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Notes

The 1991 U.S.-Japan Semiconductor Agreement: Will the New Approach Yield Old Results?

Timothy J. Bartl

INTRODUCTION

The United States and Japan have feuded intensely over trade in high technology goods, especially semiconductors, for more than twenty years. They have negotiated several times after U.S. allegations of unfair trade, illegal dumping and structurally closed markets.¹ In an effort to stop Japanese dumping and increase foreign access to Japanese electronics markets, the two countries signed a controversial five-year bilateral agreement on July 31, 1986.²

The 1986 agreement and enforcement sanctions stopped the dumping and mildly increased foreign market access, but crippled the U.S. electronics industry and increased chip prices worldwide. The U.S. chip industry, however, persuaded the U.S. government to negotiate a new five-year agreement which the two countries signed on June 4, 1991.³ The new agreement shifts the attention away from stopping dumping to increasing market access and fostering "buyer-seller relationships among firms."⁴ The U.S. government hailed the agreement as the key to developing good business relationships which will increase market ac-

1. CLYDE V. PRESTOWITZ, JR., *TRADING PLACES, HOW WE ALLOWED JAPAN TO TAKE THE LEAD*, 46-61 (1988) [hereinafter *TRADING PLACES*]. See also SEMICONDUCTOR INDUSTRY ASSOCIATION, *FOUR YEARS OF EXPERIENCE UNDER THE U.S.-JAPAN SEMICONDUCTOR AGREEMENT: "A DEAL IS A DEAL," SUMMARY, FOURTH ANNUAL REPORT TO THE PRESIDENT*, 6 (1990) (graphic) [hereinafter *A DEAL IS A DEAL*].

2. *Arrangement Between the Government of Japan and the Government of the United States of America Concerning Trade in Semiconductor Products*, July 31, 1986, *reprinted in* 25 *INT'L LEGAL MATERIALS* 1409 (1986) [hereinafter *1986 Agreement*].

3. *Arrangement Between the Government of Japan and the Government of the United States of America Concerning Trade in Semiconductor Products*, June 4, 1991 [hereinafter *1991 Agreement*] (available from the Office of the United States Trade Representative).

4. *Id.* at II(1).

cess.⁵ Others express sincere doubt about its ultimate effectiveness because it lacks any enforcement measures.⁶

The ultimate success or failure of the 1991 agreement depends on the willingness of the parties to work within it rather than the United States forcing results through sanctions. The U.S. industry needs reassurance from Japan that it is competing in an open market. In return, the U.S. industry members must show that they are reliable suppliers of high technology goods. In 1986, the U.S. used substantial leverage to force the Japanese to the negotiating table and then used sanctions to compel them to abide by the agreement. U.S. leverage has diminished considerably, however, and imposing sanctions could harm the U.S. electronics industry as much or more than that of Japan. In the final analysis, it is the extent to which the U.S. semiconductor firms, with the help of the 1991 agreement, overcome the barriers to the Japanese electronics market and prove themselves dependable suppliers which will determine the success of the 1991 agreement.

This Note explores the operation of both semiconductor agreements and discusses the ingredients which may allow the U.S. industry to improve its relations with Japan. Part I highlights the dynamics between the U.S. and Japanese semiconductor industries, and explains the operation of the 1986 agreement and the negotiation of the 1991 agreement. Part II analyzes the effectiveness of the new market access and antidumping provisions and discusses why sanctions imposed to enforce either section would likely be counterproductive. Part III concludes that the success of the agreement depends upon each side adhering to the agreement's provisions, and the ability of U.S. companies to supply products that the Japanese users will buy. This is largely because sanctions would now have only a limited effect in compelling Japanese compliance.

I. A SYNOPSIS: EVENTS LEADING TO THE 1991 AGREEMENT

A. HISTORY OF U.S.-JAPAN SEMICONDUCTOR TRADE

The U.S. electronics industry invented the semiconductor in

5. Valerie Rice, *New Chip Pact Promises Wider Door To Japan*, ELEC-TRONIC BUS., Aug. 5, 1991, at 28 [hereinafter *New Pact*].

6. *Id.* at 32 (statement of Clyde Prestowitz). For a general statement of Mr. Prestowitz's prescription for U.S. agreements with Japan, see TRADING PLACES, *supra* note 1, at 306-07 (arguing that the U.S. should negotiate forcefully with Japan).

1959⁷ and dominated the world market until 1986.⁸ In 1981, Japanese manufacturers attained the market share lead in Dynamic Random Access Memories (DRAMs or D-RAMs), the vital memory chips needed for all computers that also act as a "technology driver" for other chips.⁹ The change followed the Japanese government's "targeting" of the semiconductor industry, which started in the early 1970s.¹⁰

Japan's Ministry of International Trade and Industry (MITI) implemented targeting¹¹ practices which included impos-

7. Semiconductors are solid state crystal devices whose electrical properties are characteristic of materials which are neither conductors nor insulators. These electrical properties in the semiconductor materials (principally silicon) are created through the introduction of small amounts of impurities or dopants. The principal types of semiconductors are transistors and diodes (discrete semiconductors) and integrated circuits. U.S. INT'L TRADE COMM'N, PUB. NO. 1437, FOREIGN INDUSTRIAL TARGETING AND ITS EFFECTS ON U.S. INDUSTRIES: PHASE 1: JAPAN 217 (1983) [hereinafter TARGETING]. This article will discuss integrated circuits only.

The integrated circuit was invented in 1958 by Texas Instruments, imbedding many formerly discrete products into microscopic circuits on a silicon chip and revolutionizing the electronics industry. *What is a Semiconductor?* STANDARD & POOR'S INDUSTRY SURVEYS, May 30, 1991, at E22.

8. SEMICONDUCTOR INDUSTRY ASSOCIATION, KEY FACTS AND ISSUES: SEMICONDUCTOR INDUSTRY BACKGROUND INFORMATION 4 (1990) [hereinafter BACKGROUND INFORMATION].

9. DRAMs are currently one of the most important types of semiconductors because they allow computers to store and exchange data. DRAMs are found in all computers as well as automobiles, telecommunications equipment, and consumer electronics. *Id.* at 8-9. A DRAM contains thousands of memory storage cells in which information can be stored by electrically charging them. When the power is disconnected, all stored information is erased. COMMISSION OF THE EUROPEAN COMMUNITIES, 1990 O.J. (L 193) 1 n.5. *Id.* See also INTEGRATED CIRCUITS: PRODUCTS FOR EVERY TASK, STANDARD & POOR'S INDUSTRY SURVEYS, May 30, 1991, at E26 (describing different types of memory chip products).

Although the DRAM is not the most sophisticated type of chip, its successful design and manufacture gives a company design and manufacturing advantages in more sophisticated chips. Laurence Hooper, *IBM and Siemens Report Developing Production Model for New Chip Series*, WALL ST. J., Dec. 19, 1991, at B4.

Currently, Japan holds near 90% of the DRAM market, the U.S., less than 10%. BACKGROUND INFORMATION, *supra* note 8, at 10-11.

10. TARGETING, *supra* note 7, at 148; BACKGROUND INFORMATION, *supra* note 8, at 8.

11. Targeting is defined as "[c]oordinated government actions that direct productive resources to give domestic producers in selected industries a competitive advantage. . . . Targeting techniques include the selective use of home market protection, tax policies, antitrust exemptions, science and technology assistance, and financial assistance." TARGETING, *supra* note 7, at 1.

After the Second World War, Japan targeted IBM and the computer industry. Japan became a full-fledged GATT member in 1965, but retained its closed

ing stiff import barriers to discourage domestic consumption of foreign goods, limiting foreign market share, and restricting direct foreign investment.¹² Other techniques included forcing American firms to license products to Japanese companies instead of selling directly in the market.¹³ In the licensing negotiations, MITI provided additional assistance by pressuring U.S. companies to give extremely favorable terms to the Japanese companies.¹⁴

After 1976, when Japan pronounced its market "open,"¹⁵ the government arranged or funded cooperative research and development (R&D) projects.¹⁶ In these projects, MITI gathered certain semiconductor/electronics companies into a cartel where it gave each company a specific task according to that company's strengths. The firms not only conducted research on new technology but also devised the most efficient manufacturing processes.¹⁷

markets by using allowable GATT exceptions with little challenge from other members. TRADING PLACES, *supra* note 1, at 196-97.

12. TRADING PLACES, *supra* note 1, at 148. MITI not only required IBM to license its patents but also limited IBM's market share. This lasted in some form until 1979. *Id.* at 34. See also John C. Kingery, *The U.S.-Japan Semiconductor Arrangement and the GATT: Operating in a Legal Vacuum*, 25 STAN. J. INT'L L. 467, 472 (1988); Kenneth Flamm, *Making New Rules: High Tech Trade Friction and the Semiconductor Industry*, BROOKINGS REV., Spring 1991, at 24. These restraints did not stop the U.S. manufacturers from selling in Japan. Although Japanese chip producers complained about dumping, the U.S. share peaked at 40% of the Japanese market in 1974. *Id.* at 24. The Japanese government emphasized the importance of domestic companies buying Japanese parts by denying to one manufacturer import licenses for U.S. chips it had purchased. *Id.* at 24.

13. Because Japan's patent system is weaker and slower than that of the United States, Japanese companies often infringed on U.S. patents before they were protected. TRADING PLACES, *supra* note 1, at 35, 177-78.

14. Flamm, *supra* note 12, at 23. It is estimated that because of intervention, and because they believed themselves invincible, U.S. firms licensed \$500 billion worth of patents for \$9 billion. William P. Patterson, *Semiconductors: Crying Uncle*, INDUS. WK., Jan. 16, 1989, at 42. Other subtle protection included promoting specialization among manufacturers and providing low interest or conditional loans to companies. See Kingery, *supra* note 12, at 472.

15. TRADING PLACES, *supra* note 1, at 148.

16. TARGETING, *supra* note 7, at 148. The most celebrated of these was the Very Large Scale Integration (VLSI) project. The project combined Japan's top five semiconductor producers and MITI's electrotechnical lab in a research project to develop the technology, manufacturing processes, and equipment to manufacture DRAMs of greater densities (ones that could store more data). From this project, the Japanese introduced the 64K DRAM six months ahead of U.S. firms. Further, the government held 5% of the patents developed in the project and licensed them to the companies for free. *Id.* at 149.

17. Thomas R. Howell, *Foreign Cartels and American Competitiveness*, in INTERNATIONAL TRADE POLICY: THE LAWYER'S PERSPECTIVE, 16-1, 16-13 to -14.

MITI chose electronics companies which were already part of financially linked networks known as *keiretsu* (economic groups) to lead the electronics revolution.¹⁸ The companies vertically integrated their chip production into their other manufacturing operations, allowing them to manufacture both component parts and finished products.¹⁹ These conglomerates survived difficult economic times better than their fragmented and much smaller American competitors because the large banks within the *keiretsu* provided financing at lower interest rates.²⁰

In the early 1980s, these companies channelled funds into building state-of-the-art manufacturing facilities in which to use the government-sponsored technology.²¹ This expanded production capacity led to overproduction of memory chips,²² in part to win over American computer manufacturers²³ by dumping high

(John H. Jackson et al. eds., 1985). This "division of labor" approach to research allows many firms to introduce products more cheaply than if they act alone. Howell estimates that Japanese companies would have spent five times as much on R&D if each had worked separately, without the VLSI project. *Id.* In contrast, U.S. antitrust law allows domestic companies to work together only until prototypes are developed. *Id.* at 16-15. MITI also provided 40% in additional funding over the industry's contribution for this project. Flamm, *supra* note 12, at 25.

18. TRADING PLACES, *supra* note 1, at 157. There are approximately six major groups of this type in Japan. Each tries to have a major company in each sector of the economy. The groups usually include banking, insurance, trading, steel, electronics, glass, oil, etc. The system thrives on cross-shareholding, through which group members hold 25-40% of each other's stock. This prevents the threat of takeovers and impatient shareholders, allowing managers to focus on long-term strategy instead of short-term financial performance. *Id.*

19. Dorinda G. Dallmeyer, *The United States Semiconductor Accord of 1986: The Shortcomings of High-Tech Protectionism*, 13 MD. J. INT'L L. & TRADE, 179, 181 (1989). This provided an immediate market for their chips, allowing Japanese companies a smoother "ramp-up" (initial production) period. *Id.*

20. *Id.*

In addition, Japanese Semiconductor Companies belong to huge conglomerates. The major banks that head these organizations are ready sources of low interest R&D funds. Japanese semiconductor companies reinvest twice as much as a percentage of sales in manufacturing technology as their U.S. counterparts and about ten percent more on semiconductor research and development.

