerate dramatically over the last several years, becoming a world-class competitor in auto parts and, in fact, I think in aerospace, they're ISO-9001 and later standards.

What should we think about all this? We're told don't worry, China has a lot of problems in its own market. We're told on a panel earlier than they're really engaged in industrial tourism, that don't worry, they're taking our components and all they're doing is screwing them together and sending them back to us. It's still very labor intensive.

I don't see it that way. Can each of the panelists talk about what expectations they've had, that whether they've been met or exceeded dramatically by the Chinese? Starting Dr. Tao, if you'd like?

DR. TAO: I think you mentioned mainly two points. One is U.S. companies' competitiveness in automobile industry. And if we read the newspaper today, we see GM's big problem and their big restructuring again. But on the other hand, if GM has its China Division as an independent entity and has shares issued, I would jump on that share because GM has been doing tremendously successful in China and they have surpassed Volkswagen as the biggest producer and seller in the Chinese market. And they're making money there.

HEARING COCHAIR WESSEL: But just if I can reclaim for a moment, as I recall GM's original joint venture agreement, there was a billion plus of investment, 1.5 billion if I remember correctly.

DR. TAO: 1.5 billion, yes.

HEARING COCHAIR WESSEL: And an agreement that they would source domestically from Chinese producers within a period, I believe it was eight years, and I believe it was 100 percent production, and they would bring all of those producers, those auto parts producers up to ISO-9001. Aren't we creating our own biggest competitors?

This is true in aerospace. The MD-80, I've been to the facility, and it had at that time back in the mid-'80s, the highest FAA certification rate of any facility in the world.

Dr. Preeg, you talked about them retrenching on some of the desire to have foreign investment--have they harvested enough gains from us that they're now going to be able to make it on their own?

DR. TAO: In GM's case or even in Volkswagen's case, if you look at their suppliers network, they bring their own supplier network

from all the big global suppliers, tier one, tier two suppliers, to China. So it's not necessarily Chinese owned firms. The majority of them, we have in the components industry, we have about 1,200 suppliers in China, and they're coming from all different kind of countries and they are either wholly-owned subsidiaries or joint ventures, and they have 60 percent of the market share in China. In term of cars, they have 80 percent of the market share, and in the key component area, they have 90 percent of the market share.

So they have a fairly good control over the key areas. And that's really the biggest value added areas where the indigenous, independent suppliers that is wholly owned by Chinese, they are getting the ten percent or 20 percent of the lower end labor intensive areas. So the technology has not been effectively transferred to the Chinese partner or the independent brands so far.

HEARING COCHAIR WESSEL: Mr. Herrnstadt.

MR. HERRNSTADT: Each project is a learning step, going back to the 1970s, probably even before that, in terms of aerospace, from four-engine aircraft projects that occurred a long, long time ago, to a huge supplier base for Western aircraft, and we see a lot of it coming to fruition now, I think, in the ARJ21.

And I think what makes this program a little different, at least in my understanding, is that, one, it's got a heck of a financial backing, and, two, it's obviously involved a lot of work in design and research, and, three, it's really reaching out in terms of marketing, in terms of finding out, at least, what reports I've seen say what customers want.

And obviously, the ARJ21, the 700 series and then the 900 series would presumably help the industry figure out how do you really produce a large commercial aircraft. So you can see all of these things are part of many pieces being put together. And there are a lot of pieces out there.

I would agree with Dr. Preeg, there's an awful lot we don't know, and I think that is probably the most frightening thing of all. It's very difficult to know with any precision what direct and indirect offset deals are involved. What are the transfers of technology that occur?

How much money is involved, and how do you decide what the added-value of that transfer is in terms of innovation that could occur in the future? And all of those things, I think, make up a picture filled with big issues that much is unknown about, and that we must get a handle on in a fairly urgent fashion.

DR. PREEG: Your question was phrased rather broadly at first. I'd like to try a little broader response. Any time anyone says to me don't worry, I will say I totally disagree with you, I do worry, and you should worry because what's happening is a technology driven

transformation of the global economy. It's a historic transformation. There's great opportunities for mutual gains for all countries in the world, but it's also a big challenge to us and a big threat to our export competitiveness, to our leadership in technological innovation, and to our very production in some key sectors.

And if we don't respond, a lot more forcefully and a lot more broadly, we're in for trouble and we're in for relative decline. It's not too late. We still have some strong suits, but we haven't been doing what we should be doing. As to what the response should be, there's no single silver bullet. It's five chapters in the book, but the starting point is the need for a sense of national purpose and historic direction of where we as a country are going in this new globalizing advanced technology world.

In China and India, wherever you turn, even on the street posts there are statements about national purpose, historic destiny, toward becoming advanced technology global powers, within the Asian century. This sense of purpose, in turn, becomes the base for decisions that are often controversial, and expensive.

