APPLIED MATERIALS

STATEMENT

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Applied Materials, Inc.

US-China Economic and Security Review Commission
Hearing on China's High-Technology Development

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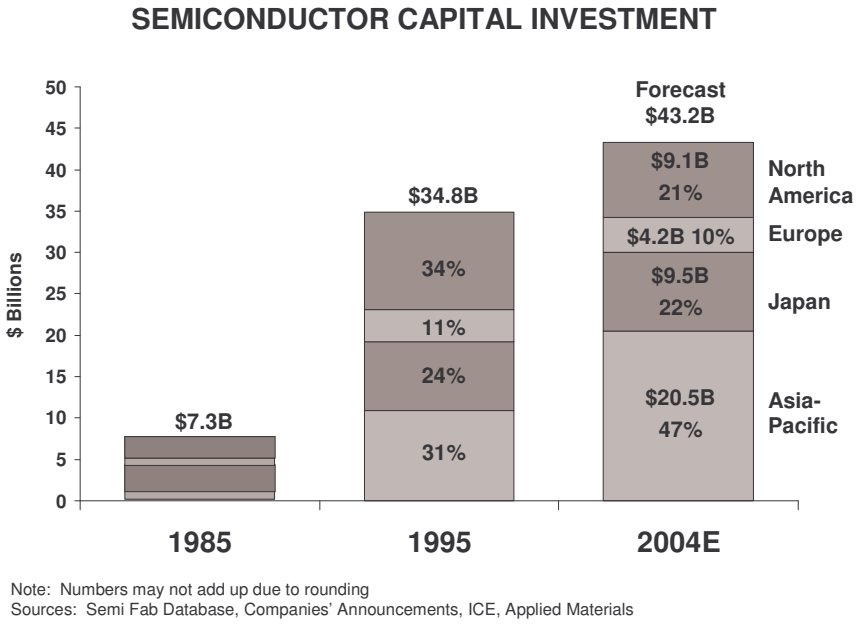
Background. Applied Materials, Inc., is the world's largest supplier of manufacturing systems and related services to the global semiconductor industry. The Company supplies wafer fabrication systems that perform many of the steps in the manufacturing process to make semiconductor chip circuitry. We also manufacture systems to produce flat-panel displays, develop and sell manufacturing-execution system software, and provide a variety of other manufacturing-related services to the industry. We are one of approximately 2,200 companies in the worldwide semiconductor equipment and materials industry represented by our trade association Semiconductor Equipment and Materials International (SEMI); about 1,000 of these companies are headquartered in the United States.

Although Applied Materials had sales of just over $8 billion in our last fiscal year, about 85 percent of US-based equipment and materials companies are small, privately-held companies with annual sales of less than $25 million. Many of these firms are part of a wide network of suppliers to larger, publicly-held companies — such as Applied Materials — that serve the global semiconductor industry.

Applied Materials, like most companies in the industry, was once simply a provider of tools built to specifications handed to us by our customers. Today, our research and development (R&D) generates many of the strategic process advances that increase chip information density, reliability and yields. As a result, SEMI companies spend an average of 15 percent of annual revenues on R&D; Applied Materials alone has spent $5 billion on R&D over the past five years.

To fund these R&D investments, every sale is important. Increasingly, this means sales to markets outside the United States. Export revenues now account for more than 70 percent of sales for most leading US companies in the semiconductor equipment industry. For Applied Materials in fiscal 2004, the figure was 83 percent. With so much of the semiconductor industry's investment outside the US, maintaining a high market share in regional markets around the world is essential to ensuring the resources to fund continued R&D, innovation and competitiveness. Thus, access to overseas markets and the ability to compete in these markets with leading-edge technology is absolutely vital to the long-term health of the US semiconductor equipment and materials infrastructure.

The Emergence of Asia. As the chart below indicates, Asia has emerged as the largest market for semiconductor equipment and materials manufacturers. First came Japan, then Korea, Taiwan (as well as smaller markets in Singapore and Malaysia), and now China. As a result, the Asia now comprises almost 70 percent of the world's market for semiconductor equipment and materials. Within the Asia market, China's is the fastest growing. But part of the impressive growth rate (130 percent from 2003-2004) stems from the fact the market is still relatively small: not quite $2.7 billion in 2004.



