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Briefing Report to the Honorable  
Lloyd M. Bentsen,  
United States Senate

April 1987

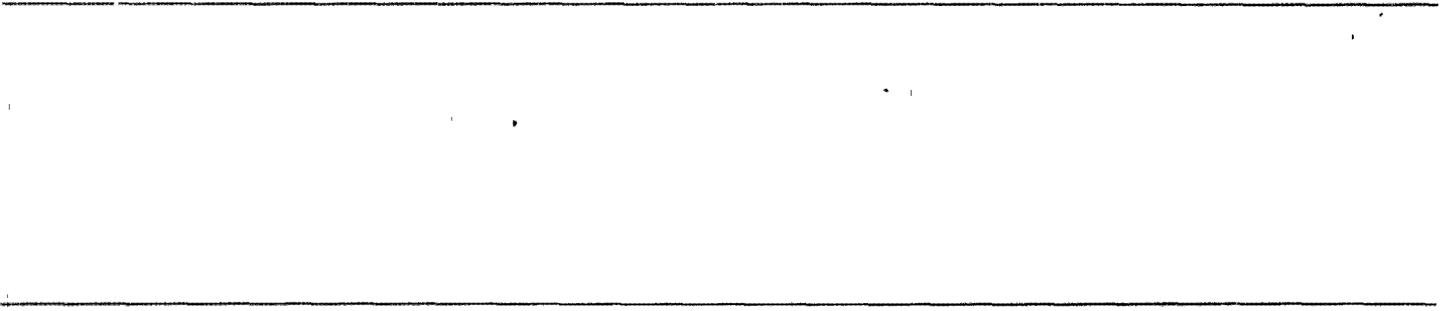
# INTERNATIONAL TRADE

## Observations on the U.S.-Japan Semiconductor Arrangement



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United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division  
B-226744

April 15, 1987

The Honorable Lloyd M. Bentsen  
United States Senate

Dear Senator Bentsen:

On February 25, 1987, you requested that we assess the results of the U.S.-Japan negotiations on semiconductor trade in terms of what was negotiated, the expected outcome, the administration's view of the results, and U.S. industry views of the results and the impact of the agreement on U.S. semiconductor manufacturers and users.

The U.S.-Japan agreement on semiconductor trade<sup>1</sup> is a unique approach developed to respond to complaints about unfair trade practices, using remedies authorized by two provisions of U.S. trade law -- section 301 of the Trade Act of 1974, as amended, and the antidumping provisions of Title VII of the Tariff Act of 1930, as amended. This Arrangement was intended to resolve three unfair trade practices: 1) below cost sales (dumping) of Japanese-manufactured semiconductors in the United States, 2) dumping of Japanese-manufactured semiconductors in third country markets, and 3) the presence of unfair trade barriers which limit the ability of U.S. producers of semiconductors to sell in the Japanese market.

The considerations underlying the U.S. efforts to negotiate and enforce the Arrangement included the general goal of encouraging the removal of any barriers to free trade and addressing a national security concern over the health and vitality of the U.S. semiconductor industry. This concern is derived from the role that mass production of certain semiconductors known as "technology drivers" plays in the U.S. industry's ability to competitively produce a full range of semiconductor products. Some experts suggest that if this essential segment were to disappear from U.S. production, the entire microelectronics industry could be threatened or lost in subsequent years, potentially resulting in further damage to vital national interests.

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<sup>1</sup> Formally the "Arrangement between the Government of Japan and the Government of the United States of America concerning Trade in Semiconductor Products," (referred to hereafter as the "Arrangement".)

U.S. government data indicate that Japanese firms are satisfactorily complying with that part of the Arrangement regarding the cessation of dumping of certain Japanese-manufactured semiconductors in the United States. However, these data also indicate that there has not been compliance with the other two major aspects of the Arrangement. Accordingly, the administration concluded on March 27, 1987 that third country dumping persists and access to the Japanese semiconductor market is still unfairly restricted, resulting in a U.S. share of the Japanese market that has declined slightly rather than grown. The President announced his intention to impose retaliatory tariffs on a range of Japanese-manufactured goods, particularly those that contain semiconductor components.