In this country, we've endless presidential debates for 18 months, and everything we're talking about here barely sees the light of day except for an occasional call for protectionism, which is a poison bullet that will make things worse. So I really believe the things we're talking about here, the sorts of books that I write, need to get out to say there is a challenge, and there's a lot of mutual gains, but that we're not responding, and that we should worry.

HEARING COCHAIR WESSEL: I just bought your book, and after today's testimony, you should go to Amazon to see the skyrocketing sales.

DR. PREEG: You can also buy it directly from Manufacturers Alliance. We make a few more dollars on it.

HEARING COCHAIR WESSEL: Okay.

HEARING COCHAIR SHEA: I also see that Commissioner Reinsch wrote a nice little blurb on the book on the back so--

COMMISSIONER REINSCH: Thank you.

DR. PREEG: He was also at the book launch.

HEARING COCHAIR SHEA: Chairman Wortzel.

CHAIRMAN WORTZEL: Gentlemen, thank you for your time and being here.

I have a question for each of you so I'll challenge you to make believe you're on television. Try and keep it to about a two-minute sound bite here which is pretty long for TV.

HEARING COCHAIR SHEA: It's an oxymoron.

CHAIRMAN WORTZEL: Yes, right.

HEARING COCHAIR WESSEL: A documentary.

CHAIRMAN WORTZEL: That's a long time. Dr. Tao, the Japanese, I think it's fair to say, beat us in automotive quality control, and that's a huge problem for China, quality control, and you cited safety standards, which is another weak area in all Chinese industry.

So what do you see as the greatest impediments to Chinese companies penetrating the U.S. market? And then I'll just go down the row and you can each answer in turn.

Mr. Herrstadt, thank you for what you did for us in Seattle and for here. Are you able to cite any concrete areas where technology transferred through offsets has improved or led to the development of new Chinese combat aircraft?

Dr. Preeg, your last footnote 13 cited four chapters of your book, which are your policy recommendations. So could you just tick off the four policy recommendations quickly?

Dr. Tao.

DR. TAO: China has made several attempts to get into the U.S. market, and they still see U.S. as sort of the ultimate place to go. And Chery made two attempts so far. One is with Mr. Bricklin, and they created a joint venture. They planned to sell cars and SUVs here in the United States, but it was delayed, it was delayed, and delayed again, mainly due to the issue of safety and environment emission issues.

So again it proves that the technology of these companies is still not there yet, especially in internal combustion engines.

Now, they had another try with Chrysler. Chrysler was trying to ask Chery to produce a Dodge brand for Chrysler at the subcompact category. And they delayed, delayed again. So Chrysler actually at the moment is talking to another Chinese company, and also they turned to Nissan for a small car, at least for the moment.

So if you look at the pattern, it's still not there yet in terms of the capability to satisfy the safety and environmental regulations. So the entry barriers for the internal combustion engine are still very high for Chinese firms. Additionally, certainly, you have the name brand recognition issues. You have all the other issues.

Another high profile attempt is Chamco, which is China American Cooperative Automotive. They were trying to partner with a very small privately owned firm called Zhongxing Auto, and they were planning to produce pick-up trucks and SUVs at really low price. They were able to attract quite a bit of money from dealers trying to sell these cars. Again, the same issue arose. They cannot get things right. Chamco at this moment is a failed project.

CHAIRMAN WORTZEL: Thank you.

MR. HERRNSTADT: Chairman Wortzel, it's a great question. Unfortunately, I don't have much of an answer for you. I simply don't know.

The Cox report covered some of this stuff that I'm sure this Commission is already well aware.

DR. PREEG: I assume he's ceding one of his two minutes to me. Is that correct? Actually it's not four chapters, it's five chapters. It has to be comprehensive, it's international and it's a domestic policy agenda. Internationally, the biggest issue by far is currency manipulation. In the history, not just of 60 years, but of the world there has never been a mercantilist protectionist policy like that of a number of Asian countries today, China most of all. If the undervaluation is 50 percent, that means it's a 50 percent subsidy on every export and a 50 percent tariff on every import. There are also many issues in international trade, as well as some growing issues in international investment, and they are linked in some ways. I would just add that our economic footprint in Asia is getting weaker because of many preferential agreements going forward among the Asians, which is gathering momentum, including by India, and that's why we should keep our footprint there, and that's why the Korea Free Trade Agreement, which gives us about five times more market access in Korea than they get from us, is an important issue, although sadly it is not looking good.

On the domestic front, there are a number of issues. I'll just mention a few that are familiar. Education from primary school thorough graduate studies. Another one is basic research, which is government funded, which has gone way down since the Cold War. These domestic issues have competing domestic interests which are usually stronger. A much larger share of the basic research money goes to the health industry and a much smaller share to industrial technologies. A third area is corporate taxes, where U.S. and Japan have the highest levels. they are much lower in Europe, and much, much lower in China. Moreover, our taxes could well go up further.