Id. Readily available internal funding remains a substantial advantage for the Japanese. General Developments: *U.S. Losing Competitive Edge in World Market, Official Says*, 8 Int'l Trade Rep. (BNA) 1508 (1991). *But see* Akio Mikuni, *Japan's Crash Will Open Its Economy*, WALL ST. J., Jan. 8, 1992, at A10 (arguing crash of Japan's bubble economy will undo *keiretsu*).

21. Flamm, *supra* note 12, at 25.

22. *See* Howell, *supra* note 17, at § 16-14.

23. *See* BACKGROUND INFORMATION, *supra* note 8, at 10. Hitachi's U.S.

quality chips at low prices.²⁴ These actions and a slowing chip market severely undercut U.S. producers.²⁵

U.S. semiconductor manufacturers complained that the Japanese government's favoritism toward its semiconductor industries constituted an unfair trade practice and filed a section 301 complaint²⁶ through its representative body, the Semiconductor Industry Association (SIA).²⁷ Two private American companies

salespeople were guaranteed profits and told to lower chip prices in ten percent increments until they won certain American accounts. *Id.* The famed "Hitachi Memo" led to a congressional inquiry and much public fanfare over the "loss" of the semiconductor industry to the Japanese. See *U.S.-Japan Trade: Semiconductors, Hearings Before the Subcomm. on Trade, Productivity and Economic Growth*, 99th Cong., 2d Sess. 4-24 (1985) (correspondence between Hitachi and Congress over memo).

24. BACKGROUND INFORMATION, *supra* note 8, at 15. See also Dallmeyer, *supra* note 19, at 187 ("Dumping refers to the practice of selling goods in an export market at prices below those in the home market."); John D. Barcello III, *Antidumping Law: Repeal It or Revise It*, 57 CORNELL L. REV. 491, 494 (1972). If the dumping country protects its markets, the dumping company can charge higher prices in its domestic market and use the profit to subsidize dumping in foreign markets. *Id.* at 499-502. Japan in effect did this but over a term of ten years. The Trade Act of 1974, as it existed in 1985 defined dumping as selling below fair value (sales at less than fair value) or when foreign market value is above U.S. price, 19 U.S.C. § 1673(1) (1982 & Supp. IV 1986), so here there was little question Japanese companies were dumping. See also JOHN H. JACKSON & WILLIAM J. DAVEY, *LEGAL PROBLEMS OF INTERNATIONAL ECONOMIC RELATIONS*, 678 (2d ed. 1986).

Dumping caused a rapid exit of six of eight major U.S. DRAM manufacturers. See *A DEAL IS A DEAL*, *supra* note 1, at 15. For example, Hewlett-Packard pleaded with its American suppliers to increase their quality. When the U.S. manufacturers did not comply, the company began using the higher-quality Japanese chips. Patterson, *supra* note 14, at 43-44.

25. Dallmeyer, *supra* note 19, at 180.

26. Section 301 of the Trade Act of 1974, 19 U.S.C. §§ 2411-16 (1988), allows private industry, the United States Trade Representative or the president to initiate an investigation of unfair trade practices such as lack of access to foreign markets and harmful foreign trade activities. It is essentially a tool which uses threats and feints to relieve protectionist pressures through negotiations and consultations with the offending country. There are four ways to allege a substantive violation: if the action is (1) a violation of an international trade agreement; (2) unjustifiable; (3) unreasonable (nullifies or impairs a benefit, including market access); and (4) a discriminatory practice. Bart S. Fisher & Ralph G. Steinhardt III, *Section 301 of the Trade Act of 1974: Protection for U.S. Exporters of Goods, Services and Capital*, 14 LAW & POL'Y INT'L BUS. 569, 575-78 (1982), reprinted in JACKSON & DAVEY, *supra* note 24, at 804-08. See generally Judith Hippler Bellow & Alan F. Holmer, *Current Developments: U.S. Trade Law & Policy Series #10: Significant Recent Developments in § 301 Unfair Trade Cases*, 21 INT'L LAW. 211, 211-16, 230-32 (1987).

27. Dallmeyer, *supra* note 19, at 188; James W. Prendergast, *Recent Development, The European Economic Community's Challenge to the U.S.-Japan Semiconductor Arrangement*, 19 LAW & POL'Y INT'L BUS. 579, 582 (1987).

The Semiconductor Industry Association [hereinafter SIA] was founded in

and the International Trade Administration (ITA) each filed separate complaints alleging dumping of 64 kilobit²⁸ (64K) DRAMs, all Erasable Programmable Read Only Memories (EPROMs),²⁹ and 256K and above DRAMs, respectively.³⁰ The massive dumping duties which the government would have levied on the Japanese chip companies supplied the pressure needed to conclude the 1986 U.S.-Japan Semiconductor Agreement.³¹

1977 and includes all major American producers of semiconductors. It is the lobby group for semiconductor manufacturers. Semiconductor Industry Association & Computer Systems Policy Project, *Toward a New U.S.-Japan Agreement on Semiconductor Trade 4* (1991) (unpublished memorandum, copy on file with the *Minnesota Journal of Global Trade*) [hereinafter SIA-CSPP Joint Memorandum].

28. A kilobit is 1,024 bits. A bit is the smallest unit of electronic binary code which provides instructions to the microprocessor. BACKGROUND INFORMATION, *supra* note 8, at 26.

29. An EPROM is another type of memory chip that has permanent storage capabilities which can be erased by ultraviolet light. *Id.* at 25.

30. Micron Technology filed an antidumping complaint on 64K DRAMs against seven Japanese firms. It alleged that less than fair value (LTFV) sales resulted in loss of profits and layoffs. As a result of the complaint, the International Trade Commission (ITC) found material injury and Commerce assessed antidumping duties of between 11.87% and 35.34%. Dallmeyer, *supra* note 19, at 192.

Three manufacturers filed an antidumping case on all capacity EPROMs. (256K EPROMs had fallen from \$17 to \$4 within an eight month period.) The ITC confirmed undercutting by the Japanese and dramatic income losses for U.S. producers and imposed dumping duties of up to 111%. *Id.*

Although the ITA may initiate a petition on its own under 19 U.S.C. § 1673a(a)(1)(B), it rarely does so. The ITA did, however, initiate its own investigation of DRAMs of at least 256K. This unusual step emphasizes the significance which the United States placed on the Japanese actions and underscores the vulnerable condition of the U.S. industry. *Id.* at 190-93. The 1986 agreement suspended the uncompleted ITA investigation.

31. Kingery, *supra* note 12, at 474-78. Kingery discusses four options available to the U.S. at this time to combat dumping: allow antidumping procedures to work; use the GATT Antidumping Code; ask for a dispute resolution panel under GATT Article XXIII; or implement a bilateral agreement. With all but the last option, the amount of time required for a formal investigation would have allowed further erosion of the U.S. industry. Also, the timing difference between the initial Japanese action and the subsequent effect on trade made proving the case difficult. *Id.* See also Richard O. Cunningham, *The Current State of U.S. Import Relief Laws—Increased Importance and Increased Complexity*, in INTERNATIONAL TRADE POLICY, THE LAWYER'S PERSPECTIVE, § 1.04[5] at 1-14 (John H. Jackson et al. eds., 1985). For a discussion of the timing problem, see, e.g., Dallmeyer, *supra* note 19, at 195; Howell, *supra* note 17, at 16-8.

B. THE 1986 AGREEMENT

The first semiconductor agreement³² affected three main areas in semiconductor trade. First, the United States agreed to suspend the section 301 investigation and the three dumping cases.³³ Second, both countries agreed to increase market access opportunities for U.S. and other foreign manufacturers.³⁴ Third, Japan agreed to prevent dumping in the United States and in third country markets.³⁵

The parties to the agreement drafted the market access provisions to assist U.S. firms to achieve a market share commensurate with their competitiveness in other markets where barriers to trade did not exist.³⁶ The provisions also mandated that the Japanese government create an organization to help U.S. companies establish sales, to make quality checks of U.S. chips, and to

32. 1986 Agreement, *supra* note 2.

33. 1986 Agreement, *supra* note 2, at 1410; Prendergast, *supra* note 27, at 583-84. Section 301 allows the trade representative to suspend its investigation if a satisfactory bilateral agreement is reached. 19 U.S.C. § 2411(a)(2)(B)(ii)(II).

The suspension agreement on 256K and above DRAMs had little impact because the ITA never finished its investigation and by the time of the agreement most U.S. producers had left the market, giving little reason for the Japanese to dump.

EPROMs were a different story. The countries signed the agreement before the U.S. industry lost all of its lead. Although the ITA had not finished the investigation at the time the agreement was signed, the U.S. firms petitioned the ITC to complete the investigation, which it did, assessing duties from 60.1% to 188%. Thus, if any dumping occurred on any type of EPROM (the scope of the investigation), Commerce could assess the duties immediately. See U.S. INT'L TRADE COMM'N, PUB. NO. 1927, ERASABLE PROGRAMMABLE READ ONLY MEMORIES FROM JAPAN. INVESTIGATION NO. 731-TA-288 (FINAL) 2, a-23 (1986).

34. 1986 Agreement, *supra* note 2, at 1411.

35. *Id.* at 1412.

36. Today U.S. chip manufacturers still routinely outsell their Japanese rivals in markets outside Japan, holding a 56% percent share as opposed to the 22% Japanese companies hold. Stephen K. Yoder, *U.S. Chips Makers Rail Against Japanese*, WALL ST. J., Mar. 5, 1992, at B1. This statistic must be read in light of the fact that Japan is the world's largest consumer of semiconductor chips, constituting over 38.7% of total global consumption. Semiconductor Industry Association, World Semiconductor Trade Statistics Forecast (unpublished document, copy on file with the *Minnesota Journal of Global Trade*) [hereinafter SIA, WSTS Forecast].

Japanese business structures generally make breaking in difficult. In addition to the financial *keiretsu*, supplier ties and distribution groups also exist. Vertical *keiretsu* cover a single industry or a group of closely related industries (like electronics) in which set business relationships exist, making entry difficult. Finally, distribution *keiretsu* contain a complex linkage of retailers and wholesalers. The Japanese government has acquiesced in these practices. *Japan: Industry Groups Lukewarm on SII Pact, Urge Tougher Trade Action Against Japan*, 6 Int'l Trade Rep. (BNA) 573 (1991).

organize a research fellowship program and seminars for foreign firms.³⁷ The parties advocated long-term ties between U.S. producers and Japanese users, and the U.S. manufacturers received access to all Japanese government-sponsored research.³⁸ In addition to the official agreements, the parties signed a "secret" side letter setting a target U.S. market share at 20% by 1991.³⁹

The antidumping section, the focus of the agreement, required each country to maintain significant data on chip imports, exports and sales. The agreement established an elaborate price and cost monitoring system in which Japanese electronics manufacturers would submit to MITI manufacturing cost and price data of semiconductors exported to the United States.⁴⁰ MITI would transmit the data to the Department of Commerce (Commerce) each quarter, and Commerce would calculate company-specific foreign market value (FMV) for each product.⁴¹

If Commerce detected any shipments coming into the United States at less than company-specific fair value (i.e., dumping), it would show MITI its evidence and request consultations to resolve the problem.⁴² MITI, in return, agreed "to use

37. 1986 Agreement, *supra* note 2, at 1410 (§ 3(1)-(2)).

38. *Id.* The parties also recognized the need to "refrain from policies or programs which stimulate inordinate increases in semiconductor production capacity." *Id.* This very problem had led to Japanese dumping in the first place. See *supra* notes 21-25 and accompanying text.

39. See, e.g., Dallmeyer, *supra* note 19, at 196 n.145; Flamm, *supra* note 12, at 23. The U.S. now openly acknowledges the existence of the market share letter. See *Japan: U.S.-Japan Semiconductor Pact Negotiations Continue to Stick on Issue of Market Share*, 8 Int'l Trade Rep. (BNA) 618 (1991) [hereinafter *Pact Negotiations Stick*]:

A disputed side letter to the 1986 agreement calls for the 20 percent foreign share of Japan's market by the expiration of the agreement in July 1991. The United States has maintained that Japan agreed to guarantee the 20% share while Japan insists it only agreed to support the U.S. goal.

Id. Clyde Prestowitz explains that secret side letters are a favorite device the Japanese government uses to grant a trade concession while publicly denying any such agreement existed. They also allow MITI to retain control of the industry. TRADING PLACES, *supra* note 1, at 65.