#### THE SEMICONDUCTOR TRADE ARRANGEMENT

The Arrangement was negotiated to resolve three major trade cases brought in 1985, and is one component of U.S. government efforts to address U.S.-Japan disputes over trade in semiconductors and other high-technology trade issues.

On June 14, 1985, the Semiconductor Industry Association (SIA) filed a petition under section 301 of the Trade Act of 1974, as amended, alleging that the Government of Japan violated international agreements by protecting its home market and erecting major barriers to the sale of foreign semiconductors in Japan. The Japanese practices included

- restriction on entry into the Japanese semiconductor industry by all but large and established Japanese electronic producers;
- concentration of semiconductor subsidies and research and development aid to the largest electronic producers;
- pressure on semiconductor consumers to "buy Japanese"; and
- formal restrictions on imports and foreign investment.

SIA alleged that these practices were in violation of the General Agreement on Tariffs and Trade (GATT) to which Japan is a signatory, inconsistent with prior commitments made by Japan as part of the 1983 Semiconductor Recommendations and the 1983 Recommendations on High Technology developed by the U.S.-Japan Work Group on High Technology Industries, and an unreasonable burden on U.S. commerce. The United States Trade Representative (USTR)

initiated an investigation of the SIA petition on July 11, 1985, and entered into negotiations with the Government of Japan, beginning in the summer of 1985.

On September 30, 1985, three U.S. firms filed an antidumping petition under Title VII of the Tariff Act of 1930, as amended, with the Department of Commerce (DOC) on behalf of the domestic manufacturers of Erasable Programmable Read Only Memory (EPROM) semiconductors. The petitioners alleged that imports of EPROM semiconductors from Japan were being sold in the United States at less than fair value, and that these imports were materially injuring, or threatened to materially injure, the U.S. semiconductor industry. DOC initiated an investigation on October 21, 1985, referring the petition to the International Trade Commission (ITC) for an injury determination, as required by law. On November 14, 1985, the ITC preliminarily determined that there was a reasonable indication that Japanese EPROMs sold in the U.S. were materially injuring, or threatened to materially injure, a U.S. industry. DOC granted the Japanese manufacturers' request for an extension of the final determination date until not later than July 30, 1986.

On December 6, 1985, DOC self-initiated an antidumping investigation of 256 kilobits (256K) and above dynamic random access memory (DRAM) semiconductor imports from Japan and referred the case to the ITC on December 9, 1985. The ITC preliminarily determined on January 22, 1986 that there was a reasonable indication that imports of Japanese 256K and above DRAMs were materially injuring or threatening to materially injure a U.S. industry. DOC granted the Japanese manufacturers' request for an extension of the final determination date until August 1, 1986.

On September 2, 1986, the United States and Japan formally signed the Arrangement in response to the semiconductor dispute arising from the antidumping cases and the section 301 petition. The Japanese government agreed to

- facilitate increased market access opportunities for foreign semiconductor firms in Japan,
- prevent the dumping of semiconductors in the United States, and
- prevent the dumping of semiconductors in third country markets.

The U.S. government suspended the pending antidumping cases and the section 301 investigation.

The overall Arrangement was signed by the respective governments, and the individual Japanese companies that were respondents to the antidumping cases signed suspension agreements with DOC. As part of the suspension agreements, DOC calculates a quarterly foreign market value (FMV) for DRAMs and EPROMs specific to each Japanese manufacturer, based on cost data that each supplies, which would constitute a minimum price for that firm's sales to the United States. The Arrangement is to last until July 31, 1991.

The U.S.-Japan Arrangement is generally considered a unique solution to an international trade problem because it was an attempt to resolve a number of complex trade disputes under one "umbrella" agreement.