Another domestic issue is tort litigation expenditures. We're beyond other in terms of not only the tens or hundreds of billions of dollars, of cost per year. The litigation also slows down decision-making. It slows down innovation and risk taking, because people throughout management are worried about getting sued. This is another issue going in the wrong direction.

The third domestic issue that's going the wrong direction is health care, where we are unique in the private sector having to pay for it. There are ways to restrain health costs, but they go up faster

than almost anything else, and looking ahead a few years, in considering new investments, as do they 500 corporate members of Manufacturers Alliance, health costs, already so large, loom ever larger.

This is the comprehensive agenda, which unfortunately is hardly on the screen in the presidential debate, almost any of the issues I've just mentioned, except the Korea Free Trade Agreement, which is being turned down in the Congress.

CHAIRMAN WORTZEL: Thank you.

HEARING COCHAIR SHEA: Thank you. Commissioner Fiedler.

COMMISSIONER FIEDLER: Thank you. Couple of quick questions. What's the new Boeing plane, passenger plane, that they haven't delivered yet?

MR. HERRNSTADT: The 787.

COMMISSIONER FIEDLER: 787. It was held up because of supplier problems not delivering, right, to some extent?

MR. HERRNSTADT: Yes.

COMMISSIONER FIEDLER: Any Chinese suppliers not delivering on--I'm not sure that it's been specified in any detail on that. The news reports talk about foreign suppliers, the foreign supplier network.

COMMISSIONER FIEDLER: So you don't know whether it's Chinese?

MR. HERRNSTADT: No.

COMMISSIONER FIEDLER: So just to follow up with you a minute. So Boeing at the bargaining table over the last decade, you guys have been raising the offset question, the China issue, the outsourcing, losing of jobs, and the shifting of production. Why don't you go over what they've been telling you over time. Did they say don't worry about it; to start with it won't cost any jobs; we need it for the market? And now what are they saying as those jobs have disappeared?

MR. HERRNSTADT: I wasn't at the bargaining table, Commissioner Fiedler, so I can't really tell you what was there. But I will give you a general response on all of this. I think it's probably true on those who advocate the necessity of outsourcing and offsets, and I talk about it in the paper that I recently wrote on offsets, what other countries are doing.

It's kind of the prisoner's dilemma. Obviously I didn't coin that phrase. It comes up in an earlier paper done by Rob Scott and Randy Barber, "Jobs on the Wings," from the mid-1990s on the issue, and that is folks say, well, we've got to trade part of the production in return for market access for the sale so half a loaf is better than no loaf at

all, and we've always asserted that competition for goods should be based on quality and on pricing, not on market distorting issues like offsets.

And that if companies should compete in terms of quality and pricing, the U.S. workforce will certainly come out ahead. It also gets wrapped up into the whole issue of globalization and global networks and a variety of other things that I think this Commission is extraordinarily familiar with.

COMMISSIONER FIEDLER: Thank you.

Dr. Tao, we were in the Chery plant about a year-and-a-half ago in Dalian; right?

DR. TAO: It should be in Anhui, Wuhu, Anhui.

CHAIRMAN WORTZEL: Wuhan. That was when we went to the beer factory.

COMMISSIONER FIEDLER: No, I didn't go on that trip. Anyway, let me just ask a question about Chery. Chery, the joint venture didn't work, but presumably people from those joint ventures are hired by Chery and/or were the creators of Chery. In other words, they learned at the feet of the foreign companies and then said, okay, we don't want them anymore. Let's just do it ourselves.

DR. TAO: Spillover certainly exists, and Chery should be able to hire--

CHAIRMAN WORTZEL: Whomever it wants.

DR. TAO: Whoever that come from the joint ventures, and an interesting fact is that actually the first model, the QQ, it was actually developed by the design team that was kicked out of Dongfeng Automobile Corporation when the joint venture with Peugeot or Renault. I believe it's Renault. So that design team was kicked out and Chery took them over and said we're going to need it, you guys work for us, and there comes the QQ.

COMMISSIONER FIEDLER: Just one final question. What can you tell us about composite technology offsets? Mr. Wortzel's question on combat aircraft is in part heavily dependent on composite materials making fighter planes more effective.

MR. HERRNSTADT: I'll direct you, and I think probably the best area to go for this, is the report that was issued in January or February of this year by the Wisconsin Nuclear Arms Project, which talked specifically about the Department of Commerce's validated end-user program, and they zeroed in on a few different programs. One of them involved BHA, Boeing, Hexcel, AVIC I. I'd encourage you to take a look at that document.

COMMISSIONER FIEDLER: Thank you.

HEARING COCHAIR SHEA: Okay. Commissioner Mulloy.

COMMISSIONER MULLOY: Thank you, Mr. Chairman. Dr. Preeg, Mr. Herrstadt, thank you for all the help you've given this Commission through the years. It's been very helpful. Dr. Tao, thank you for being here.

Dr. Preeg, there's another book you've been part of called China's New Great Leap Forward: High Technology and Military Power in the Next Half Century. That's where they talk about Deng Xiaoping in '78 and decided he needed the foreigners to help move China forward, and it's worked for China.