The 20% number was drawn from a study done by Finan and Associates which concluded that in the absence of barriers to the Japanese market, the U.S. market share would be between 24% and 40%. *Id.* at 64 n.33.

40. 1986 Agreement, *supra* note 2, at 1411. The pact required Japanese companies to track 35 different types of data such as production costs, shipping and discounts. *Id.*

41. *Id.* at 1427; Dallmeyer, *supra* note 19, at 195-97. Commerce valued the Japanese chips by taking the weighted-average cost and adding an 8% profit for each product over the period reported. 1986 Agreement, *supra* note 2, at 1426 (Appendix, Monitoring of Sales to the United States, Classification ¶ J.).

42. 1986 Agreement, *supra* note 2, at 1411.

all power within its means" to keep export floor prices at the level set by Commerce.⁴³ The implied understanding was that MITI would use administrative guidance in addition to more conventional law to keep exports at the foreign market value.

The agreement would only accomplish its dumping goals by controlling Japanese sales to distributors in third countries which could in turn sell illegally to U.S. firms in the gray market and avoid the enforcement sanctions. Thus, the agreement also directed Japan to monitor all exports from manufacturers to third countries.⁴⁴ Japan used questionable export controls to prevent less-than-fair-value sales to third countries. The controls did, nonetheless, prevent direct dumping and downstream dumping from third country markets.⁴⁵

C. EFFECTS OF THE 1986 AGREEMENT

The 1986 agreement caused concern in the United States, Japan, and the world market. The FMV system hurt U.S. chip consumers who had to pay high prices for Japanese chips, while Japanese export and production measures increased chip prices worldwide. The European Community filed a case with the General Agreement on Tariffs and Trade (GATT). The market access provisions, however, did help U.S. producers increase sales in Japan. This section reviews these elements, all of which played an important role in the 1991 agreement.

1. The Antidumping Provisions—Effects on Japan and the United States

Japanese producers reacted to the agreement initially by dumping into third country markets the chip surplus which remained from the preceding years' overexpansion.⁴⁶ The United States threatened sanctions to stop the third country dumping

43. *Id.* at 1412. Because semiconductor production is a precise procedure, companies must correct manufacturing flaws at the initial stages of mass production. As these flaws are corrected, costs of production decrease substantially. This phenomenon is known as the "learning curve effect." Because producers know costs will decline (usually quickly), they will price their products lower than current marginal costs and recoup lost profits as those costs decline. Flamm, *supra* note 12, at 27 (contending that Commerce ignored these factors in setting fair value prices).

44. 1986 Agreement, *supra* note 2, at 1412 (¶ III. (3)(1-2)).

45. See Prendergast, *supra* note 27, at 587 n.57. Downstream dumping occurs when third countries use dumped components such as semiconductors to produce downstream products, such as computers, at lower prices than manufacturers in the competing country can. *Id.*

46. Dallmeyer, *supra* note 19, at 197-99.

(which undercut semiconductor manufacturers) and to compel Japanese compliance with the agreement's market access provisions.

Shortly before the United States took action, MITI directed Japanese chip manufacturers to cut back production by 32% in order to dry up the gray market and avoid sanctions.⁴⁷ In April 1987, however, President Reagan followed through and imposed \$300 million in sanctions intended to avoid injuring U.S. producers or users.⁴⁸ By mid-1987, however, the U.S. computer industry rebounded, and demand for DRAMs in the U.S. increased by 30% just as the supply of Japanese DRAMs plummeted.⁴⁹ The U.S. prices for DRAMs then jumped to levels far above the price floors set by Commerce, causing panic over a likely chip shortage.⁵⁰ Washington dropped \$135 million from the sanctions

The [Japanese] semiconductor manufacturers needed to get rid of huge inventories of these components so that prices would begin to rise again. This need to reduce inventory along with a desire to maintain good customer relations and to maintain market share, led to widespread smuggling of low-cost semiconductors from Japan to third countries. In the third country, suppliers would repackage the components and ship them to U.S. customers who paid 20 to 40 percent less than the prices set by Commerce under the Accord.

Id. at 197-98 (citing WALL ST. J., Feb. 12, 1987, at 1).

The term "gray market" is used to describe the trade in chips smuggled to third countries, thereby avoiding the Japanese legal controls. Public criticism from the U.S. user industries complaining about the high prices of DRAMs may have encouraged Japanese firms to continue dumping. See Jeff Moad, *Clash of Chip, Systems Vendors Led to Sanctions Compromise*, DATAMATION, June 1, 1987, at 17.

47. See George Gilder, *How the Computer Companies Lost Their Memories*, FORBES, June 13, 1988, at 79, 81 [hereinafter *Memories*]. MITI issued forecasts which prompted manufacturers to reduce production in line with the forecasts. MITI did not provide company-specific forecasts. See *Japan—Trade in Semiconductors*, BISD 35th Supp. 116 (1989), ¶ 17, 27 (GATT panel report adopted May 4, 1988). Japanese semiconductor executives subsequently complained of MITI requiring 50% production controls after the U.S. imposed sanctions. See Jack Robertson, *Japanese Executives Cool to Access Goals of U.S.*, ELECTRONIC NEWS, June 15, 1987, at 43 [hereinafter *Japanese Executives Cool to Goals*].

48. Sanctions were imposed on 16-bit laptop and desktop computers, 18-, 19-, and 20-inch television receivers and displays, and rotary drills, grinders and sanders. Jack Robertson, *Tariffs Held to 16-bit CPUs, TV; Drives, T&M Escape*, ELECTRONIC NEWS, Apr. 20, 1987, at 1. Of the total, \$135 million penalized Japan for continued dumping, and \$165 million were imposed for lack of market access. Dallmeyer, *supra* note 19, at 203. The Reagan Administration tried to design the sanctions largely so that they would not affect U.S. chip or computer manufacturers. See, e.g., Jack Robertson, *Move Micro Sanctions*, ELECTRONIC NEWS, Aug. 21, 1989, at 10.

49. *Memories*, *supra* note 47, at 81.

50. Dallmeyer, *supra* note 19, at 204-05. Several reasons existed for the low quantities. MITI's production controls, which prompted major manufacturers to cut production by 50%, remained a dominant reason through November 1987.

after six months, satisfied that all dumping had ceased.⁵¹ Though the agreement's price increase mechanisms for EPROMs resuscitated the industry,⁵² those designed to allow American chip producers to compete in the DRAM market failed. By the time of the agreement, only two U.S. manufacturers making DRAMS existed⁵³ and, by the time the United States imposed sanctions, only one U.S. DRAM-only manufacturer, holding a minor market share, remained.⁵⁴

In Japan, the rigorous production controls MITI imposed to dry up the gray market fostered cooperation between the once adversarial chip producers. Instead of engaging in blood-letting competition, the firms united to raise prices and to share oligopolistic profits.⁵⁵ This price cooperation forced U.S. computer

Also, American Telephone and Telegraph, which produced exclusively for itself, left the DRAM market just before the demand explosion in mid-1987. *Memories*, *supra* note 47, at 81; *Japanese Executives Cool to Goals*, *supra* note 47, at 43.

51. Dumping had largely stopped by late May, prompting President Reagan to lift \$51 million of the sanctions on June 9, 1987. Gerald M. Boyd, *Reagan in Venice, Lifts Part of Tariff on Japan*, N.Y. TIMES, June 9, 1987, at A1, see also Jack Robertson, *Accuse Japan of Dumping ASICs, MPUs*, ELECTRONIC NEWS, May 25, 1987, at 4. Some reports of dumping in the gray market continued through August. *Gray Market for Semiconductors Still Exists in Taiwan*, Comline News Service, Aug. 17, 1987, available in LEXIS, Nexis Library, CMPCOM File. Commerce lifted the remaining \$84 million in antidumping sanctions on November 2, 1987. *Commerce Undersecretary for International Trade Announces Semiconductor Progress*, PR Newswire, Nov. 2, 1987, available in LEXIS, Nexis Library, CMPCOM File. Prices remained high into 1989. See Patterson, *supra* note 14, at 42.

52. Note that the agreement did allow U.S. EPROM manufacturers to retain their lead. See *infra*, notes 138-41 and accompanying text.

53. BACKGROUND INFORMATION, *supra* note 8, at 4. By 1985, all U.S. companies except for Micron Technology and Texas Instruments had abandoned the 256K DRAM.

In hindsight, the ineffective antidumping section actually worked to the advantage of the Japanese. The high quality and extremely low price of Japanese DRAMs drove most U.S. manufacturers out of the market before the countries signed the agreement. Thus, the pact was protecting a non-existent U.S. DRAM industry. Dallmeyer, *supra* note 19, at 202; See also *Japan's Chipmakers: Falling off the Learning Curve*, ECONOMIST, Feb. 23, 1991, at 64.

54. Micron Technology, the only remaining DRAM-only producer in 1986, had filed the 64K antidumping complaint. Jack Robertson, *Semiconductor (Dis)Agreement*, ELECTRONIC NEWS, Sept. 22, 1986, at 14. IBM still made DRAMs during this period but did so for internal use only. By 1988 Texas Instruments had entered into a joint venture with Japanese companies. Jonathan Matzkin, *Pipeline*, PC, Sept. 13, 1988, at 40.

55. *Memories*, *supra* note 47, at 81. Japanese manufacturers had suffered \$4 billion in losses due to overexpansion in their quest to gain market share. The U.S. DRAM users effectively refunded profits which the Japanese semiconductor industry lost trying to enter the U.S. market. *Id.*

manufacturers to buy DRAMs at exorbitant prices while the Japanese domestic price remained much lower for the same chips.⁵⁶ Further, the conglomerates enhanced their competitive position by applying the profits to R&D and capital investment for new product development.⁵⁷ To avoid the sanctions on computers and the floor prices on semiconductors, some companies such as Toshiba and NEC moved production to the United States or the United Kingdom.⁵⁸

In the United States, the prices of chips subject to the FMV prices increased initially to three and four times the pre-agreement prices.⁵⁹ After the United States imposed sanctions and MITI instituted its production controls, some prices jumped eight-fold.⁶⁰ Both the agreement and the price increases shocked computer manufacturers and other DRAM users. The users lashed out at the U.S. government and the SIA for not notifying them prior to the negotiations,⁶¹ and for the government's lack of foresight concerning how the agreement would affect them.⁶² The resulting DRAM shortages⁶³ also caused sev-

56. *Id.* However, before the 1987 price controls were lifted, even Japanese manufacturers complained that they should be allowed to produce for the market, at least inside Japan. U.S. manufacturers put Japanese users on allocation during the price controls as well, filling U.S. orders at the expense of Japanese orders. See, e.g., *Japanese Executives Cool to Goals*, *supra* note 47, at 42 (statement of Tadahiro Sekimoto, President of NEC Corp.).

57. *Memories*, *supra* note 47, at 81. "During the mid-1980s the Japanese chipmakers lost some \$4 billion as they overexpanded production and dumped the excess in the U.S. But today, as a result of MITI-ordered cutbacks and higher DRAM prices, Japanese manufacturers are making huge margins on the product and funding big R&D programs designed to close the U.S. lead in state-of-the-art microchips and design tools." *Id.*

58. Toshiba moved some of its personal computer manufacturing operations to the U.S. to avoid the 100% tariff which remained on computers using "high-performance" chips. Mitch Betts, *Tariffs Remain a Thorn in U.S., Japan Sides*, *COMPUTERWORLD*, Nov. 16, 1987, at 105. NEC increased its chip manufacturing capacity at its plant in Scotland to avoid the FMV prices. *NEC to Start Producing 1 Mbit DRAM in the UK*, *Comline News Service*, Aug. 26, 1987, available in LEXIS, Nexis Library, CMPCOM File.

59. *Semiconductor (Dis)Agreement*, *supra* note 54, at 14.

60. Moad, *supra* note 46, at 17. The jump probably resulted from the 50% Japanese production controls taking effect. See *Japanese Executives Cool to Goals*, *supra* note 47, at 1.

61. Moad, *supra* note 46, at 17-18 (quoting Stephen Schmidt, Vice President of Operations at Tandem Computers, Inc.: "[t]he first indication Tandem had was when some of our suppliers said DRAM prices were going to go up by two, three, four, or in some cases eight times.").

