

U.S.-Japan Competition and Trade in the Global Semiconductor Industry

CASE B (1986-1991)

I. COMING TO AN AGREEMENT

In 1986, Japan became the world's largest producer of semiconductors as well as the largest market for semiconductors. The trend was felt in the United States as nine of the 11 U.S. DRAM producers left the market, resulting in Japan's world dominance of this largest market for semiconductor products. The EPROM producers in both Japan and the United States suffered great losses as well. At this time, there appeared to be no signs of relief for U.S. semiconductor producers.

The numerous previous attempts to reverse the negative American trends that had become the focus of the complaints made by the U.S. semiconductor industry had not achieved the desired results. But the Section 301 petition filed by the SIA, the EPROM and DRAM dumping suits filed by three U.S. chip makers, and the self-initiated suit by the U.S. Department of Commerce had finally created an atmosphere that demanded the attention of Japan. The U.S. Department of Commerce suit was particularly alarming as Japanese semiconductor firms were declared to be selling DRAMs at levels far below the cost of production and dumping memory devices in the U.S. market by up to 34.5% of cost. With all of these pressures on Japan, a formal agreement was finally initiated by MITI, DOC, and USTR to address the problems of dumping and market access.

The U.S.-Japan Semiconductor Agreement that was formally signed in September 1986 had three basic conditions. The first condition was that Japanese firms would stop dumping in all world markets, not merely the U.S. market. This was a precedent setting condition since it was a bilateral agreement that governed behavior in third-country markets. In addition, the Japanese firms were to maintain detailed cost records that were to be the basis under which each firm would set a "fair market value" (FMV). The FMV became the selling price for the firm, as it was based on the total cost of production plus an 8% profit. Each firm could sell at any price as long as the price was at or greater than

its “fair market value” (FMV). Thus an efficient Japanese firm could sell below its U.S. or Japanese competitor’s prices so long as its price was above the calculated FMV for its product.

The second condition of the U.S.-Japan Semiconductor Agreement was that Japan would encourage and expect that foreign semiconductor firms achieve an increased share of the Japan market. A specific target market share for foreign firms of 20% was included in a side letter to the agreement. Though the side letter was considered to be a secret, in time it would become the SIA’s quantitative measure of compliance by Japanese firms .

The third condition of the agreement was that the U.S. government would suspend the antidumping duties estimated to be as high as \$1 billion. Consequently the agreement balanced Japan’s promise to cease dumping and to open its market in return for a suspension of the hundreds of millions of dollars in penalties. It was expected that full compliance with the first two terms of the agreement would take the Japanese firms some time to achieve.

Among the interested third parties observing the negotiations and the agreement were the semiconductor producers of Europe, who were highly critical of the agreement. The DG12, the EC’s directorate of information technology, wanted to ensure that the European chip producers would have equal opportunities to increase their access to the Japan market. At that time, their share was less than 1% of the total. Specifically, the European chip producers were concerned that the bilateral agreement would be discriminatory in granting the United States primary access to the Japanese market. The European producers filed a complaint with the GATT on the basis that the U.S.-Japan agreement violated the GATT principles of multilateral agreements. A GATT panel would eventually find that the export and production controls imposed on Japan were contrary to GATT principles but that the agreement did not provide preferential market access to the U.S. firms.

European chip producers were not alone in their criticisms of the agreement. U.S. consumers of semiconductors were alarmed that, as fair market value prices began to take

effect, the prices of DRAM chips had risen to several times the pre-agreement prices. They were concerned that more expensive chips would make their computer and electronic products noncompetitive. And even though continued high growth was predicted for the semiconductor market, U.S. chip makers too were not satisfied. They believed that now, six months after signing the agreement, dumping had still not ceased in third-country markets and that access to the Japanese semiconductor market had not significantly improved. Only American semiconductor production equipment producers seemed unaffected.