Dr. Tao, you say in your testimony, strong government support played a crucial role for China's car makers to gain global competitiveness, and part of that was getting the joint ventures to get the foreigners to come in and help China build its automobile industry.

DR. TAO: That's right.

COMMISSIONER MULLOY: Dr. Preeg, you say on page three of your testimony:

"Foreign invested firms have played a decisive role in the development of advanced technology industries in China, particularly for export oriented manufacturers, information technology in the electronic sectors."

You talk about how much of their exports are from these foreign invested firms, which really helps them get all this money, which now they can go out and buy people.

There were two Congressmen testifying here earlier, and you could see that they were frustrated because they're hearing from their people back in their districts something is drastically wrong, but the policy doesn't move here in Washington, and I'm trying to understand that phenomenon.

Mr. Herrstadt, on page three of your testimony, you talk about the whole problem with offsets. You say the American companies will transfer part of their technology in order to get the sale. But then the other country is getting the technology and getting the capacity to build aerospace, airplanes.

You also say, "If a sale means transferring production and/or technology, private companies are in a difficult position. Given that their interests"--their interests--"do not always align with the national interest, they can be expected to maximize corporate returns, even though the use of offsets can deeply affect an industry as essential to the nation's economy and security as aerospace."

So here's the way I see it going on. The Chinese have a strategy. They're incentivizing our corporations to increase corporate profits and shareholder value by cooperating in China's efforts to build its high technology industry.

We have no counter-strategy. So we're in a declining economic situation. Dr. Preeg said it's not too late, but we better get going. The Congressmen tell us that we can't get any attention to these issues on a policy level in our executive branch.

Is part of the problem that the corporations, whose interests short-term may be served by this, their corporate return, are lobbying to prevent the nation from coming to grips with this problem? In other words, their interests are no longer aligned with the national interests in this area, and do you have ideas what we should do to try to align those interests back with the national interests?

Maybe Mr. Herrnstadt and then Dr. Preeg, and then Dr. Tao, if you have anything.

MR. HERRNSTADT: Sure. I think there are a variety of things that we can do in terms of our policymakers, in terms of our executive branch, to try to drive home the point that you're making, which I think is very real and very critical.

One, the issue of offsets and outsourcing should be a priority of for our trade negotiators. For goodness sake, you've got two large commercial aircraft producers in the world, Boeing and Airbus. You would think if Europe and the United States agreed that they wouldn't engage in this type of activity, that it would be a trade issue, that that would go a long way towards curbing it or towards mitigating it.

I think there are also other things that we can talk about. We talked a little bit about the woeful lack of information on outsourcing, offsets and other things, not only here, but with respect to China.

There needs to be stronger reporting requirements, particularly when it comes to commercial and defense items, so that we can really get a handle on precisely what's going on.

And last but not least, there are many other things as well, and they're addressed in the article I mentioned to you. Our government should be able to ascertain when it gives assistance to a private entity, to a corporation, whether it's through a contract award, a government award, whether it's through EX-IM Bank assistance or support precisely if that taxpayer money is going to create and maintain good jobs at home or is going in any way to help assist the movement of those jobs to other countries overseas.

DR. PREEG: Let me respond. Two examples of the basic question, where is U.S. manufacturing or U.S. industry and companies in all this?

First with respect to the biggest issue, in my view, the currency manipulation issue, I don't see American companies having played as a role as opposing it, in other words, supporting the Treasury view that there is no currency manipulation.

The individual companies that are in China, and these are India problems, too, they're reluctant to stand up and say China is manipulating its currency because they're in the country so it's hard to get witnesses sometimes. It always is.

COMMISSIONER MULLOY: Yes.

DR. PREEG: I don't see the companies as the ones that have been actually out front blocking any real action on currency manipulation. You've got others who are blocking. You've got the foreign policy interests and you've got financial companies that like a stable currency, and you've got a bigger issue with Treasury, that if the Chinese stop buying several hundred billions of dollars per year of U.S. Treasuries and other dollar assets, our Treasury rate is going to go up substantially.

So there are a other players, but I don't see our companies, although some of them are making more money in China with the depressed currency, playing an active, blocking role.

The other issue is the offset, which it's a broader issue than just Boeing. It's a big issue in India, too, incidentally, not only for aircraft but for defense contracts. So it's a broader issue of trade policy. Aircraft is almost unique because there are just the two companies. We haven't resolved aircraft subsidies in the WTO, while offsets could be illegal in that area of WTO- trade related investment measures. Not only the specific offsets in this sector, but elsewhere as well, Defense industry is different.

There are also related issues where China wants R&D commitments as a condition for investment. It's an issue of blatant violation of Chinese and other countries, like India's WTO commitments. But we can't resolve the issue alone and we can't do it halfheartedly. We have to do it together with the Europeans and the Japanese and others who are investing, because the Chinese are playing one off against the other, and if the U.S. resists, investment approval will go to the others.