62. *Id.* at 18. The article refers to the 1986 agreement as the secret arrangement. There is no indication in any source that the government accounted for the effect on user industries. There is also debate as to whether the SIA alerted any user groups. *Id.*

eral delays in introductions of new machines and reduced revenues at computer companies.⁶⁴ The increases in chip prices in turn raised prices to ultimate consumers, causing them to delay computer purchases until prices dropped.⁶⁵

The 1987 sanctions imposed on 16-bit microprocessors and data processing equipment caused additional problems for computer and equipment manufacturers. All imported microcomputers with higher level processors⁶⁶ fell victim to the tariff, hurting companies such as IBM and Zenith that imported computers with those processors. In a controversial ruling, the U.S. Customs Service classified printed circuit boards (PCBs) with complete data processing ability as data processing equipment instead of computer parts.⁶⁷ The ruling made the circuit boards, also imported by many domestic companies, subject to 100% tariffs, and set up a major confrontation between Commerce, the Treasury Department and the Office of the United States Trade Representative (USTR).⁶⁸ The ruling stood, but some U.S. and

63. In addition to the 50% production cutbacks, a natural disaster at a Hitachi factory, *Memories*, *supra* note 47, at 81, and the changeover in memory generations from 256K to 1Mb also affected quantities and prices. Matzkin, *supra* note 54, at 40.

64. *Memories*, *supra* note 47, at 81. Examples include five-month backlogs for a powerful Sun Microsystems workstation, the delay of Hewlett Packard's 386 desktop personal computer, and new network cards from Apple Computer. *Id.* Sun's spokesperson said in the fall of 1988, "[t]he principal constraint we are under is a shortage of DRAM, not a shortage of business." Matzkin, *supra* note 54, at 40.

The chip shortage which developed in mid-1987 lasted until mid-1989 when demand for computers fell. *Move Micro Sanctions*, *supra* note 48, at 10. When the price of DRAMs fell again, many computer companies had large inventories of overvalued chips, causing further losses. See, e.g., APPLE COMPUTER, INC., 1988 ANNUAL REPORT 28 (1989).

65. Matzkin, *supra* note 54, at 40. According to a PC MagNet survey, 15% of respondents said they would wait to purchase new machines until after DRAM prices fell to a reasonable level. *Id.*

The cost of memory chips increased to nearly 50% of a microcomputer's total costs. *Id.* See also *Memories*, *supra* note 47, at 82.

66. Jack Robertson, *MITT's Yankee Accent*, ELECTRONIC NEWS, Aug. 24, 1987, at 6 (decrying U.S. dependence on Japan). The lower-level Intel 80/86 and 80/88 chips were exempted from import sanctions, but the higher-level 80286 and 80386 processors, and the Motorola equivalents, were subject to 100% tariffs. *Id.*

67. Mitch Betts, *Industry Battling Parts Tariff*, COMPUTERWORLD, Aug. 10, 1987, at 71.

68. *U.S. Trade Rep Opposes Customs Ruling*, ELECTRONIC NEWS, Nov. 2, 1987, at 4. In making its determination, Commerce stressed that if the United States allowed PCBs (motherboards) to enter sanction-free, the Japanese could avoid the impact of the sanctions completely. *Id.* The SIA, Computer and Busi-

Japanese firms avoided the tariffs nonetheless.⁶⁹

2. Effects of the Antidumping Provisions—Europe

Many countries with significant chip user industries feared that the agreement effectively created a semiconductor price cartel between the United States and Japan.⁷⁰ The European Community (EC) was especially fearful because it had a large electronics manufacturing industry but produced only a small percentage of its semiconductors.⁷¹ The United States and Japan produce 80% of the world's chips; a price cartel between these two countries could put control of the EC's electronics industries in the chip suppliers' hands.⁷² After unsuccessful consultations during which the EC tried to persuade the parties to rescind the agreement,⁷³ the EC requested a GATT panel to determine whether Japan's methods of implementing the agreement violated GATT.

The EC claimed that several aspects of Japanese enforcement breached GATT. First, the export licensing system effectively increased the price of semiconductors to third country markets.⁷⁴ Second, MITI's use of administrative guidance (i.e., encouraging executives of major semiconductor producers to follow MITI-generated supply-demand forecasts)⁷⁵ had the effect

ness Equipment Manufacturers' Association (CBEMA), and the American Electronics Association (AEA) all teamed up to oppose the ruling:

Ironically, one part of the SIA letter questioned the strong support for the Customs ruling by the Commerce Department, an agency which SIA has lobbied extensively in its continuing trade dispute with Japan. . . . [SIA President Andrew] Procassini wrote [in his letter to Commerce] "SIA is seriously concerned about reports that Customs may have been influenced by a concern that to decide otherwise would jeopardize the effectiveness of the current sanctions. To the extent that this view played a part in your decision, SIA urges you to reconsider."

Id. The SIA had to lobby for the user industries or risk losing their support in Washington, D.C. *Id.*

69. To get around the tariffs, Japanese companies would import PCBs with enough chips removed to be classified as computer parts rather than data processors. Then, the American importers would add the missing chips and assemble the computers. See *Move Micro Sanctions*, *supra* note 48, at 10.

70. See Kingery, *supra* note 12, at 488.

71. *Id.* at 482.

72. See Dallmeyer, *supra* note 19, at 200 n.169.

73. The EC requested consultations under GATT Article XXII:1. GATT doc. L/6129 (notification of consultations), cited in *Japan—Trade in Semiconductors*, BISD 35th Supp. 116 (1989), ¶¶ 1, 33 (GATT panel report adopted May 4, 1988) [hereinafter *Panel Report*].

74. *Panel Report*, *supra* note 73, ¶ 33.

75. *Id.* ¶ 40. The panel report recognized that the supply-demand forecasts

of controlling production quantities, export prices, and export quantities, and thus world prices of semiconductors.⁷⁶ Third, the agreement violated Most Favored Nation⁷⁷ principles by giving the United States a market access advantage.⁷⁸ Finally, the EC claimed that MITI's measures lacked transparency and thus violated Article X of GATT.⁷⁹

After examining the Japanese monitoring scheme and a position paper in which Japan stated it had instituted production guidelines to curb third country dumping,⁸⁰ the panel determined that two portions of the Japanese monitoring system violated GATT. First, MITI's export monitoring measures unnecessarily restricted exports based on price.⁸¹ While Japanese companies' compliance with the guidance was technically voluntary, the panel found that the measures violated Article

went out to all major manufacturers of semiconductors. *Id.* ¶¶ 26-27. MITI provided an explanation to the panel:

Since the supply and demand imbalance in the domestic market was harmful to the [semiconductor] sector and because some of the sales at cheap prices might be regarded as dumping, MITI had revised its quarterly supply and demand forecast in February 1987 and had communicated its expectation to manufacturers that they should produce in reasonable volumes to restore the domestic supply and demand balance.

Id. ¶ 40.

76. The EC contended that these measures amounted to an Article XI:1 violation because they restricted exports. *Id.* ¶ 35.

77. Most Favored Nation is a term defined in GATT Article I. Article I states in pertinent part:

[A]ny advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.

GATT art. I:1.

78. *Panel Report, supra* note 73, ¶ 35.

79. *Id.* ¶ 64. GATT Article X:1 states in pertinent part:

Laws, regulations, judicial decisions and administrative rulings of general application, made effective by any contracting party, pertaining to . . . prohibitions on imports or exports . . . or affecting their sale, distribution . . . or other use, shall be published promptly in such a manner as to enable governments and traders to become acquainted with them.

80. See Kenneth Flamm, *Semiconductors, in EUROPE 1992: AN AMERICAN PERSPECTIVE* 225, 250 (Gary Hufbauer, ed., Brookings Institution 1990). The paper from the Japanese government to the United States government tried to persuade the Reagan Administration to not impose previously announced sanctions. *Id.*; see also *Panel Report, supra* note 73, ¶ 33 (citing Japanese opposition).

81. *Id.* ¶ 117. "The Panel considered that the complex of measures exhibited the rationale as well as the essential elements of a formal system of export control." *Id.*

X⁸² because (1) "sufficient incentives . . . existed for [the] non-mandatory measures to take effect";⁸³ and (2) operation of measures to restrict exports at below market prices depended on government action or intervention.⁸⁴ Second, paperwork delays of up to three months in processing export licenses for third countries, which was another element of MITI's solution to third country dumping, also constituted restrictions on exportation.⁸⁵

While the EC argued at the GATT that Japan was deliberately increasing the price of semiconductors (which hurt its computer manufacturers), it was simultaneously investigating charges that Japanese chip companies were dumping in the EC (which hurt its developing chip industry).⁸⁶ The negotiations following the investigation resulted in an arrangement between the Commission of the European Communities and Japan similar to the 1986 agreement. The Commission asked Japan to ensure "undertakings" that sales prices in the EC would not fall below a floor price level calculated as a weighted-average production cost plus 9.5% profit margin.⁸⁷ This demonstrates the

82. In *Japan—Restrictions on Imports of Certain Agricultural Products*, BISD 35th Supp. 163 (1989) (GATT panel report adopted Mar. 22, 1988), the panel recognized administrative guidance as an effective governmental measure capable of enforcing supply restrictions even though compliance was not legally binding.

83. *Panel Report, supra* note 73, ¶ 109. According to the panel, part of the incentive consisted of upholding Japan's end of the agreement: if Japanese producers did not reduce their production, Japan would not fulfill its undertaking to the U.S. *Id.* ¶ 110. The Japanese producers conformed to the 1986 agreement because they had a strong interest in reduced trade tensions between Japan and the United States (continued semiconductor sales) and MITI's strong administrative controls allowed it to pinpoint any manufacturer that did not conform. *Id.* ¶¶ 110-11.

84. *Id.* ¶ 109. The panel concluded that the amount of information the government required the producers to submit allowed MITI to pinpoint which company violated the guidance. Also private firms and government representatives worked together in the Supply and Demand Forecasts Committee to reduce output. *Id.* ¶¶ 112-14.

85. *Id.* at ¶ 118. While the panel found that Japanese implementation of the Agreement violated GATT, most commentators agree that such arrangements *prima facie* violate GATT but may fall within certain exceptions. See, e.g., John H. Jackson, *Consistency of Export Restraint Arrangements with the GATT*, 11 *WORLD ECON.* 485, 491 (1988).

86. The original dumping complaint was made in February 1987 by the European Electronic Component Manufacturers' Association (EECMA, the European counterpart to SIA). 1990 O.J. (L 20) 1. In a period from 1983 to 1987, Japan increased its market share in DRAM from 24.6% to 70.5%. *Id.* at ¶ 89. The Japanese dumping margins ranged from 8.5% to 206.2% below cost of production. *Id.* ¶ 78.

87. 1990 O.J. (L 20) 25-26. The provisional "undertakings" were made final in Council Regulation Ne 2112/90 of 23 July 1990 imposing a definitive an-

strong likelihood that Japanese companies dumped chips into the third major semiconductor market, not just in the U.S.

3. Japan and the United States—Market Access

Although foreign producers never reached the goal of 20% market share, the market share provisions of the agreement accomplished far more than the antidumping provisions. Foreign market share increased from 8.5% in 1986 to nearly 13.5% in 1991.⁸⁸ By mid-1989, the five major Japanese electronics firms (Fujitsu, Hitachi, NEC, Mitsubishi and Toshiba) were purchasing 20% of their semiconductor input from foreign suppliers,⁸⁹ and U.S. and Japanese companies had started several joint ventures.⁹⁰ The SIA and the Electronics Industry Association of Ja-

tidumping duty on imports of DRAMs originating in Japan and collecting definitively the provisional duty. 1990 O.J. (L 193) 5-6.

Europe's computer manufacturers complained immediately that Japan had stopped dumping long before the initial investigation and instead invested in new plant there. In addition, Japanese chip producers reaped the increased profits which flowed as a result of the price floors. Linda Bernier, *DRAM Price Agreement Helps Japan More Than Europe*, ELECTRONIC BUS., June 25, 1990, at 63.

Europe has never achieved the organization it hoped for in its electronics industry. Although it has attempted to become a major player with consortia such as JESSI (Joint European Submicron Silicon Initiative) and ESPRIT (its computer counterpart), the making of components and computers has floundered due to heavy protection. However, the setback in production may signal a change in policy toward cooperation with the Japanese and the Americans. Barbara N. Berkman, *Will Europe's Protectionists Yield to the Free Marketers?*, ELECTRONIC BUS., July 8, 1991, at 55. *But see* Ross Denton, *The Commission Communication on European Community Policies for Semiconductors*, EUR. BUS. L. REV., Mar. 1991, at 57, 57-60.

88. Semiconductor Industry Association, *Foreign Market Share in Japan as Defined by the 1991 U.S.-Japan Semiconductor Agreement* (unpublished data, copy on file with the *Minnesota Journal of Global Trade*) [hereinafter SIA Market Share Data]. One article described market share rising from 8.5% to nearly 13%. *New Pact, supra* note 5, at 29. The market share data collection and calculation system under the new agreement is more accurate and thus is used here. The 1986 and 1991 agreements specify foreign market share rather than United States market share in order to combat most favored nation problems. Because the U.S. is the world's second largest producer of semiconductors, however, the figure reflects heavily on U.S. share. *See* 1986 Agreement, *supra* note 2, at 1411.