The Arrangement has been called "unexpectedly successful" by representatives of the U.S. semiconductor industry in terms of scope since the domestic dumping cases, the problem of dumping in third country markets, and market access in Japan were included under the "umbrella" format of section 301 negotiations. Further, U.S. negotiators were able to achieve the inclusion of both a strong monitoring component and a provision to expedite dumping cases if non-compliance was found and such action was considered warranted. The Arrangement provided that a determination of compliance with the terms of the suspension agreement would be based on Japanese manufacturing cost data that the Commerce Department is authorized to audit. Monitoring other aspects of the Arrangement -- third-country pricing, U.S. pricing, and access to the Japanese market -- are the responsibility of the Japanese Ministry of International Trade and Industry (MITI).

Industry reaction to the Arrangement is very positive. A consensus appears to exist in support of it among both semiconductor manufacturer and user groups. Most of the merchant<sup>2</sup> manufacturers we spoke with expressed the belief that this Arrangement is the best one that could have been achieved. Although some concern was voiced by electronics

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<sup>2</sup> U.S. merchant manufacturers generally produce semiconductors (or microchips) to sell directly to end-users (e.g., electronics manufacturers), whereas captive manufacturers' production is solely for internal consumption as part of a larger manufacturing effort (e.g., IBM and AT&T) and not sold to outside interests. Japanese semiconductor manufacturers, on the other hand, often have merchant and captive components to their operations.

producers (who naturally are strongly affected by semiconductor prices), the major electronics associations have voiced the overall support of their members. Many industry representatives told us that they recognize that this Arrangement is a better approach than relying on U.S. antidumping procedures which, if taken alone, would have only created "an island of high prices" in the United States which could have harmed all U.S. semiconductor user industries or increased the incentives for them to move to off-shore production.

Measures of compliance with the antidumping provisions of the Arrangement are straightforward. However, the Arrangement is much less clear with respect to the provisions regarding increased access to the Japanese market. It does not explicitly state how compliance with that aspect of the Arrangement will be determined. The administration took this approach based on its policy not to engage in market share arrangements. For example, the Arrangement does not specify what increase in U.S. market share would be an acceptable intermediate goal, and it does not specify an ultimate market share as the final goal. Furthermore, the Arrangement does not specify compliance in terms of specific actions by the Government of Japan. As a result, trying to demonstrate compliance or lack of compliance with this provision of the Arrangement is problematic.

Some trade experts have asserted that the United States should never stipulate specific numeric goals such as market share or domestic production levels, since a mandated market share would not encourage competitive effort by U.S. industry. It was mainly for this reason that the U.S. government did not seek such specificity. However, other experts insist that Japanese compliance could only be expected if specific numeric goals were included in the Arrangement.

A U.S.-Japan bilateral agreement such as the Arrangement raises a question regarding the impact of such an arrangement on other U.S. trading partners. The European Community responded to the Arrangement by bringing a case before the GATT for dispute settlement; this case is currently pending GATT panel formation to review the complaint. Further, it is uncertain what impact the Arrangement will have on nascent chip production facilities in developing countries, principally Korea.

#### JAPANESE COMPLIANCE

Although data provided to the U.S. government under the terms of the suspension agreements indicate Japanese

compliance regarding the cessation of dumping of DRAMs and EPROMs in the U.S. market place, this information led the administration to conclude that Japan has not complied with the other two major aspects of the Arrangement. Based on DOC's and USTR's most recent figures, the administration concluded on March 27, 1987 that third country dumping persists and access to the Japanese semiconductor market is still unfairly restricted, resulting in a U.S. market share that has declined slightly rather than grown.