The question how to put together a strategy that would take this issue on frontally by Japan, Europe, the U.S., and probably a couple others as well, in this whole area of trade-related investment measures? It's a key part of the Uruguay Round agreement, and the fact is that China, and India, I should add, have not been engaged in the WTO system. More broadly, they do not take on the basic obligations related to currency manipulation under IMF, Article IV, or the TRIMs and several other obligations of the WTO.

And where do we go? What's the strategy? A few of us are beginning to talk about it. I might even have another project in this area . But the fact is China and India are now advanced, fully

competitive trading partners. China is the number one manufacturing exporter, beyond us, and growing faster, and yet they're not fully committed to the WTO system of rights and obligations.

We might have to give them more voting rights in global economic order to make a deal, but it's a much bigger challenge than any one specific issue. We could have a major showdown on one issue, which we have so far not done.

Thank you.

COMMISSIONER MULLOY: Thank you.

HEARING COCHAIR SHEA: Thank you.

Commissioner Reinsch.

COMMISSIONER REINSCH: Thank you. Good book, Ernie. I like your policy recommendations. I particularly like your attack on the trial lawyers. That was encouraging. Just be careful when you walk out the door to make sure there's nobody there with papers.

I have a question for each of the other witnesses. Dr. Tao, you referred in your written statement, and I'm not sure you had a chance to get to it in your oral statement, that the main Chinese challenge in the auto sector in terms of imports into the United States, might come in breakthrough technologies, new and more energy-efficient automobiles.

And you alluded to a design they're developing with a new battery. Is it as good as they say it is?

DR. TAO: We'll get to see the final result at the end of this year or the end of next year, and it could be a hype by them, but if you look at China's national strategy in terms of clean vehicle and electronic vehicle, they started from 1999 and they spent quite a bit of money on it, and for this last eight years, they spent--let me see--six billion, at least 6 billion RMB into this direction, and a lot of firms have been engaging in activities in this direction, and it's not that surprising that some of them may make some breakthrough in certain areas.

In the case here, BYD, they are the biggest producers of cell phone batteries in the world today. And they certainly have certain capabilities in R&D in the battery technologies. And in this particular technology, they have developed and they are trying to use it in the vehicles. It has a lot of promise, and they are in the race against several other international projects that are going on in Japan, in America, in Canada, that they are part of the race now, and by the end of the next year, we're going to see who's going to win, and I suspect they have a good chance.

COMMISSIONER REINSCH: Thank you.

Mr. Herrstadt, this will be round 12 of our ongoing dialogue on this subject. And you really answered my basic question, thanks to

Commissioner Mulloy, which was going to be, well, what do we about it? And both you and Dr. Preeg, I thought, had some good suggestions, which I've heard before.

The question I'd ask is I recall we've had extended discussions about this, and your union had extensive discussions with the Clinton administration about this including the prospect of international negotiations to address the problem. As Dr. Preeg pointed out, it probably can best be addressed multilaterally or at least on the part of the two largest producers or their governments.

So this has been going on for a long time. You've been talking about it for a long time. Nothing has happened, which is an embarrassment. Why has nothing happened? Did the last administration drop the ball? Did this one drop the ball? Did you drop the ball? Did I drop the ball?

HEARING COCHAIR WESSEL: Can we answer?

COMMISSIONER REINSCH: No, he has to answer.

MR. HERRNSTADT: I traced the development of this in the offset article I submitted as a reference to this Commission. I pretty well traced the development of the legislation as well as the activity from the executive branch on this topic.

Things really stopped in the waning days of the Clinton administration. There was the Presidential Commission on Offsets which addressed commercial offsets by executive order and in parallel action addressed defense offsets by congressional action.

That commission met for two, three hours, four hours--came up with a status report, and the current administration then never reconvened that commission. In the interim period, there were these interagency task forces which came up with some sort of report, several months ago, maybe a year ago, which really didn't address in a serious way this issue. So you're quite right in terms of effectiveness.

Very little, very little has been done, yet things become much more critical, and I dare say in terms of indirect offsets, things become crazier and crazier out there. These become even harder to track. Hopefully, the next administration will take this issue head on and will develop a real meaningful comprehensive response for it because it is getting more serious.

COMMISSIONER REINSCH: Well, I hope you're right. I must say it's kind of depressing. The best you're going to get out of us because of what we are is another report that says something ought to be done, and perhaps some detail about what that something ought to be, but I agree with you. Multiple balls have been dropped, I guess, is the answer to my question, and I hope that we can work collectively in the next administration to try to get this addressed in a way that

actually deals with the problem. You and I, as you know, may have some differences in detail about that, but I certainly share your analysis of the problem and your commitment in trying to deal with it.

Thank you.

HEARING COCHAIR SHEA: Round two. Commissioner Wessel.