II. MAKING THE AGREEMENT STICK

On March 27, 1987, after listening to strong complaints from SIA—and to the surprise of many in Japan—President Reagan placed sanctions of \$300 million on Japanese imports for failure to comply with the U.S.-Japan agreement. The SIA supported the president but decided to refrain from taking a position with regard to products that would be sanctioned. The sanctions amounted to customs duties of 100% of the value of Japanese imports of televisions, computers, power tools, and other products for which U.S. consumers had alternative country sources. Although this action did not apply to Japanese semiconductors, it did result in a backlash from the Japanese producers of consumer goods against their country's chip makers who had not complied with the agreement.

Although the sanctions were effective in encouraging the Government of Japan to act, the SIA and chip consumers were unhappy with the uniform floor price that MITI had imposed as a result on Japanese chip exporters to satisfy the conditions of the agreement. The SIA implored the Reagan administration not to lift the remaining sanctions until the MITI price monitoring became company-specific. After MITI provided assurance that production export controls had been eliminated and dumping in third countries had ceased, sanctions related to dumping were removed at the end of 1987. The Japanese buyers also began to recognize that purchase of foreign-made chips was necessary to meet the market access terms, but those sanctions related to market access remained, pending full compliance with the 1986 agreement.

With the advent of 1988, several new events appeared to bolster the fortunes of U.S. chip makers. The SIA obtained government approval in 1987 for a new organization, SEMATECH. This consortium of 14 U.S. chip makers was expected to usher in the next phase of U.S. semiconductor industrial development. SEMATECH's goal was to support new manufacturing technology development through the use of U.S. industry funds and matching government grants. The ultimate result to be expected was superior American products. Another event, the combination of a rise in demand for chips and a rise in value of the Japanese yen relative to the U.S. dollar began putting further economic pressures on the Japanese producers to raise their export prices, thus favoring U.S. competitors. These events seemed to reduce the intensity of the conflict.

With some easing of tensions between the U.S. and Japanese industries in 1988, the SIA invited the Electronic Industries Association of Japan (EIAJ) for a meeting in Monterey, California. The overriding goal of the meeting was to explore ways in which U.S. chip makers could increase their opportunities in the Japanese market, but SIA's specific objective for the event was to promote long-term relationships between U.S. producers and Japanese users. At the meeting, U.S. industry representatives advocated the benefits of designing in foreign-made semiconductor components in the production of finished goods in Japan and of broadening the base of users and suppliers in the market access effort. Following this meeting the EIAJ formed the Users Committee of Foreign Semiconductors (UCOM). UCOM would hold seminars to promote market access and review market access improvements. This meeting was followed by the establishment of a Distributors Association of Foreign Semiconductors (DAFS) that would become the link for distributors of U.S. products in Japan to increase market share there. In conjunction with the SIA's Japan chapter, the foreign suppliers, Japan users, and foreign distributors were organized and able to begin the most extensive series of market access activities in history. Because of the 1986 Semiconductor Agreement, these activities covered a range of applications from televisions to cellular phones to automobile engine controls.

By 1988, the Reagan administration and Congress appeared to have developed a succinct set of a policies for dealing with the complaints of U.S. semiconductors

manufacturers about Japan business practices. In cooperation with the Congress, the USTR, and the Department of Commerce, the Reagan administration carried out policy actions to retaliate against alleged dumping in the U.S. market and restrictive business practices ostensibly limiting market access for U.S. firms in the Japanese market.. In addition, in 1988 Congress approved formation of the National Advisory Committee on Semiconductors (NACS), a committee of high-level government and industry officials. This committee would become the platform through which proposals could be articulated for further development of the national strategy for the U.S. semiconductor industry. But then came a new cause for concern regarding trade policy. Inauguration of George Bush as president and the inception of his administration in 1989 forced all parties to reassess the semiconductor agreement and its impact.