Most industry and government officials we interviewed believe that Japan has complied with the suspension agreement contained within the Arrangement -- sales of DRAMs and EPROMs in the United States by Japanese companies which signed the Arrangement have not been priced below foreign market value. However, an unknown amount of chips are being purchased off-shore at cut-rate prices. This may have been a particularly severe problem when the Arrangement was first agreed upon. Because the first FMV figures proved to be unexpectedly high (due to an initial refusal of Japanese manufacturers to provide cost data), U.S. electronics firms responded by quickly finding alternate off-shore sources for chips at below U.S. prices. Indeed, one electronics firm spokesman told us he believed that "...no U.S. sales were ever made at that [price] level..." and that "...since firms had to have supplies or go out of business, other sources were found."

The Department of Commerce, as well as U.S. industry research, has determined that prices of Japanese produced DRAMs and EPROMs in third country markets are still often well below the fully allocated cost of production. Specific sales data has led U.S. manufacturers to believe that at least some Japanese firms are continuing to "dump" chips there. Further, since prices are not controlled in Japan, and Japanese firms have not substantially lowered semiconductor production in response to slackened demand, a strong incentive exists for broker/dealers to buy semiconductors in Japan to distribute overseas at discounted prices, outside of established distribution channels. These "grey market" sales are purported to be a growing market force although no substantiated data exist which determine just how much of this is going on.

In the Arrangement, the Japanese government agreed that improvement in access would be gradual and steady over the period of the Arrangement. Nevertheless, the U.S. market share in Japan has remained flat, and may even have declined since the signing of the Arrangement. These data call into question whether MITI has the determination to implement these provisions or the ability to influence Japanese purchases of U.S. semiconductors. The Japanese

semiconductor manufacturers typically are part of vertically-integrated electronics manufacturers and the Arrangement cannot address transfer prices within the "walls" of each firm. Prospective Japanese customers of U.S. semiconductor manufacturers thus may also be competing producers of semiconductors in many cases. The incentive to buy from U.S. competitors may therefore be limited unless some technology transfer is involved and/or government pressure is brought to bear.

MITI also agreed to establish an organization to provide U.S. manufacturers sales assistance and quality assessments. The stated objective of this center was to "...provide sales assistance for foreign semiconductor producers as they attempt to penetrate the Japanese market." U.S. manufacturers object to the "sales center" concept the Japanese have developed in response to the Arrangement, known as the International Semiconductor Cooperation Center, however, since Japanese semiconductor producers, rather than purchasers of chips, are reportedly involved in setting the quality standards. U.S. manufacturers believe that users should set individual standards. The U.S. Semiconductor Industry Association does not support the Center as currently organized and none of its members have joined thus far. However, the industry has not rejected the possibility of participation in the future if their stated concerns can be met by MITI.

#### INDUSTRY PERSPECTIVES

Even if the Arrangement were strictly adhered to, there remains some disagreement regarding just how much it would directly benefit U.S. semiconductor manufacturers, especially over the long run. Although the U.S. semiconductor industry strongly supports the Arrangement, questions arise as to whether U.S. intervention is being appropriately used to assist an otherwise competitive industry or simply to "bail out" an industry which created its own problems and cannot compete on its own.

Some semiconductor industry representatives told us that the Arrangement was never meant to assure their profitability. Even if prices firmed to cover fully-allocated costs, the resulting profit margins alone could not support the research and development necessary to develop new technologies. However, many industry experts believe that the cessation of Japanese dumping of DRAMs and EPROMs is essential since these are the "technology drivers" which serve as a necessary base for other U.S. semiconductor production. Price stability coupled with production efficiency can prevent unacceptable losses from these commodity lines so that profits from other lines can

fuel future research and development. Due to continued weak demand and resulting depressed prices for DRAMs and EPROMs, some industry representatives commented that no incentive exists for new firms to enter the market, or for firms which once produced these chips to re-enter the market to expand U.S. manufacturing capability.

Some semiconductor user firms have asserted that it was "ill-advised" for the United States to self-initiate a DRAM antidumping case in the first place, since it would potentially have hurt U.S. electronics companies by increasing the U.S. prices of component chips used in their products, while the prices paid by competing Japanese electronics manufacturers for the same chips would not be raised. Further, they suggested that the DRAM antidumping case would not have greatly helped manufacturers since few U.S. DRAM manufacturers remain.