HEARING COCHAIR WESSEL: Thank you. Mr. Herrstadt, I'd like to go back to the safety issue that Chairman Wortzel raised briefly because as I recall from news reports--I believe it was last year--we've begun to see, because of the globalization of the supply chain as it relates to aerospace, concerns about component parts. Last year, I believe it was, Senator Levin was here, and brought in, I guess, Motorcraft auto parts, the real thing and the knockoff.

The reports I've seen, if I remember, were on fuel lines, on certain Airlon connectors, I think it was, the cabling, et cetera, that there some substandard parts.

My question, though, really is about the service and maintenance. As I recall, many of our airlines are now increasingly doing service either in China or other countries. Can you relate what's happened there? What the agreements are, meaning the volume and what kind of controls there are to make sure that the service is being done to the highest standards?

MR. HERRNSTADT: Yes, this really calls for a pretty long-winded answer, but let me make it kind of short by referring to this and that, and I can supply you with further information on it.

There was an interesting report issued by the FAA, I believe it was the acting Inspector General in February or so of this year, which talks about not only the safety issues and inspection issues, dealing with airlines, but also with suppliers, and I believe they reference China. The citation for it is referenced in my testimony before this Commission.

In terms of maintenance work, there's a lot of work that is now being done in China. There have been hearings held before Congress on the issue of foreign repair stations, the adequacy of inspections, the frequency of inspections and so forth on that as well, and I'd be glad to give you our testimony on those and other issues.

HEARING COCHAIR WESSEL: Please. Let me ask, though, if I could quickly, just as a follow-on, as we had a hearing probably two months ago on the question of seafood safety, seafood and broader food safety, and found out, as I recall, we were going to have seven FDA inspectors in all of China. Just as it relates to the service and maintenance, is FAA over there doing examination of every single plane that maintenance is being done on? Is it sporadic? Just how is

it done?

MR. HERRNSTADT: I think these are significant questions that have been posed before, and I would urge the Commission to ask the FAA specifically for a response to those issues.

HEARING COCHAIR WESSEL: Thank you.

HEARING COCHAIR SHEA: Commissioner Mulloy.

COMMISSIONER MULLOY: I just wanted to come back for one minute, Dr. Preeg, to the issue of how I sometimes think the multinational corporations who are making money for their shareholders off the way the system is presently structured, but that may not be, as Mr. Herrnstadt pointed out, be consistent with the national interests.

And you brought up the issue of the exchange rates. My recollection is within the National Association of Manufacturers, the companies that produce in the United States wanted to endorse legislation that Senator Stabenow and Bunning and others had introduced to say that China's underpriced currency is an export subsidy and could be countervailed, but that the multinational corporations within the NAM fought against that, and ultimately won the battle within NAM to prevent NAM from supporting that legislation.

Am I mistaken on that or is that your understanding, and does that reveal somehow that maybe that there's some divergence and that it results in lobbying that may not be consistent with larger national interests?

DR. PREEG: My recollection, and I wasn't in the middle but heard quite a bit about it, was, there that the Coalition for a Sound Dollar, chaired by NAM, which took the currency manipulation on frontally for several years and was out front.

COMMISSIONER MULLOY: Yes, they testified early on. Frank Vargo testified before this Commission.

DR. PREEG: But then there was a split on the issue of how to respond. My view has always been to take violators to court in the IMF and also in the WTO under GATT Article 15, which deals with exchange rate policy, and have a showdown in this context.

But the idea of some lawyers was to approach the issue as an export subsidy, in which case we put a duty on right away--at 27.5 percent or whatever and then let others take us to court in the WTO, who will say it's not an export subsidy, and there was a split there.

Many of the smaller companies that are more hurt--because they're facing direct import competition supported the subsidy approvals while some of the larger didn't support immediate protection based on the export subsidy case.

I'm opposed to the export subsidy route because I am 99 percent sure we would lose our case in the WTO. We could destroy the WTO, and I think it was very much on this issue of how respond that the split occurred.

There is difference of interest. Many of the small and medium-sized companies, such as auto parts producers, it's only are getting direct import competition from China, and it's all bad. The big companies are there and they're here and thus have balanced interests. This doesn't mean that they opposed taking on the currency manipulation issue. They were with us. They very much for taking on the currency manipulation issue. They were very supportive in many ways of my chapter eight on this issue, but they resisted the export subsidy response, meaning immediate protection through tariffs on imports from China.

COMMISSIONER MULLOY: Do either of the other witnesses have anything they want to add on this point? Thank you. Thank you, Mr. Chairman.

HEARING COCHAIR SHEA: Sure. Are there any further questions? Gentlemen, thank you very much for your testimony today. We appreciate the contribution you made at this hearing.

MR. HERRNSTADT: Thank you.

HEARING COCHAIR SHEA: We expect Senator Stabenow to be here at about 3:15 so if all the commissioners could stay, and stand in recess until 3:15.

Thank you.

[Whereupon, a short recess was taken.]