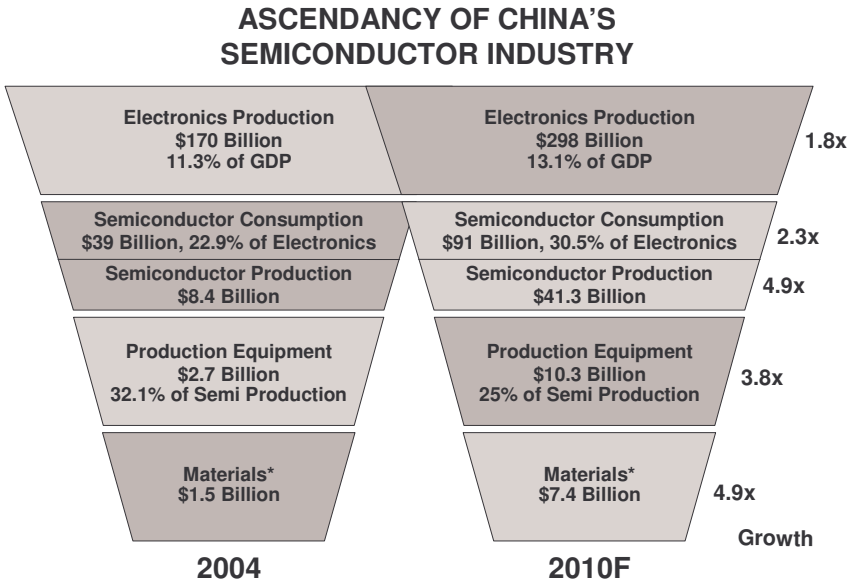
Note: Numbers may not add up due to rounding
Sources: Semi Fab Database, Companies' Announcements, ICE, Applied Materials

Though still a relatively small market, investment trends indicate that China is a key strategic market and early access to the China market is crucial for downstream success. It is hard to overstate the importance of gaining the "tool of record" designation with a customer, since this means the supplier companies likely will be a part of future manufacturing facilities. One of the lessons we learned in the 1980s when the US faced stiff competition from Japan is that competing effectively means competing for *every* customer in *every* market. Ceding market presence anywhere makes it that much more difficult to afford the R&D to stay competitive.

American firms have been moderately successful so far in the China market, selling 51 percent of the equipment in the "front-end" market (*i.e.*, wafer fab, mask/reticle, wafer manufacturing and factory automation equipment). The situation is not as good in the "back-end" segment (*i.e.*, test and assembly), as US firms account for only 29 percent of sales. In sum, US producers face strong competition from Japan, Taiwan, Korea and Europe in markets around the world, and China is proving itself no different.

Applied Materials and China. In November 2004, Applied Materials celebrated the twentieth anniversary of our presence in China. From a handful of service center workers at the outset in 1984 (and at that time we were not allowed to even hire our own employees in China), we have grown to more than 300 employees in five offices around the country. For the first 15 years, revenues from China were negligible. It was not until 2000 — as China became part of the

global economy in earnest — that we really saw significant market growth. In 2004, Applied Materials had revenues in excess of $750 million from China. With the growth of the electronics industry in general, and of the semiconductor industry in particular, in China, we anticipate even further market potential. The chart below illustrates where we expect China's electronics industry to be in five years.



Materials*: Fab and Packaging Materials only
Sources: Dataquest, WSTS, SEMI, Global Insight, Applied Materials Corporate Marketing estimates

Driving the nearly five-fold increase in semiconductor production in China over the next five years is a host of expected new semiconductor fabrication facilities ("fabs"):

It is important to note that the majority of these facilities are *not* at the cutting edge of technology, largely because they do not need to be. For every customer such as an SMIC building a 12-inch (300mm) facility, there are several others building 8-inch or even smaller wafer-size production facilities. Currently, China produces only about 20 percent of the chips its domestic electronics industry consumes. China is aggressively moving to increase this figure, which has led to a building boom. As a result of this building boom, the percentage of consumption derived from domestic production will rise to about 45 percent in 2010, and the market for semiconductor chips is expected to double.

Despite China's impressive growth in some sectors, it is important to keep that country in perspective. Only a small percentage of China's population has been touched by technology, and several serious problems face the country: rural/urban dislocations and unemployment, scarce water resources and growing pollution, energy consumption and rising prices, an unstable banking/finance system, inefficient state-owned enterprises, and others. China's ability to generate genuine innovation in the absence of effective intellectual property protection is another real barrier to its ability to be a global technology leader. Given this host of looming challenges, it is not surprising that China was ranked 24th in the 2004 IMD "World Competitiveness Scoreboard" and 46th in the World Economic Forum's 2004 rankings. (The United States ranked 1st and 2nd, respectively, in these ratings.) The point is, while China is a growing economic power, it also has a lot of competitors around the world who are not likely to cede economic or technological leadership easily.