89. Jack Robertson, *Confirm CPU Policy Group: For Trade*, ELECTRONIC NEWS, July 3, 1989, at 1, 7. However, the 20% level did not include the numerous sub-contractors of these firms which consume a large percentage of semiconductors. Telephone Interview with Howard High, Director of Media Communications, Intel, Inc. (Feb. 18, 1992).

90. Stuart M. Dambrot, *Foreign Alliances That Make Sense*, ELECTRONIC BUS., Sept. 3, 1990, at 68. The joint ventures include Texas Instrument's joint development of 16Mb DRAMs with Hitachi; Intel's agreements with NMB Semiconductor and Matsushita to jointly build a DRAM foundry and EPROM

pan (EIAJ) squabbled frequently, however.⁹¹ The U.S. chip makers sought a new agreement because the increase in market share did not occur until the final two years of the agreement,⁹² and because U.S. market share fell far short of the 20% benchmark even after the increase.⁹³

D. THE 1991 AGREEMENT

1. Achieving Industry Unity

The SIA changed its strategy the second time around. The U.S. chip producers still needed to increase sales to Japan, the world's largest consumer of semiconductors,⁹⁴ to maintain their

factory, respectively; and an American Telephone & Telegraph and NEC technology partnership in ASICs. *Id.* See also Clinton Wilder, *Motorola RAM Chip Output Rekindled with Toshiba Deal*, COMPUTERWORLD, Nov. 23, 1987, at 67 (describing Motorola-Toshiba DRAM licensing agreement).

91. Initially, Japanese complaints focused on lack of sales, engineering and technical support facilities in Japan and the fact that the U.S. producers failed to cater to the needs of the Japanese consumer electronics sector which dominated the chip market. Japanese firms complained that U.S. producers were unreliable because they delayed deliveries to Japan and shipped orders first to U.S. customers during the 1987 sales boom. Robertson, *Japanese Executives Cool to Goals*, *supra* note 47, at 1.

In 1989, the SIA accused Japan of still not opening its markets. The EIAJ countered that, for U.S. producers to attain the 20% market share, they would have to begin manufacturing chips for the consumer electronics sector which comprised 41% of the \$19.1 billion Japanese chip market in 1989. Otherwise, U.S. firms would have to gain 40% of the computer and equipment sector. This was unlikely because 40% of that market consisted of demand for memory devices — DRAMs — the product which most U.S. firms deserted just before the agreement. Robert Ristelhueber, *Market Access Rankles SIA, EIAJ*, ELECTRONIC NEWS, Mar. 13, 1989, at 1, 4.

92. Jack Robertson, *Life After the Chip Agreement: The U.S.-Japan Semiconductor Agreement Expiration in July 1991*, ELECTRONIC NEWS, Sept. 24, 1990, at 12.

93. General Developments, *Japan: U.S. Semiconductor Producers, Users Join to Unveil Plan for New U.S.-Japan Accord*, 7 Int'l Trade Rep. (BNA) 1533 (Oct. 10, 1990) [hereinafter *Producers, Users Join to Unveil Plan*]. The final market share figures were: foreign market share, 14.7%; U.S. market share roughly 13.7%. SIA Market Share Data, *supra* note 88, at 2. See also *New Pact*, *supra* note 5, at 29 (foreign share under old calculation 13%, U.S. share, 12%). While the general electronics market in Japan was down in 1990, semiconductor manufacturers fared well, projecting hope for future big sales increases. See Paula Doe, *Hard Slogging in the Japanese Market*, ELECTRONIC BUS., Aug. 5, 1991, at 38, 38-40.

94. SIA, WSTS Forecast, *supra* note 36 (1992). The WSTS estimate shows that in 1991, Japan consumed 38.7% of the world's semiconductors, worth \$21.5 billion in sales compared with 28.1% and \$15.5 billion for the United States. The SIA projects these amounts to grow by 1994 to \$29.2 billion for Japan and \$21.7 billion for the U.S. *Id.*

ability to compete throughout the world.⁹⁵ Every percentage point gain in the Japanese market was worth about \$200 million in sales, with proportional increases in R&D and capital investment.⁹⁶ However, the faults of the 1986 agreement alerted users; they were ready to oppose any agreement that would again reduce their competitiveness.⁹⁷

The SIA needed to find a way to get the government's help as it tried to extend the market access provisions. At first, the prospects for government assistance looked bleak. While the 1986 agreement was winding down, United States Trade Representative Carla Hills had labeled the market access provisions, especially the 20% figure, "managed trade" and vowed to withhold her support from the renewal of a similar agreement.⁹⁸ In addition, the cumbersome FMV system created a rift in the U.S. electronics industry, discouraging trade negotiators.⁹⁹ The solution: the SIA joined forces with its main opponent, the Computer Systems Policy Project (CSPP)¹⁰⁰ to present a unified

95. *New Pact*, *supra* note 5, at 29. Additional Japanese market share brings with it increased revenues, allowing manufacturers to re-invest to become larger and more efficient and to compete to design parts for leading-edge Japanese products. *Id.*

96. *See A DEAL IS A DEAL*, *supra* note 1, at 10. U.S. semiconductor firms invest about 11.6% of sales on R&D and another 12% in capital equipment. Another \$1 billion in sales (five percent of the \$20 billion Japanese chip market) would not only allow U.S. firms to stay on top of new technology and equipment, but would also allow them to create greater economies of scale resulting in lower costs and increased sales. *Id.*

97. In the fall of 1988, the AEA and the SIA made an agreement to explore modification of the FMV calculations. The resolution called for the SIA to request that Commerce drop the FMV calculations and replace them with fast-track antidumping proceedings (essentially the same as the 1991 agreement). In exchange, the AEA would support the SIA's quest to gain market access. Jack Robertson, *Move to End FMVs, Use Penalty Tariffs*, ELECTRONIC NEWS, Sept. 12, 1988, at 1. However, by December of 1988, the talks had broken down, destroying the potential for industry unity. Jack Robertson, *Letting the Chips Fly*, ELECTRONIC NEWS, Dec. 5, 1988, at 1.

The downstream industries continued to argue until a group of heavy-weight computer manufacturers decided to counter SIA's political power and avoid the divisions between the AEA and the CBEMA. *See infra* note 101 and accompanying text.

98. *See, e.g., Producers, Users Join to Unveil Plan*, *supra* note 93, at 1533.

99. *See, e.g., Move to End FMVs*, *supra* note 97, at 8. Without the support of the U.S. trade negotiators, the SIA could have failed to successfully complete the 1991 agreement. The rift among sectors was readily apparent in 1989 when Gordon Moore, Associate Chairman of SIA, tried to unite the electronics industry on semiconductor issues. Mr. Moore received a list of demands from the uncooperative CBEMA completely redrafting his proposal. *One Big Happy Family*, ELECTRONIC NEWS, July 3, 1989, at 12.

100. SIA-CSPP Joint Memorandum, *supra* note 27, at 4. CSPP was created

position to the Bush Administration.¹⁰¹

The compromise approach worked. On October 10, 1990, the two associations sent a proposal to President Bush which would later become the basis for the 1991 agreement.¹⁰² The new proposal contained two parts. Most importantly, the parties advocated an explicit extension of the 20% market share goal until the end of 1992.¹⁰³ The figure appeared obtainable because market access had improved, particularly during the latter period of the 1986 agreement.¹⁰⁴ The parties believed that the target would maintain pressure on Japanese manufacturers to develop long-term relationships with foreign suppliers. To achieve the market share goal, the SIA wanted Japanese computer firms to "design-in" custom U.S. chips into their products.¹⁰⁵ As the SIA

in 1989 as an affiliation of eleven chief executive officers of U.S. computer, software and services companies. *Id.* The group formed because of the inability of the two existing organizations, the AEA and the CBEMA, to present a unified front in Washington. See *Confirm CPU Policy Group: For Trade*, *supra* note 89, at 1; see also *One Big Happy Family*, *supra* note 99, at 12. The discouragement of U.S. trade negotiators due to the split in the industry as early as 1988 was another reason CSPP and SIA needed to work together. See *Move to End FMVs*, *supra* note 97, at 1.

The members of CSPP had an additional incentive to cooperate; they hoped that the government would support a further opening of Japan in their products. *The Real Winner*, ELECTRONIC BUS., Aug. 5, 1991, at 30. The United States fulfilled those hopes in January 1992. See Christopher J. Chipello, et al., *Japan Agrees to Measures to Aid Sales of United States Goods*, WALL ST. J., Jan. 9, 1992, at A3-A4 (explaining new Japanese promises to increase purchases of American products, including computers).

101. *Producers, Users Join to Unveil Plan*, *supra* note 93, at 1533; *Finding a Common Ground*, ELECTRONIC NEWS, Aug. 5, 1991, at 32. CSPP vehemently opposed the 1986 Agreement because it increased prices of manufacturers' main components. *Id.*

102. *Finding a Common Ground*, *supra* note 101, at 32.

103. *Producers, Users Join to Unveil Plan*, *supra* note 93 at 1533. The parties included this extension because the foreign market share was only 13% compared to the benchmark of 20%. *Id.*

The SIA has requested market access arrangements because the Japanese have complete open access to the U.S. semiconductor user's market. Instead of closing off that access (as EC countries have done), the SIA will attempt to sell in Japan's market to make up for lost sales and prior ineffective agreements. Telephone Interview with Darryl G. Hatano, Director of International Trade & Government Affairs, SIA (Feb. 18, 1992); see also *A DEAL IS A DEAL*, *supra* note 1, at 1.

104. *But see infra* note 125 and accompanying text (progress between 1990 and 1991 slowed considerably compared with increases between 1989 and 1990).

105. At the very least, the SIA wanted to get for U.S. firms a chance to compete for new design-ins. See Jack Robertson & Joyce Barret, *20% Japan Market Share "Essential": T.I. Chief*, ELECTRONIC NEWS, Mar. 25, 1991, at 1 [hereinafter *20% Essential*]. A designed-in chip is an integrated circuit custom designed for a specific system, automobile, etc. This is also known as an Application Spe-

viewed it, once U.S. manufacturers achieved design-ins, the Japanese would become dependent on the custom U.S. chips and the U.S. firms would establish a market presence.¹⁰⁶ In addition, the coalition proposed a fast-track antidumping system to replace the FMV system.¹⁰⁷

2. Negotiations

The Japanese at first rebuffed efforts by the United States to negotiate a new agreement.¹⁰⁸ Japanese producers viewed the market access extension as unnecessary because U.S. producers had already achieved substantial increases in market share. The Japanese government echoed this sentiment, calling any set market share figure "inappropriate."¹⁰⁹ Further, the EIAJ promised that the Japanese electronics industry would continue its efforts to open the market to foreign imports.¹¹⁰

MITI ultimately agreed to negotiate. The United States and Japan negotiated for four months, concentrating on four main issues: the inclusion of the 20% market share figure in the text, the removal of the remaining 1987 sanctions,¹¹¹ the wording and severity of the antidumping provisions and the method for calcu-

cific Integrated Circuit (ASIC). Such a design requires highly proprietary information passed from the product designer to the chip maker. Once the chip producer has designed the chip, the product manufacturer relies exclusively on that producer. See Flamm, *supra* note 80, at 227-29. U.S. chipmakers hope such cooperation will induce long-term reliance on U.S. firms, thus increasing market share and sustaining part of the industry. See Computer Systems Policy Project, *Perspectives on Market Access and Antidumping Law Reform*, 5-6 (1990) (unpublished paper on file with *The Minnesota Journal of Global Trade*). In sum, increasing Japanese market share will allow the U.S. semiconductor industry to remain competitive in the world market.

106. *20% Essential*, *supra* note 105, at 1. The Japanese merchant market is not a sustainable market for U.S. producers. *Id.* at 7. Vertically integrated Japanese firms such as those in computers, automobiles and telecommunications make their own chips and do not need the U.S. chips on a continual basis. Unfortunately, U.S. makers do not produce the right kind of chips for the consumer electronics industry, the only sector that requires large quantities of fungible chips. See, e.g., A.I. Nakajima, *Heat Turned Up for More Chip Imports*, THE NIKKEI WEEKLY, Apr. 18, 1992, at 3, available in LEXIS, Nexis Library, Papers File.