PANEL I: CONGRESSIONAL PERSPECTIVES (CONTINUED)

HEARING COCHAIR WESSEL: Thank you, Senator, for being here. We know you have a very busy schedule and we're honored to have you here, I believe, for the second time, since you appeared before us at our field hearing out in your state.

United States Senator Debbie Stabenow made history in 2000 when she became the first woman from the state of Michigan elected to the United States Senate.

She is a respected national leader on health care and manufacturing issues, and a champion for Michigan. She has risen in Senate leadership as Senate Conference Secretary and is now chair of the Democratic Steering and Outreach Committee.

She was appointed this term to the Senate Finance Committee where she is playing a key role in addressing our nation's health care, trade and tax policies. She also serves on the Senate Budget and

Agriculture Committees. We're honored to have you here, and please begin.

**STATEMENT OF DEBBIE STABENOW
A U.S. SENATOR FROM THE STATE OF MICHIGAN**

SENATOR STABENOW: Thank you, Commissioner Wessel, and to everyone, for allowing me to come before you. It's great to see all of you and, Commissioner Mulloy, thanks so much for having spent time in Michigan as well, and seeing firsthand what's happened. I appreciate all of you who have taken the time on a very, very important subject.

Obviously, we are in very challenging times in Michigan, but now across the country, particularly when we look at how we create a situation where there's a level playing field on trade that allows us to compete effectively, to be able to sell our products, and to be able to have a strong economy, keep the middle class in this country and not create a situation where we're exporting jobs instead of products, and that's really the big challenge for all of us, particularly those of us who make things and grow things, and that's what we do in Michigan. We make things and we grow things, and we do it very well, and we want to continue to do that, and we want to continue to have export markets to be able to strengthen the opportunities for us.

We're obviously closely tied to the automobile industry in Michigan, as well as broader manufacturing, and while many factors are affecting the auto industry, for sure, including the skyrocketing price of gas that we could spend a whole day on. In fact, if you have the answers on that one, please let me know because it's obviously extremely challenging to every part of the economy.

But at least two of the factors that are affecting the auto industry specifically relate to China, which is why I'm so pleased to be able to be here today.

First, China has been illegally taxing auto parts, auto parts imports, as you know, and second, they are the world's biggest counterfeiter, and both of those things have had a profound impact on us in Michigan as well as other states involved in manufacturing.

Although the WTO recently ruled that China's taxing of auto parts imports was illegal, and that's good news, unfortunately that ruling came far too late for tens of thousands of American workers.

In 2001, as part of the entry into the WTO, China agreed to tax auto parts less than it taxes entire cars. I wasn't surprised that China violated their commitments, unfortunately, but I have been very disappointed at the slow response from our government to the fact that

they violated their commitments.

USTR didn't file a case against China on this issue until March of 2006. And because the WTO process takes so long, we didn't get the ruling, of course, until February, which was too late for auto parts manufacturers and their workers. By the time the case was filed, four of the largest auto part suppliers had already entered bankruptcy and two more followed within months after that.

I'm also worried about our government's inadequate efforts to stop Chinese counterfeiting and substandard goods from entering the U.S. China is the main player in the \$12 billion a year counterfeit auto parts industry, which is, by the way, also a serious safety issue for Americans.

And this, according to the Federal Trade Commission, has cost us over 250,000 American jobs alone, just because of this one industry as it relates to counterfeit auto parts. Yet, the United States lacks a comprehensive strategy to stop this and other counterfeit and substandard goods, which is why your deliberations and recommendations I believe are so important.

Last summer, I led an effort to have over a half a million defective Chinese tires taken off the roads, and we all remember recall after recall during the holidays last year. Our nation is clearly behind the curve, and our inaction has put consumers and workers at risk. And so, again, your actions, your voice is very important in creating the sense of urgency that we need on these issues.

We need to act now to stop counterfeiting, to stop dangerous goods from coming in, to end numerous illegal trade practices, and frankly in my state, we're not interested in waiting for more plant closings or job losses or injured consumers.

We understand that China is a major part of the world economy, growing everyday, and obviously looking out for their interests, but we need to be looking out for our interests. They're looking out for their interests. We need to make sure that we are advocating for American businesses and American workers and our American economy, and we can't just wait until they decide it's convenient to live up to their agreements.

They were brought into the WTO under the argument that we would have more leverage to create a level playing field and fair trade if they were a permanent part of the WTO. But we've not taken actions to guarantee or to at least do everything we can to make sure, in fact, those agreements are being kept.

We can't wait while China gives illegal subsidies to their frequently state-run firms. We have too many businesses today where the company is competing against a country, when you're talking about

here, the cost that businesses individually have versus what China, as an example, will do if you come to China--build the plant, no health care costs. It goes on and on--lower safety standards--it goes on and on--and this is a really challenge for us.

China isn't stopping at low-value- added goods like textiles. In the automotive sector, China has its sights on more than just auto parts. It wants to use their industrial policy as a country to create an automobile manufacturing sector that eventually dwarfs those of Japan, Europe, and the United States.