General agreement exists on the part of both producers and users, however, regarding enforcement of the Arrangement. Irrespective of views regarding the Arrangement itself, semiconductor users and producers almost unanimously agree that "a deal's a deal" and should be enforced. Sanctions are viewed as a necessary extension of enforcement in response to "a history of Japanese unfair trading practices" and current non-compliance. Industry officials told us that they fear that, unchecked by a strong U.S. response, "...the Japanese will continue their delay tactics" or put up a mere "facade of compliance." Therefore, industry representatives generally supported the use of sanctions, specifically if they would be placed on those Japanese companies that are pricing below fully allocated cost and would not disadvantage U.S. users.

#### Industry Suggestions

Some U.S. industry representatives believe that Japanese producers have market advantages derived from the vertically-integrated structure of Japanese semiconductor firms. The industry views this structure as inherently advantageous to the Japanese because it facilitates close relationships between suppliers and users of semiconductor components -- relationships which are important to understanding and responding to user demand through new product design and development. The industry representatives acknowledged that they are striving to improve the quality of their relationships with users in an effort to simulate the benefits of vertical integration.

Both merchant and captive semiconductor manufacturers see a national need to maintain a strong infrastructure to support U.S. semiconductor manufacturing capability; some

recent government studies support this view. Manufacturers, however, fear an eventual loss of this technology if not supported with on-going high levels of U.S. production. The Semiconductor Industry Association developed a proposal for a special consortium called "Sematech" (Semiconductor Manufacturing Technology Institute) to respond to this concern. This group is designed to focus on U.S. manufacturing technology rather than on specific chip design. Most of the industry representatives we spoke with support the general concept of such a consortium, although it is still in the planning stages. However, project funding is still being debated -- the issue of government-versus-private funding is a divisive one for the overall industry.

The semiconductor industry believes that continued technical and manufacturing innovation, cost competitiveness and research and development cooperation are central elements of its effort to regain profitability. Nevertheless, many also see some role for the U.S. government in the revitalization of the industry. Because the industry remains convinced that it can successfully compete in an open international trading system, it views the government's role as one of establishing and maintaining the rules of fair trade with Japan and other nations. Additionally, the Semiconductor Industry Association advocates certain changes in tax incentives, and in antitrust, antidumping, and export control laws to further stimulate industry competitiveness.

#### CONCLUSIONS

The U.S.-Japan semiconductor trade Arrangement is a fairly unique bilateral approach developed to address a number of complex, and long-standing, trade issues. However, it would be unrealistic to see it as a complete solution to the semiconductor industry's current problems. Different views are held -- within both the industry and government -- regarding the ultimate purpose of this Arrangement. Some believe that it should primarily serve to ensure adherence to obligations under the GATT (e.g., market access and antidumping rules); others view it more broadly as a means to "re-introduce the operation of market forces to Japanese production and consumption of chips..." and still others consider it as a way to bolster a weakened U.S. industry.

Although the Arrangement was developed to provide remedies under U.S. trade law responding to unfair foreign trade practices, the strength of will behind its development and enforcement is buttressed by national security concerns. Despite the national security concern, there has been no consensus as to what the semiconductor industry should look

like to meet those national security goals. There might be greater assurance of success if such a consensus were reached and the trade initiatives were coordinated at the outset with other actions deemed necessary to ensure the viability of the U.S. semiconductor manufacturing industry at a level that satisfies the national security objectives.