107. See *Japan: Japan, U.S. Open Semiconductor Talks: Market Share in Japan Seen as Issue*, 8 Int'l Trade Rep. (BNA) 275, 276 (1991) [hereinafter *Japan, U.S. Open Talks*]; *Japan: U.S. Semiconductor Industry Wants 25 Percent Market Share in Japan Within Next Five Years*, 8 Int'l Trade Rep. (BNA) 352, 353 (1991) [hereinafter *U.S. Industry Wants 25 Percent*].

108. See *Producers, Users Join to Unveil Plan*, *supra* note 93, at 1533.

109. See *Japan, U.S. Open Talks*, *supra* note 107, at 276.

110. *Id.*

111. *Pact Negotiations Stick*, *supra* note 39, at 618.

lating market share.¹¹² After a considerable struggle, the parties settled the first two issues by trade-off: the Japanese government would support a market access goal in the text, and in return the United States would drop the \$165 million in sanctions remaining from 1987.¹¹³ They agreed that the market access goal was not a guaranteed ceiling or floor, but only a measure of how successful U.S. firms were in gaining additional market share in Japan.¹¹⁴

The countries resolved the third issue, the new antidumping provision, by replacing the then-current FMV floor price system with a fast-track dumping procedure.¹¹⁵ Japanese manufacturers would continue to maintain detailed cost records which they would have to submit within fourteen days of the filing of a dumping complaint.¹¹⁶ This fast-track approach would enable procedures to begin immediately after the United States suspected dumping.

The 1991 agreement is much more flexible than the 1986 agreement. It allows the parties after three years to set additional quantitative goals, develop looser agreements, or jointly terminate the agreement altogether.¹¹⁷ The SIA-CSPP coalition believed U.S. chipmakers could accomplish the 20% market share goal within the eighteen-month extension.¹¹⁸

Calculation of market share continued to be a problem for both countries. The 1986 pact specified no formula, so each party used formulas which supported its position. The United States interpreted foreign market share to include U.S.-produced chips sold to Japanese manufacturers, while Japan used

112. *Japan: Semiconductor Talks to Continue as Some Technical Issues Remain to be Resolved*, 8 Int'l Trade Rep. (BNA) 739 (1991).

113. *Japan: U.S. and Japan Sign Semiconductor Pact Targeting 20 Percent Share, Design-Ins*, 8 Int'l Trade Rep. 845 (1991) [hereinafter *U.S. and Japan Sign Pact*].

114. 1991 Agreement, *supra* note 3, at II(10).

115. The 1991 provisions on dumping are much more relaxed than those in the 1986 agreement. This is primarily due to the harm done to the United States industry under the first agreement and the fact that dumping had virtually disappeared since 1987. See generally OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE, QUESTIONS AND ANSWERS ON THE U.S.-JAPAN SEMICONDUCTOR ARRANGEMENT (June 4, 1991), at 3.

116. *Id.* See also *U.S. and Japan Sign Pact, supra* note 113, at 845.

117. 1991 Agreement, *supra* note 3, at IV (12). The agreement states that the U.S. industry "expects that the foreign market share will grow to more than 20 percent of the Japanese market by the end of 1992." *Id.* at II (10). However, the agreement continues at least until 1993. *Id.* at IV (12).

118. See *Japan: Japanese Electronics Industry Agrees to Closer Cooperation With U.S. Chip Makers*, 8 Int'l Trade Rep (BNA) 900, 901 (1991).

different calculations and included different types of sales.¹¹⁹ As a result, Japanese calculations showed a larger U.S. share of Japan's market than U.S. calculations.¹²⁰

Under the new agreement, both countries will still calculate their own market shares, but they must now agree on the calculations each will use. The United States will calculate the amount of foreign sales in Japan (the numerator of the percentage) using the data collection program (DCP)¹²¹ and MITI will calculate the total size of the Japanese semiconductor market (the denominator of the percentage).¹²² The central difference between these two methods is that MITI will include two additional types of sales: captive sales — intercompany sales of chips made in Japan by U.S. manufacturers for their own use — and foreign branded product sales — chips made by Japanese companies under a U.S. manufacturer's name.¹²³ The first market share calculation under the new agreement came out in December 1991. The figure indicated that the foreign market share in the third quarter of 1991 was only 14.3% compared with 14.7% in the second quarter of 1991.¹²⁴ The growth rate has flattened rapidly, perhaps due in part to the state of the Japanese economy.¹²⁵ Although little comment has been made by either coun-

119. See Valerie Rice, *Why the Numbers Don't Always Add Up*, ELECTRONIC BUS., Aug. 5, 1991, at 31 [hereinafter *Numbers*] (the United States used the World Semiconductor Trade Statistics derived from SIA data).

120. For example, the U.S. readings (before the new calculation system) put total *foreign* market share at about 13%. Japan's computed figure is closer to 16%. *Id.*

121. The Data Collection Program is a system devised by the two governments to improve the accuracy of the data used in market share calculations. Under the 1986 agreement, the countries estimated the figures which they input into their formulas. The Data Collection Program provides for a large number of U.S. and other non-Japanese foreign semiconductor manufacturers to report their sales in the Japanese market directly to the U.S. government. The United States and Japan will then jointly verify the data to ensure accuracy. 1991 Agreement, Annex A: Statistical System, *supra* note 3, at 9-13.

122. *Numbers*, *supra* note 119, at 31.

123. *U.S. and Japan Sign Pact*, *supra* note 113, at 845.

124. *Foreign Chip Makers Held 14.3% of the Market in Japan Last Quarter*, WALL ST. J., Dec. 26, 1991, at B5 (Eastern edition). The SIA restated the market share numbers reported under the 1986 agreement according to the 1991 agreement formula. SIA Market Share Data, *supra* note 88, at 2. During 1989 foreign market share increased from 11.7% to 13.5%. Foreign share began at 13.5% in early 1990, reached a high of 15.5% and dropped to 14.0% by the end of 1990. *Id.*

125. Statistics for the fourth quarter of 1991 indicated little improvement, increasing only to 14.4%. The Japanese government responded by blaming the poor economy. USTR Carla Hills still implored the Japanese government and industry to boost their efforts to buy foreign semiconductors. See *Foreign-Chip*

try on this trend, it appears unlikely that foreign firms will achieve a 20% market share by December 1992.

II. NEW DIRECTIONS: THE REALITIES OF THE 1991 AGREEMENT

The 1991 agreement marks a noticeable weakening of U.S. leverage in high technology trade. While the agreement again seeks to increase market access opportunities and, to a lesser extent, to prevent dumping, the dependence of the U.S. electronics industry on Japan and the use of sanctions to enforce the 1986 agreement frustrates the ability of the United States to enforce the new agreement. To the extent these factors prevail, the success or failure of the agreement appears to fall squarely on the shoulders of the U.S. semiconductor industry. Because both countries have learned from their experience with the provisions and operation of the 1986 agreement, the prospects for success of the 1991 agreement should be better. Likewise, the lessons learned will probably change the prospect of U.S. enforcement action.

A. ANTIDUMPING: LESSONS LEARNED

The lessons of the first five years manifested themselves in the antidumping provisions of the current agreement. The antidumping provisions of the 1986 agreement consisted of blunt and cumbersome regulations which ignored several central truths of the industries involved. Specifically, the agreement ignored the semiconductor industry's pricing structure, the competitiveness of the U.S. industry in some products and the user industries' dependence on Japanese products, especially DRAMs.¹²⁶ In its haste to save the producers, the government apparently did not consult the user industries¹²⁷ and further fragmented the electronics industry instead of promoting a con-

Lag in Japan, N.Y. TIMES, Mar. 31, 1992, at D5. For an indication of the slowdown in the electronics sector of the economy, see Jacob M. Schlesinger, *Profits Decline at High-Tech Firms in Japan*, WALL ST. J., May 27, 1992, at A11 (Midwest edition) (citing profit declines of 41% to 65%) [hereinafter *Profits Decline*].

126. It appears that Commerce should have set the FMV prices in accordance with "forward pricing" to more closely approximate market prices. Jack Robertson, *Urge Relaxed Dumping Laws*, ELECTRONIC NEWS, May 21, 1990, at 1 (statement of John Young, President of Hewlett-Packard).

127. *But see* Moad, *supra* note 46, at 17. (statement by then-SIA vice president Shiela Sandow that the SIA did inform the user groups who assumed nothing was going to happen and so did not react to the pre-arrangement negotiations).

sensus. The resulting high prices of DRAMs hurt both consumers and producers.¹²⁸

The SIA and CSPP designed the new antidumping provisions to give U.S. semiconductor producers adequate protection from dumping while allowing the U.S. electronics industry to buy chips at global market prices.¹²⁹ The agreement still protects U.S. semiconductor manufacturers because Japanese firms must collect production and sales data on standard representative products on a quarterly basis,¹³⁰ and the countries will update the list of products as needed.¹³¹ Thus, the new antidumping provisions should operate effectively despite reduced enforcement measures.

B. DEVELOPMENTS — RENEWED DUMPING CONCERNS

Notwithstanding the fanfare surrounding the new antidumping provisions, U.S. producers remain wary of dumping. The level of protection from dumping varies greatly by product, with a large contrast between DRAMs and EPROMs. Although the 1991 agreement covers broad product types (e.g., DRAMs, EPROMs), data is collected only for certain representative subgroups, leaving some products unprotected if dumping occurs.¹³² The agreement also fails to protect U.S. producers if Japanese

128. In the future, if the situation arises, the government must first understand the industry to avoid creating unrealistic pricing structures and protecting non-existent products. See, e.g., Flamm, *supra* note 12, at 27-28.

129. During the 1986 agreement, U.S. computer manufacturers paid \$22 per DRAM while their Japanese competitors paid \$16. A DEAL IS A DEAL, *supra* note 1, at 20.

130. The Revised Suspension Agreement requires the major Japanese manufacturers (NEC, Hitachi, Fujitsu, Mitsubishi Electric, Toshiba, Sanyo, and Sharp) to maintain price and cost data of chips exported to the United States, other foreign countries (as a whole), and the five largest countries next to the United States on a country-by-country basis. In addition, the Japanese companies must maintain cost and price data for sales in Japan. Erasable Programmable Read Only Memory Semiconductors From Japan, 56 Fed. Reg. 37,523 (Dep't Commerce 1991) (terminating administrative review and revision of suspension agreement).

The Japanese companies complained that the cost of keeping the records required under the new agreement would increase DRAM prices. Richard McCausland, *Fear Trade Accord's Costs Could Boost DRAM Prices*, ELECTRONIC NEWS, July 22, 1991, at 1.

131. 1991 Agreement, *supra* note 3, at III:2(a). Whether the agreement covers a given product can be very important. U.S. firms have little antidumping protection for chips that are not yet protected under the cost collection system. If the United States suspected dumping of a chip not under the agreement, an investigation would still take six to twelve months. Robert Ristelhueber, *Commerce Lists Flash as EPROM*, ELECTRONIC NEWS, Dec. 9, 1991, at 1.

132. See *id.*

companies dump a new product before the governments have added it to the list of monitored products.¹³³ If this happens, any dumping investigation could still take from six to twelve months to collect the necessary data.¹³⁴ The delay could put U.S. producers in a situation similar to that in 1985-86 when Japanese manufacturers gained substantial market share at the expense of their U.S. counterparts.¹³⁵ SIA member firms have already proved their vigilance, however, and would undoubtedly complain at the first hint of dumping.¹³⁶

1. EPROMs

Dumping is less of a concern in the EPROM sector than it is in the case of the DRAM sector, in part because the U.S. industry has maintained market share and may have an edge in some EPROM products. More importantly, a modified suspension agreement from the 1986 antidumping case remains in place with respect to EPROMs.¹³⁷ The dumping duties Commerce assessed in that case pose an immediate threat to major Japanese companies. If U.S. producers prove Japanese dumping of any type of EPROM, under the revised suspension agreement Commerce could immediately impose the substantial duties determined in 1986.¹³⁸ Until recently, however, U.S. firms did not know whether Commerce would include new but similar products under the suspension agreement.¹³⁹

The U.S. industry foresees intense competition in a new

133. A product joins the watch list if: (1) it is a standard and general use semiconductor, or (2) there is evidence of a threat of sales at less than normal value, and either government requests its inclusion. 1991 Agreement, *supra* note 3, at III:2(a)(i-ii). In addition, the agreement states that new products will be added to the list when their export from Japan increases. *Commerce Lists Flash as EPROM, supra* note 131, at 1.

134. *Commerce Lists Flash as EPROM, supra* note 131, at 1. (statement of Intel spokesman).