The SIA began its appraisal of the position of the new administration by sending its officials to Washington to request that the White House preserve the integrity of the Semiconductor Trade Agreement (STA) by keeping the heat on the Japanese to comply with the agreement. In addition, the SIA began to respond to renewed criticisms from journalists that the agreement was allowing Japanese producers to gouge chip consumers. The SIA replied that prices in the DRAM market rose because Japanese producers were able to drive out U.S. competition by selling their products below cost. It insisted that the terms of the STA were not intended to harm U.S. consumers of chips since prices were to be based on FMVs of each company plus an 8% margin for profit. In addition, the SIA issued a report by a business research group that concluded that DRAM prices were expected to rise, regardless of STA, as a result of dumping that occurred in the mid-1980s. The report also claimed that prices were consistent with the long-term projected figures for the overall time period beginning in 1984 and ending in 1989. U.S. journalists, however, clung to anecdotal evidence suggesting that the STA gave Japanese manufacturers a license to cut production of 1K DRAMs and then boost up the prices.

Other DRAM markets also saw prices rise worldwide in the first half of 1989 with 256K DRAMs prices remaining higher than their lowest point in 1986. Higher prices meant that \$3 billion to \$4 billion in additional profits on sales were being made. Half of Toshiba's 1989 profits came from its semiconductor division. Prices finally dropped in

the second half of 1989, a result believed to be partially due to the introduction of new four megabit DRAM devices. By 1991, however, these were priced so low that the costs of building production lines for them could not be recovered. There were two reasons for this new price decline: a cyclical slump in demand, and emerging new competition from Korea. Samsung, a Korean *chaebol* had appeared on the scene as a new supplier, and Korea's global market share of sales in DRAMs climbed to 18% by late 1989.

By this time, most major U.S. chip consumers reported that they were able to obtain adequate supplies at competitive prices, and the gap between spot and large contract prices had disappeared. These changes spelled the end of Japan's total dominance in DRAM production. Its global share fell from 80% in 1987 to 57% in 1991, while its North American share also fell from 61% in 1987 to 52% in 1991. Furthermore, it was not only Japan's global share in the DRAM market that fell, but also its share in the overall semiconductor market, which dropped further in 1991. However, the prices of DRAMs remained high enough for the Japanese producers to remain profitable through the end of 1990 during which time prices remained above individual FMVs. Two American DRAM producers, Texas Instruments and Micron Technology, also gained during the increase in prices. They were the only two who were not squeezed out of the market during the abrupt decline in U.S. producer share of the global DRAM market in 1985. After the U.S.-Japan agreement, this decline halted and the United States actually won back a small increase in global market share from 17.9% in 1987 to 19.8% in 1991. However, the U.S. share of the North American DRAM market continued to decline, from 31% in 1987 to 27% in 1991.

The effects of EPROM pricing were not quite as dramatic as those of DRAM pricing. No EPROM consumers complained about their price increases or pointed an accusatory finger at the trade agreement. U.S. producers also had a much different and better experience with EPROMs than with DRAMs. In 1991, U.S. EPROM producers had 64% of the North American market and 25% of the Japanese market.

By 1989, the dumping had clearly abated, and new sources of DRAMs were available. Many considered that the crisis in dumping was over. With regard to access,

U.S. firms had taken the initiative to increase their sales in Japan by setting up offices and centers in Japan beginning in 1986. With the assurances provided by the U.S.-Japan agreement, U.S. suppliers added 30 sales offices to the 42 previously there. They also opened 16 new design centers, which was a fourfold increase from before the agreement. Six new testing centers were added for a total of 18, and 4 new failure analysis centers were added for a total of 15. Total additional sales offices and other facilities amounted to one per month during five years of the agreement. The sum total: U.S. firms' expenditures for personnel in Japan increased by 32%, for capital 162%, and for sales offices, 86% between 1986 and 1990.

Despite these efforts, SIA provided evidence to the Bush administration in 1989 that no progress had been made on gaining access to the Japanese market. The U.S. government pressed Japan for action, which led the Japanese system's firms finally to begin developing closer relationships with U.S. chip producers. This may have been due to a fear on the part of Japanese producers that Washington might accept the SIA's recommendation that semiconductors continue to be a top priority under Section 301. As a result, there was a significant increase in U.S. market share between early 1989 and the end of 1990. This increased market share translated into additional annual sales of over \$1 billion for U.S. companies.