The goals of the Arrangement are to enhance "free trade in semiconductors on the basis of market principles and the competitive positions" of the industries in the United States and Japan. The potential benefits of the Arrangement in attaining this goal can be analyzed from two perspectives -- short-term enforcement of antidumping measures and long-term reduction of over-production. Both are essential to the viability of the U.S. industry, as are its own efforts to enhance its ability to produce competitive products. In the area of short-term actions, we agree with the administration that the suspension agreements are enforceable and that it is possible for third-country dumping to be substantially reduced. Evidence suggests that short-run pricing behavior of Japanese semiconductor manufacturers can be monitored and influenced. MITI can influence prices through export controls and therefore should be able to influence Japanese firms to stop dumping. MITI has taken some actions in this direction, using a variety of means to persuade Japanese manufacturers to reduce production in an effort to firm prices. The United States, however, views these as inadequate and inappropriate measures which can have trade-distorting effects.

However, the more fundamental and long-term issue of overcapacity is more central to the longer-run health of the U.S. industry. Negotiators on both sides expected demand for semiconductors to strengthen more than it has. Since it has not done so, the environment of weak demand and general over-supply that has characterized the world semiconductor market since 1985 continues and the incentive for the remaining manufacturers to sell below fully allocated production costs still exists. In negotiating the Arrangement, U.S. negotiators clearly envisioned that firms would exit the market, in either nation, if they were unable to operate profitably once the FMV figures and MITI monitoring mechanisms were in place. High-cost firms normally do leave an industry when slack demand and industry overcapacity persist and prevent them from making a profit; many U.S. manufacturers have in fact ceased production of 256K DRAMS. The Arrangement does not, and could not, specify the manner in which the semiconductor industries in the two nations would adjust nor the speed at which the adjustment would occur.

In its efforts to enforce and comply with the Arrangement and address the problem of over-production, MITI has mandated uniform production cuts by Japanese producers. The production cuts do not differentiate among high-cost and low-cost producers, leading to concern by some U.S. industry and government officials that MITI is unwilling or unable to see a long-term reduction in the manufacturing capacity of the Japanese semiconductor industry. It is unclear, however, whether this concern is valid or whether the MITI actions reflect either divergent expectations between the United States and Japan regarding the nature and speed of industry adjustment, limits to the action that MITI can take, or MITI and Japanese expectations of an increase in demand for semiconductors to warrant this overcapacity in the near future.

The administration's announcement of planned sanctions should not necessarily be seen as an indication that the Arrangement is a failure. The antidumping provisions of the Arrangement are enforceable and the sanctions reflect U.S. resolve to ensure compliance with Arrangement commitments, not the collapse of the Arrangement. As such, the sanctions should serve as temporary measures to be removed when compliance improves. In fact, the sanctions may strengthen MITI's ability to influence Japanese manufacturers' compliance. Over the long run, such serious efforts to enforce compliance with the commitments contained in international trade agreements should strengthen the credibility of U.S. resolve on these matters.

#### OBJECTIVES, SCOPE AND METHODOLOGY

We conducted our review during March and April 1987. We interviewed U.S. officials involved in the negotiation and monitoring of the U.S.-Japan Arrangement, representatives of semiconductor manufacturing and user associations, and representatives of individual companies in the industry. Although we did not develop a statistical sample to measure these views quantitatively, we did interview representatives of major U.S. merchant and captive semiconductor manufacturers, as well as representatives of major users of semiconductor components selected so as to present a potentially diverse range of opinion. Further, we discussed the Arrangement with a representative of MITI. We relied on information provided by the Department of Commerce (DOC), the Office of the U.S. Trade Representative (USTR), and private industry to assess Japanese compliance with the Arrangement.

At the request of your office, we did not obtain official comments on this report from Commerce or other U.S.

agencies. However, we reviewed a draft of the report with Commerce and USTR officials and their comments were considered in preparing the final report. Our review was performed in accordance with generally accepted government auditing standards.

Unless you publicly announce its contents earlier, no further distribution of this report will be made until 10 days from its issue date. At that time, we will provide copies to the Department of Commerce and the U.S. Trade Representative and to other interested parties upon request.

Sincerely yours,



Frank C. Conahan  
Assistant Comptroller General

(483465)

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