135. See also T.J. Rodgers, *An Industry That Doesn't Need Saving From Japan*, WALL ST. J., Jan. 2, 1992, at A7. According to Dataquest, the U.S. share of semiconductor sales slipped from 54% in 1982 to 34% in 1990 while Japan's share increased from 34% to 49%. *Id.*

136. See, e.g., Stephen K. Yoder, *U.S. Microchip Makers Suspect Japan of Dumping, but Some See Lack of Proof*, WALL ST. J., Mar. 9, 1992, at C11 (Midwest edition) (discussing the U.S. industry's allegations of dumping before its annual meeting).

137. See *supra* notes 33, 129-31 and accompanying text.

138. *Commerce Lists Flash as EPROM, supra* note 131, at 1 (U.S. producers would first have to complain about dumping, but Commerce retains the option to apply the previously set duties). See *supra* note 33 (dumping duties ranged from 60% to 188%).

139. See *supra* notes 128-30 and accompanying text.

EPROM technology called "Flash EPROM," which is likely to revolutionize data storage. Flash chips are similar to regular EPROMs, but are easier to erase and re-program, making them useful for data storage.¹⁴⁰

The U.S. industry is concerned that Japanese manufacturers will overinvest in flash manufacturing capacity and dump the chips once a viable market exists for them,¹⁴¹ forcing the smaller U.S. producers out of the market.¹⁴² In April, 1992, the International Trade Administration (ITA) issued a final scope ruling that flash chips fit the definition of EPROMs under the suspension agreement.¹⁴³ Thus, if the United States suspects Japanese companies of dumping EPROMs, including Flash Memories, Commerce could institute the prior dumping duties almost immediately.¹⁴⁴ In sum, the combination of the suspen-

140. Because erasing the data is difficult in most current EPROMs, they are used only for repetitive tasks such as regulating automobile engines. Flash chips use electrical charges to erase the stored data instead of expensive ultraviolet light, making them much easier to use. Stephen K. Yoder, *Future Appears Bright for 'Flash' Chips*, WALL ST. J., Feb. 6, 1992, at B1.

It is believed that flash chips will be able to replace hard disks in computers by 1995, making the sector extremely important. The technology will be especially useful in portable computers, where size and battery life are circumscribed by the weighty and energy-draining hard disk. *Id.* at B1. Although the flash market is currently in its infant stages, it is expected to reach \$1.45 billion by 1995. *Id.*

141. Total sales in 1992 are projected to reach \$200 million. Currently, Intel leads all manufacturers with 85% of the market; Toshiba, the inventor of the technology, holds only 3%. *Id.*

142. This is exactly what happened with DRAMs in 1985-86. *See supra* notes 20-25 and accompanying text.

143. The ITA made the preliminary ruling in December 1991. Erasable Programmable Read Only Memories from Japan, 56 Fed. Reg. 64,743 (Dep't Commerce 1991) (prelim. scope ruling). Four Japanese companies subsequently filed comments opposing the ruling, but the ITA reaffirmed its preliminary determination. Erasable Programmable Read Only Memories from Japan, 57 Fed. Reg. 11,593 (Dep't Commerce 1992) (Int'l Trade Admin., final scope ruling). After the ITA notified the ITC of its decision to include a later developed product under the revised suspension agreement, the ITC acquiesced.

After our analysis of the comments received, the Department of Commerce reaffirms its preliminary scope ruling that certain Flash Memories are within the scope of the suspended investigation and suspension agreement.

On January 28, 1992, the ITC responded to our notification of intent to include a later-developed product within the scope of the suspended investigation and advised the Department that consultations were not necessary in this case.

Id. at 11,594.

144. *Commerce Lists Flash as EPROM, supra* note 131, at 1. This is a significant difference; if the ITA had classified flash chips as a separate product, the parties would have had to first fall under the agreement. *See supra* note 131

sion agreement and the scope ruling will substantially deter Japanese dumping of EPROMs in the United States.

2. DRAMs

The conditions are much different in the DRAM sector. After the near-death of the U.S. DRAM industry in 1986, it appeared that once the United States dropped the FMV system, Japanese dumping of DRAMs would not matter to the U.S. chip industry. The surge in demand for DRAMs in the late 1980s, however, prompted two additional U.S. manufacturers to either fortify or re-enter DRAM production.¹⁴⁵ Unlike the EPROM sector, no suspension agreement remains to deter Japanese firms from dumping DRAMs. Instead, U.S. firms must rely on the antidumping provisions in the agreement. Because the U.S. firms make up such a small portion of the market, renewed dumping by the Japanese could destroy their business even before a regular antidumping investigation could take place.

The problem is that current market conditions mirror those which prevailed in 1985-86. The general user market is sluggish and the main Japanese producers have invested heavily in large manufacturing facilities, anticipating considerable demand for the 4Mb DRAM chip. That chip has not yet sold well.¹⁴⁶ For the first time, three generations of DRAMs (1Mb, 4Mb and 16Mb) are simultaneously competing against each other in the marketplace.¹⁴⁷ Multiple generations and increased competition from Korean producers reduces the amount of return on the new chips, further diminishing profits.¹⁴⁸ Japanese producers will

(they would have had to be either general use semiconductors or dumped). If flash chips did not fall with the scope of the agreement, any dumping investigations would take six to twelve months to gather the data. See *supra* note 130.

145. See *U.S. Microchip Makers Suspect Japan of Dumping*, *supra* note 136, at C11. Of the U.S. DRAM producers remaining in April, 1992 (Micron Technology, IBM, Motorola, and Texas Instruments), *id.*, the last two produce through licensing arrangements with Japanese companies. See Dambrot, *supra* note 90, at 68; Wilder, *supra* note 90, at 67-68. For a description of the erosion of the DRAM industry, see text accompanying notes 51-54.

146. *Falling Off the Learning Curve*, *supra* note 53, at 66. The Japanese spent \$6.7 billion on production facilities for the 4Mb chip but sales have been flat and prices down, largely because much existing software does not yet require that much memory.

147. *Id.*; Andrew Pollack, *Executives Say Japan May Be Dumping Chips*, N.Y. TIMES, Mar. 6, 1992, at C2 (National edition).

148. *U.S. Microchip Makers Suspect Japan of Dumping*, *supra* note 136, at C11 (Korean producers also have excess capacity and are taking market share away from Japanese firms). See *Profits Decline*, *supra* note 125, at A11 (report-

likely try to recoup their massive investment,¹⁴⁹ making the conditions ripe for dumping.¹⁵⁰

If the U.S. producers make a timely showing that dumping is occurring,¹⁵¹ the speed with which Commerce compiles and assembles the data will likely determine the success of the antidumping provisions. The investigation process would prevent significant loss of market share by U.S. firms if it works as it is designed.¹⁵²

In the future, antidumping statutes must provide for quick investigations after sufficient allegations. U.S. companies must continually monitor the competition and be ready to file a petition if dumping occurs. The investigative process should be shortened as much as practicable to prevent further loss of domestic producer market share. Furthermore, the remedies must strike with precision to avoid unreasonable injury to the user industries which receive some benefits from dumping.¹⁵³ The difficulty of imposing meaningful antidumping duties will increase as interdependence grows between the two countries. This may be the last chance U.S. producers have to establish themselves competitively before the United States is unable to enforce its rights without severely crippling itself.

ing that Japanese electronics companies plan to cut capital spending in their semiconductor divisions between 20% and 50%).

149. Because prices for the 1Mb DRAM are low as well, the sales prices may be too low for producers to recapture their initial investment on the 4Mb production lines. *Falling Off the Learning Curve*, *supra* note 53, at 64.

150. *Id.* Several firms are currently striving for perfection of the next DRAM generation, the 64Mb, expected by 1995. This pressure will also drive the price down. Hooper, *supra* note 9, at B4.

151. The U.S. manufacturers must show tangible evidence of dumping before Commerce could start any action. If the tangible evidence is not available until the U.S. manufacturers have lost excessive revenues, any action on the part of Commerce could be too late.

152. Preserving the remaining DRAM producers could also facilitate production and development of more sophisticated chips because the high-volume DRAM production helps develop efficient manufacturing processes applicable to the other chips. See *infra* notes 186-88 and accompanying text.

153. Current antidumping protocol requires an intricate petition alleging sales at less than fair value. When the International Trade Administration makes a preliminary determination of sales at less than fair value, preliminary duties are collected. 19 U.S.C. § 1673b(d)(1). Collecting the data necessary to initiate a petition, often a difficult task, creates a time lag which can lead to further erosion of the complaining industry. Currently, the U.S. semiconductor industry watches for signs of dumping but collecting data to file a petition would still take up to a year. See *Commerce Lists Flash as Eprom*, *supra* note 131, at 1.

C. MARKET ACCESS: A CHIP ON THE U.S. INDUSTRY'S SHOULDER

Despite the antidumping concerns, the focus of the new agreement is to increase foreign market share in Japan. Under the 1986 pact, market access did not improve significantly until after the United States imposed sanctions.¹⁵⁴ Now the threat of sanctions is considerably weaker than in 1986 and only one means of providing security remains: U.S. semiconductor manufacturers must use the 1991 agreement to break through the barriers which Japanese business practices create, and then generate genuine demand for their products.

Of course, determinations as to the success or failure of the market access provisions will continue to be complicated by the fact that the United States and Japan still disagree on how to compute market share. Government and industry hail the new foreign market share calculations because the new agreement specifies a data collection process and defines the formulas each country will use to calculate the foreign market share in Japan.¹⁵⁵ The reality remains that Japan uses a different formula than the United States and that the Japanese figure will always exceed the U.S. figure.¹⁵⁶ Even though MITI knows that the United States will regard the U.S. calculation as the real measure of market access,¹⁵⁷ it will continue to promote its own figure as a true measure of foreign market access.¹⁵⁸

1. Summary — Gains Made to Date

The SIA fought hard for the market access provisions in both the 1986 and 1991 agreements. By the late 1980s Japanese manufacturers had captured a significant percentage of the world semiconductor market from U.S. producers.¹⁵⁹ Instead of

154. Most of the improvement really occurred in the last two years. See *supra* notes 89-92 and accompanying text.

155. See *supra* notes 121-23 and accompanying text. U.S. market share as calculated by the Japanese went from 19% before the 1991 arrangement to 16% immediately after it went into effect.

156. See *supra* notes 121-24 and accompanying text.

157. *U.S. and Japan Sign Pact*, *supra* note 113, at 845 (statement of S. Linn Williams, Deputy USTR and head negotiator).

158. See, e.g., *Foreign Chip Makers Held 14.3% Last Quarter*, *supra* note 124, at B5. "Sinichi Itoh, chairman of the User's Committee of Foreign Semiconductors of the Electronic Industries Association of Japan, said, however, that under the terms of a second formula for calculating market share access, penetration increased to 16.2 percent." *SIA: Sanctions Only as Last Resort in Japan Market Access Dispute*, ELECTRONIC NEWS, Mar. 23, 1992, at 16.

159. See, e.g., BACKGROUND INFORMATION, *supra* note 8, at 4-5 (noting that

encouraging the imposition of barriers to the U.S. market to combat this loss of market share, the SIA sought greater access to the Japanese market.¹⁶⁰ The SIA believed the 20% market share goal would allow U.S. firms to break into most sectors of the Japanese market.¹⁶¹ The goal would implicitly require Japanese users to design-in U.S.-made chips resulting in long-term contracts and, eventually, lasting relationships with U.S. producers.¹⁶²

The 1986 agreement did give U.S. semiconductor manufacturers confidence to make the investments essential to improving their competitive position in Japan.¹⁶³ U.S. companies built 60 sales, development and testing centers in Japan,¹⁶⁴ set up joint ventures with Japanese firms,¹⁶⁵ and interacted with Japanese users associations in their efforts to break into the Japanese market.¹⁶⁶ These activities helped U.S. firms increase the foreign market share from 8.0% in September 1986 to 14.7% in July 1991.¹⁶⁷

2. The Key: Real Market Demand

The 1991 agreement attempts to raise the U.S. share of the Japanese market closer to the U.S. share of the other world

between 1981 and 1988 U.S. world semiconductor share plunged from 57% to 37.4% while Japan's share increased from 33% to 51.2%).

160. Telephone Interview with Darryl Hatano, *supra* note 103.

161. This goal would allow U.S. producers to enter otherwise impenetrable markets such as consumer electronics. "This breadth of market penetration is necessary if the U.S. and other foreign industries are ever to obtain the benefits of a truly open market." *A DEAL IS A DEAL*, *supra* note 1, at 8.