How do we know this? Because the Chinese told us earlier this year. They identified the automobile manufacturing industry as a pillar industry, and because of their economy, as a non-market economy, they're willing to do things to guarantee that that happens and use whatever means possible including violating trade laws in order to make that happen.

Rest assured China doesn't want to compete on a level playing field. It manipulates its currency, subsidizes industries and uses other illegal trade practices to gain an unfair advantage.

I was very pleased that Under Secretary Christopher Padilla from Department of Commerce accepted an invitation of mine to come in and meet with manufacturers earlier this year and met with a number of small, medium and large manufacturers. And he heard across the board concerns about what is happening with China as well as other places, although China certainly is the big focus, and the fact that our businesses simply want one thing, to know that there is a level playing field, that if there are going to be rules, that China is expected to follow the rules as well as everybody else. That's all we're asking, is to be able to have the same rules, the same standards, the same playing field.

We somehow unfortunately in this country, I believe, have felt that we could lose manufacturing as a country and that would be okay. That we would have other advanced industries that would help us survive, other high-tech industries, and I would welcome you to come to any plant in Michigan. This is not your father's factory. This is not loud, dirty, dark. This is bright, open, all automated.

The most high-tech plant General Motors has is five minutes from my home in Lansing, and they spent a year training people before they went to work in the plant because it was so sophisticated. We're talking about the most sophisticated equipment and computerized technology and robotics anywhere.

So this notion that somehow we can give up advanced manufacturing and that it won't impact every other part of our economy doesn't make any sense to me at all.

In the past, this Commission has spelled out what this means for U.S. manufacturers and for defense. You have taken strong positions. I hope that the Commission will continue to think of this as you look ahead and look to ten years from now and 20 years from now and beyond because I believe that not only from a defense standpoint, which we've talked about before, but from an economic standpoint, it is extremely difficult to imagine an American middle class without a strong advanced technology manufacturing base in this country.

The bottom line is we need to be smarter this time around than we have been in the past. We need to follow through on. We have passed out of the Finance Committee legislation dealing with currency manipulation, and I believe very strongly that needs to be passed quickly, and I would certainly appreciate the support from the administration in that.

We have to make sure we are using the right kinds of enforcement which means more resources, and I would welcome your comments there, as we look at our resource capability. We know that these aren't easy issues. This is a complicated global economy now with interdependency, and we know that taking action one place affects another place, affects another place.

And so I understand. When I entered the discussion about intellectual property rights and counterfeiting, small businesses were primarily affected. Now, multinational companies are affected, and these issues aren't going to go away, just because we choose not to address them.

So I'm hopeful under the Commission's guidance that we will be able to see action in three areas, in particular. First, I would hope the Commission would do further research on how our current allocation of resources, how much is dedicated to trade enforcement in order to address these issues?

I'm very concerned. We've heard testimony in the Finance Committee. In fact, former Commerce Secretary Mickey Kantor indicated that from his analysis, he believed that we have the smallest enforcement arm of any industrialized country, and yet we have over 230 trade agreements around the world, not counting all of what's happening with China.

Second, the Commission, I would hope, would continue to research how China's industrial policy to support key industries will affect our companies and their workers.

And third, I would hope the Commission would help illuminate China's wide variety of WTO inconsistent subsidies that have gone unchallenged because the subsidies remain hidden.

These are very, very important issues that I believe go to the

core of how we compete successfully in a global economy. I have supported many more trade agreements than I have opposed in my now 12 years in the United States Congress, but I have reached a point after watching what happens when we don't pay attention and we don't enforce trade laws and we don't make sure there's a level playing field, I cannot continue to do that without knowing that we will be serious and have the resources and the knowledge to be able to make sure that we're doing our part to fight for American businesses and American workers.

So I thank you for all that you do, and please count me in as someone to call on as an ally in this. I know these are not easy issues, but I know that we have to address them if we're going to have a strong economy that we've had and benefitted from for so long in the United States.

HEARING COCHAIR WESSEL: Thank you for your testimony. I know your schedule is tight this afternoon, and we appreciate your being here and your support for the Commission over time. You've been a leader on these issues.

I should point out, I believe today is the third hearing we've done on autos and auto parts, which I think exceeds any other industry over the life of this Commission. We take it very seriously. Going out to your state and elsewhere to look at this, Ohio, and understand that the strength of this industry and the strength of our economy go hand-in-hand.

So we will continue to work on this. Appreciate your recommendations today, and we will work with you and your staff in the coming weeks.

SENATOR STABENOW: Great. Thank you very much.

HEARING COCHAIR WESSEL: Thank you.

SENATOR STABENOW: I appreciate your time. Thank you.

HEARING COCHAIR WESSEL: That is the last panel for the day. We stand adjourned until our next hearing on August 13, which will be posted on our Web site.

[Whereupon, at 3:40 p.m., the hearing was adjourned.]