Applied Materials, like many other companies, has strategies for engaging with China and remaining competitive as China emerges as a significant semiconductor manufacturing player. On the one hand, it is a vibrant and growing market; on the other hand, we face the prospect of a domestic semiconductor equipment industry emerging to challenge us. Another issue we face is cost pressure from our customers. As some components and technologies become commoditized and prices drop, increased operations in China are often viewed as a solution to staying profitable and funding further R&D in the US. This raises the issue of intellectual property protection, which is haphazard at best in China. We spend considerable time and effort to safeguard our technology and corporate knowledge.

Policy Responses. Any policy response to the rise of global competition from China or anywhere else should target one overarching goal: to make the United States *the* preferred place for investment (of all types) from around the world. There is a China-oriented component of this strategy, which largely involves enforcement of China's WTO commitments (particularly its continued shortcomings in intellectual property protection) and a realignment of China's currency.

For the most part, however, the US policy response should be focused less on China and more on challenges at home to our overall competitiveness. There are numerous elements that comprise this comprehensive policy program, few of which are easy, inexpensive or near-term. They include, but are not limited to:

- **Education** — we cannot expect to be an innovation- and technology-based economy if our students are deficient in math and science skills. This is true at both the grade level (*e.g.*, No

Child Left Behind) as well as college and graduate levels (National Science Foundation funding).

- **Immigration/Visas** — with pipeline shortages of scientific and engineering talent, we should make it easier to attract and keep students from around the world in the United States.
- **R&D Funding** — Except for military and health sciences, federal R&D spending has been stagnant for 15 years. The United States cannot coast forever on our R&D investments from decades gone by. The physical sciences are key drivers of an innovation-based economy and we are under-investing in those areas.
- **R&D Incentives** — the on-again, off-again R&D tax credit (not to mention its increasingly archaic structure and difficult compliance) is less and less of an incentive to perform R&D activities here in the United States.
- **Regulation** — the recent battle over stock options accounting (which will likely seriously diminish the use of this form of employee incentive) is a good example of how knee-jerk regulation with insufficient consideration leads us into blind alleys to no good purpose. The Gordian Knot of telecom regulation that retards broadband deployment in the United States is another type of entanglement that hamstrings US competitiveness .
- **Export Controls** — there are multiple sources for everything these days, and making it more difficult for US exporters to compete and gain market share does not advance our national security since technology companies require sales in all regions to have the financial return necessary for continued R&D funding to stay in the lead.

These and other issues will determine the macro-environment that will drive investment decisions in the years ahead. The economic reforms started by Deng Xiaoping and accelerated under Jiang Zemin were marked by a high degree of pragmatism and flexibility. This flexibility is one of the reasons that China has been able to achieve the surprising economic growth it has. We would do well to be as pragmatic in seeking and implementing our own policy solutions.

The US semiconductor equipment industry is a technology-intensive, high value-added, net-exporting American success story. As an industry, we achieved a leadership position through a lot of hard work by a lot of smart people over a long time. And we intend to keep this hard-won place of international competitiveness leadership — if we have a policy framework that enables us to do so. We must work diligently to make sure the United States is at the top of the list of attractive places around the world in which to do business. This is the best way to assure job growth in the US and the resulting income and taxes to invest in US competitiveness.

Thank you.

During his testimony at the Commission's hearing on April 21, 2005, Mr. Morgan made the following additional statement:

"As Vice Chairman of the President's Export Council, I can tell you that China has been a large part of our focus in discussing strategies to help promote and develop export opportunities for American goods and services. Last year, we even took the step of conducting a special trip to China for commission members — led by Secretary of Commerce Don Evans. The PEC has produced a number of letters of recommendation to the President regarding China, and I would respectfully suggest that the Commission members review those recommendations as part of your work."

He submitted, for the record, copies of the following PEC documents:

THE PRESIDENT'S EXPORT COUNCIL

Select Letters of Recommendation to the President of the United States

December 17, 2004	Letter on Export Control Legislation
August 19, 2004	Report on the President's Export Council Trip to China
August 19, 2004	Annex to the Council Letter on China addressing U.S. Competitiveness in China
September 29, 2004	Letter on Export Controls
October 1, 2003	Letter on China

Copies of these letters of recommendation can be accessed on the webpage of the President's Export Council

http://www.ita.doc.gov/TD/PEC/letterspage.html