As the agreement neared its end in 1991, however, there was no further increase in market share despite the efforts made by U.S. firms. The market share of foreign producers was still well below 20%. With an agreement whose terms were yet to be completely met, the SIA pressed for and the U.S. government agreed to campaigning for another semiconductor agreement with the Japanese government.

Questions:

What problems could you expect based on the situation as it was in 1990? What would be the likely points of contention between the United States and Japan in formulating the next agreement? How would it be different from the first agreement? How strong was the possibility that the United States and Japan would no longer be

primarily facing each other in these debates? How much of a threat were the emerging semiconductor producers from third countries in obtaining world market share? What kind of role would the SIA and U.S. government play in the next round of negotiations? What about EIAJ and Japanese government actors? What could you predict to be the future market share that the U.S. would hold in Japan for semiconductors? What about third country share in Japan? And Europe's share in Japan?

Exhibits

B.1 WORLDWIDE DRAM MARKET 1976 - 1991

B.2 FOREIGN FIRMS SHARE OF THE JAPANESE SEMICONDUCTOR MARKET
1973 - 1991

B.3 FOREIGN MARKET SHARE IN JAPAN, (by quarter 1986 -1991) AS DEFINED
BY THE 1991 U.S. - JAPAN SEMICONDUCTOR AGREEMENT

B.4 WORLD SALES BY REGION AND BY TOTAL 1984 -1991

B.5 WORLD MARKET SHARE U.S., JAPAN, & OTHER 1982-1991

Exhibit B.1

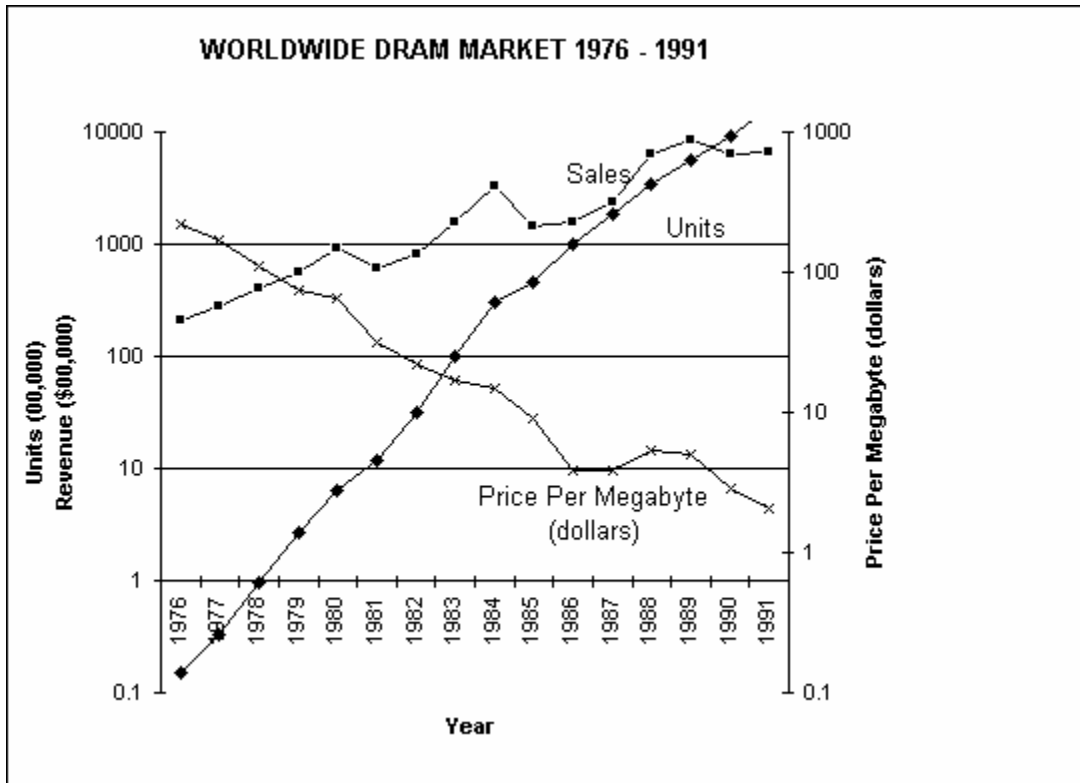


Exhibit B.2

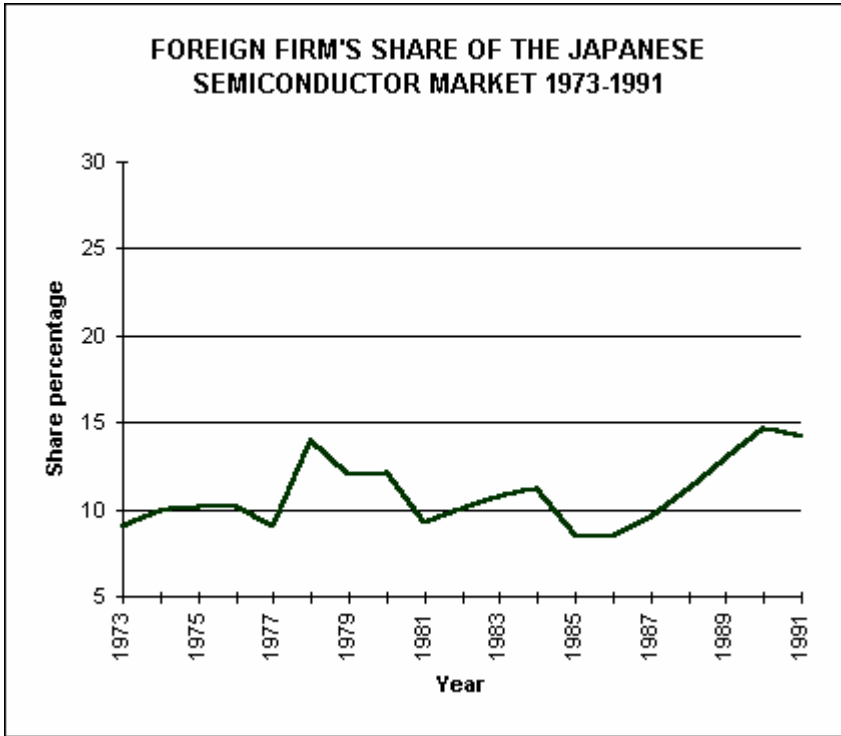


Exhibit B.3

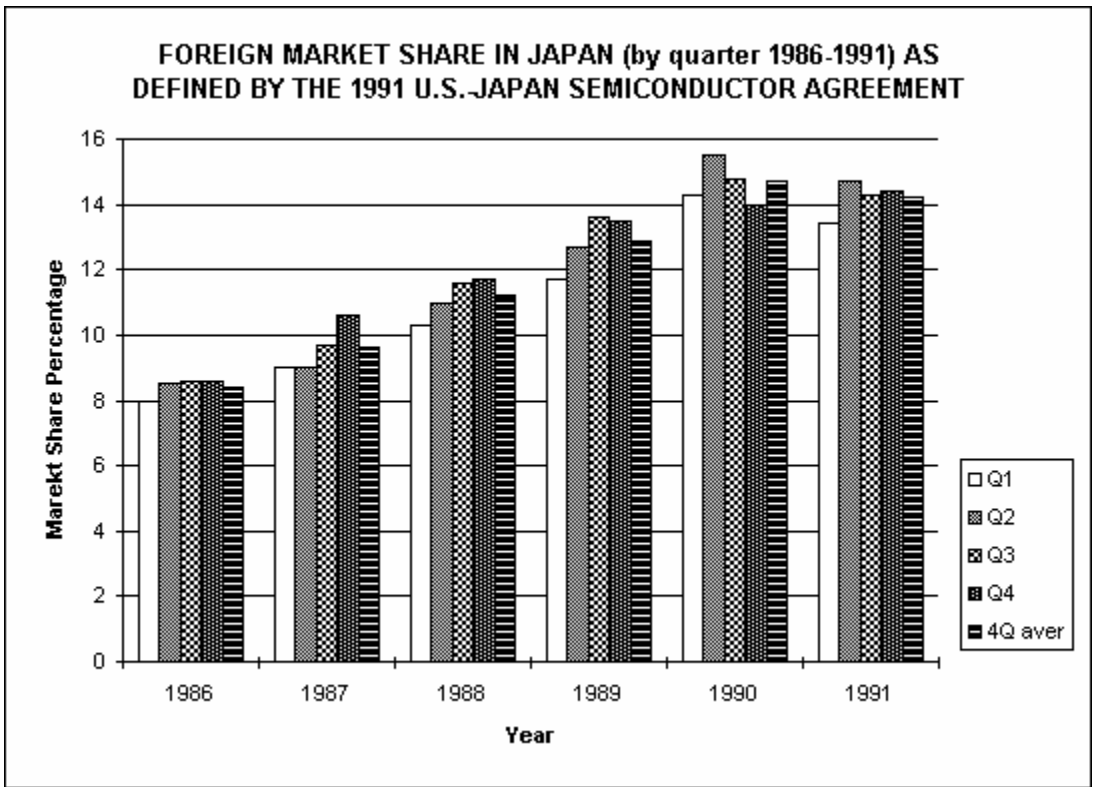


Exhibit B.4

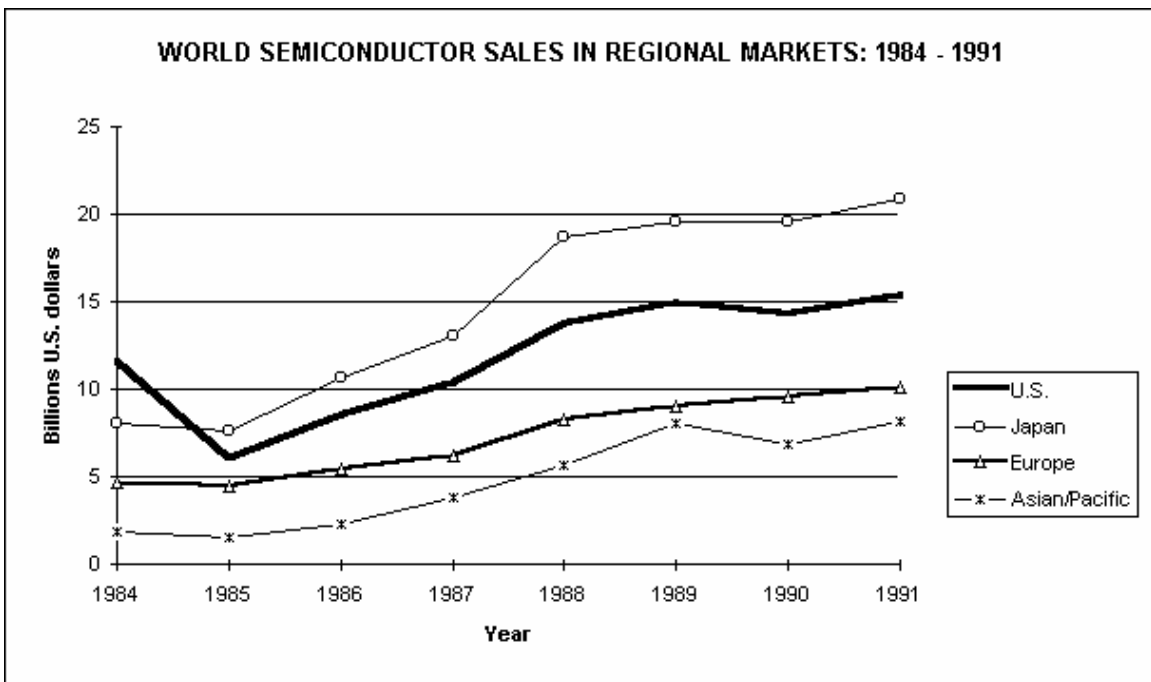


Exhibit B.5

**WORLD MARKET SHARE OF U.S., JAPAN AND OTHER
1982-1991**