162. Without such long-term relationships, the U.S. producers are merely spot-market suppliers, which over the long run does not create sustainable demand. *20% Essential*, *supra* note 105, at 7.

The reader should note that the prediction of reaching the market share goal through design-ins is predicated on the U.S. manufacturers presenting a product that the Japanese users need.

163. In the eyes of the SIA, the market access language in the 1991 agreement is simply an extension of what U.S. firms learned during the 1986 agreement. Telephone Interview with Darryl Hatano, *supra* note 103.

164. *A DEAL IS A DEAL*, *supra* note 1, at 4; Telephone Interview with Darryl Hatano, *supra* note 103.

165. MITI has included or forced inclusion of several U.S. firms in its manufacturing of HDTV. See *Matsushita Electric, NEC, Mitsubishi Electric Agree to Jointly Develop HDTV-Use ICs*, *Comline Daily News Telecommunications*, Nov. 6, 1991, available in LEXIS, CMPCOM Library, ALLCMP File.

166. *A DEAL IS A DEAL*, *supra* note 1, at 4. These organizations include the Japan Automotive Parts Industries Association (JAPIA), the Distributors Association of Foreign Semiconductors (DAFS), and the EIAJ's Users' Committee of Foreign Semiconductors (EIAJ-UCOM). *Id.* at 1-4.

167. SIA, WSTS Forecast, *supra* note 37, at 2.

markets.¹⁶⁸ There are several possible reasons for this lack of sales, including the perceived inferiority of U.S. products,¹⁶⁹ the inability of U.S. companies to meet demand in upturns,¹⁷⁰ the strength of the *keiretsu* in setting economic policy, and general anti-foreign sentiment.¹⁷¹ The U.S. industry has remained technologically competitive with Japan, however,¹⁷² and holds a slim lead in some products.¹⁷³

Before U.S. producers can compete on the merits of their products, they must break through the barriers created by Japanese business practices, especially the *keiretsu* structure.¹⁷⁴ U.S. firms have made some progress. At the beginning of the 1986 agreement, the semiconductor supplier divisions of Japanese conglomerates were blocking U.S. semiconductor firms from selling directly to the user divisions, effectively cutting off U.S. access to major buyers of memory products. By the end of the 1986 agreement, however, most of the major Japanese electronics companies were purchasing more than 20% of their semiconductors from foreign firms.¹⁷⁵ Nevertheless, overall foreign market share in Japan remained at just 14.4%.¹⁷⁶ With significant effort, the 1986 agreement succeeded in loosening barriers to the Japanese market. It will take additional effort to break

168. Outside of Japan, the U.S. has a much greater market share even when competing against the Japanese. *U.S. Chip Makers Rail Against Japanese*, *supra* note 36, at B1.

169. Boyd Harnell, *Congress Backs SIA on Japan Market Share*, *ELECTRONIC NEWS*, June 12, 1989, at 4.

170. Howell, *supra* note 17, at 16-8. The Japanese have generally believed that American suppliers are unable to deliver in cyclical upswings because they invest too little during recessions. *See also Falling Off the Learning Curve*, *supra* note 53, at 64.

171. Alan S. Gutterman, *Japan and Korea: Contrasts and Comparisons in Regulatory Policies of Cooperative Growth Economies*, 8 *INT'L TAX & BUS. LAW.* 267, 273, 291-93 (contending that once the individual industries grew powerful, they wielded some influence over the government).

172. Rodgers, *supra* note 135, at A7. Rodgers believes that the Japanese are better at manufacturing; the U.S. is better at design and innovation. According to Rodgers, the United States is catching up faster in manufacturing process than Japan is improving its innovation. *Id.*

173. According to Darryl Hatano, SIA President for Governmental Affairs, the U.S. industry still has a marginal lead in the development and manufacture of some EPROMs, ASICs, and microprocessors. Telephone Interview with Darryl Hatano, *supra* note 103.

174. *See generally* Mitsuo Matsushita, *The Structural Impediments Initiative: An Example of Bilateral Trade Negotiation*, 12 *MICH. J. INT'L L.* 436 (1991).

175. *See supra* note 89 and accompanying text; *A DEAL IS A DEAL*, *supra* note 1, at 8.

176. *Foreign-Chip Lag in Japan*, *supra* note 125, at D5.

through the remaining barriers to open markets so that true competition can occur.

Assuming that U.S. products break through the structural barriers, U.S. producers must show that they possess the latest technology and the sophisticated designs needed by Japanese users, and that they can meet Japanese quality and quantity requirements. Currently, the United States may hold a slight technological advantage in application-specific chips and microprocessors, the brains of computers.¹⁷⁷ Innovative U.S. firms which work to adapt U.S. technology to Japanese needs will have a greater chance of selling in Japan.¹⁷⁸

In many sectors, U.S. producers are just beginning to understand how to address the users' concerns.¹⁷⁹ The SIA advocated extending the 20% market share benchmark for an additional eighteen months to ensure that U.S. firms penetrate many sectors of the market, and to give additional time to joint projects which started in the last years of the 1986 pact.¹⁸⁰ For example, firms have had trouble selling to the sub-contractors for the larger electronics firms. The SIA and EIAJ are trying to develop Market Access Plans (MAPs) for each user, in which the user sets goals for using foreign chips.¹⁸¹ In the future, U.S. manufacturers may reach these sub-contractor companies by persuading the large electronics companies to set content requirements for their sub-contracted parts, the ultimate affirmative action plan.¹⁸²

U.S. firms must broach Japan's consumer electronics mar-

177. Howard High said that the U.S. lead is flat, but that several new products will provide impetus to U.S. technical advantage. Telephone Interview with Howard High, *supra* note 89. Darryl Hatano from the SIA stated that the U.S. has the lead in some ASICS and microprocessors. Telephone Interview with Darryl Hatano, *supra* note 103.

178. TRADING PLACES, *supra* note 1, at 30-32; *accord* Rodgers, *supra* note 135, at A7. *But see* Nakajima, *supra* note 106, at 3 (statement of Kunihiisa Ono of the EIAJ) (contending the real demand is in memory chips which U.S. producers no longer make).

179. Individual producers and Japanese users have met face to face in many joint user/producer seminars. In addition, special task forces in each sector currently work to increase U.S. exposure. A DEAL IS A DEAL, *supra* note 1, at 4.

180. *See id.* at 3 (many industry initiatives did not start until 1989 or 1990).

181. *Id.* at 4. As of April 1992, eighty-three major chip users had provided MITI with market access plans which explain in detail what chips the company needs, procurement patterns and other information. *Heat Turned Up for More Chip Imports*, *supra* note 106, at 3.

182. Telephone interview with Howard High, *supra* note 89. Mr. High commented that over 50% of Japan's chip consumption occurs outside of the large companies, much of it through sub-contracting.

ket, the largest sector of the semiconductor industry, in order to come close to achieving the agreement's market share goals. This is no small endeavor because U.S. producers have not had a domestic consumer electronics industry to supply.¹⁸³ Instead they have concentrated on developing chips for the computer and telecommunications markets.¹⁸⁴ The result is that, with Japanese assistance under both agreements, U.S. firms have had to regain the technology they lost when the U.S. domestic consumer electronics industry died.¹⁸⁵

Perhaps a greater barrier for U.S. producers is that many no longer design or produce DRAMs. DRAMs provide two competitive advantages for those who manufacture them: first, they act as technology drivers,¹⁸⁶ providing technical and manufacturing knowledge necessary to the design and production of more sophisticated chips; second, user companies need DRAMs in large quantities to put into their electronic devices.¹⁸⁷ Combining the design advantages and the high demand element, DRAMs are needed for a manufacturer to compete in the Japanese market because of the large quantity of consumer products manufactured there. Japanese firms have an advantage because they lead the world in design and manufacture of DRAMs.¹⁸⁸

As new technology develops, however, a debate is growing over whether DRAMs are the exclusive technology driver, or whether other, more sophisticated chips may provide the same impetus for wide-spread technological advances. To the extent

183. Because there is no domestic industry for consumer electronics, the U.S. industry has focused on other industries, limiting its competitiveness in consumer electronics. See *Market Access Rankles SIA, EIAJ, supra* note 91, at 4.

184. *Id.* See also *supra* text accompanying notes 59-64.

185. See, e.g., *Market Access Rankles SIA, EIAJ, supra* note 91, at 4 (arguing that the United States is not competitive in the products Japanese consumer electronics users need).

186. The term "technology driver" simply means that by designing, manufacturing and mass-producing a given type of chip (currently DRAMs), the manufacturer learns how to avoid problems with more intricate designs and also the best way to mass produce a semiconductor chip, so as to maximize the number of good chips (yield). Thus, manufacturers producing DRAMs have a distinct advantage over competitors using lower volume memory products as technology drivers. Jack Robertson, *ELECTRONIC NEWS*, Jan. 13, 1986, at 8. This view continues to be widely held. Jack Robertson, *Confirm Major IBM Role in Creation of U.S. Memories*, *ELECTRONIC NEWS*, June 26, 1989, at 1 (statement of Dr. Robert Noyce, CEO of Sematech).

187. See *Heat Turned Up for More Chip Imports, supra* note 106, at 3.

188. As world competition intensifies, this leadership role may abate. See *supra* notes 146-52 and accompanying text (discussing the IBM-Siemens joint venture for the 64Mb DRAM and general state of competition in the international market).

that design and production of higher level chips provide a similar advantage, the United States will remain a center for new, innovative designs.¹⁸⁹ In addition, the potential for Flash Memories to replace DRAMs would mean that U.S. producers have another chance to prove their competitiveness.¹⁹⁰

After convincing the Japanese of their technological competence, U.S. firms must prove they can meet Japanese demands for consistent, on-time delivery of products which meet user quality standards. U.S. firms have built a reputation as unreliable suppliers of marginal quality chips. The new agreement explicitly recognizes this stigma and calls for U.S. firms to meet the quality requirements of their Japanese customers while maintaining a steady supply of the correct chips.¹⁹¹

Advances in chip technology will require greater capital investment to design new generations of chips and build the manufacturing facilities in which to produce them. Extremely high design and manufacture costs raise the stakes, bringing with them a high risk of failure if the design or manufacture is flawed or falls behind schedule, allowing competitors' products to win contracts.¹⁹² To distribute the risk and cost, firms throughout the world join with other manufacturers to develop and/or produce products.¹⁹³ One example of such cooperation is the IBM-Siemens project to design and manufacture 64Mb DRAMs.¹⁹⁴

A better example is the joint effort between Intel, the largest U.S. semiconductor manufacturer, and Sharp, the Japanese consumer electronics maker, to design and manufacture Flash

189. "[V]iewed as a country or as a group of companies, the U.S. is positioned where it should be. It dominates the high-value, high-margin, innovation-driven part of the semiconductor business." Rodgers, *supra* note 135, at A7.

190. Being successful at this technology will require the capital and the patience to capture market share. It will also probably involve partnerships with other larger manufacturers to maintain capital investment levels required for large scale production. See *infra* notes 192-96 and accompanying text.

191. 1991 Agreement, Joint Announcement on Market Access Activities, *supra* note 3, at 2(1)(b-e).

192. See Dambrot, *supra* note 90, at 69.

193. This is especially true for the smaller American producers which join up with their financially stronger Japanese counterparts. U.S. firms cannot afford the huge capital outlays required to produce large volume commodity or other chips. Dambrot, *supra* note 90, at 68 (the cost of building a fabrication plant is well over \$250 million). This is largely because of the high cost of capital and the short-term financial outlook in the U.S. contrasted with cheaper capital and a long-term outlook in Japan. See *supra* notes 18-20 and accompanying text.

194. IBM gets Siemens chipmaking expertise and non-Japanese rival technology, Siemens gets to defray its cost, and both companies avoid the huge risks of self-developing the technology. See Hooper, *supra* note 9, at B4.

Memories.¹⁹⁵ In 1992, Intel held 85% of the tiny world market for these devices.¹⁹⁶ It joined forces with Sharp to defray the cost of developing future generations of Flash, acquire the capital and the economies of scale necessary to remain competitive when the market expands, and enter the hard-to-penetrate consumer electronics field.¹⁹⁷ In return, Sharp will receive the technology and the rights to produce a product which it will use extensively in its consumer electronics business.¹⁹⁸

3. Forcing Market Share

If U.S. firms do not succeed in increasing their market share within the first eighteen months of the 1991 agreement, the SIA may seek government intervention. Executives of SIA member companies stressed at the signing of the 1991 agreement that they expected their market share to reach the 20% goal by 1992.¹⁹⁹ If this goal is not met, the SIA may lobby the U.S. government to levy sanctions again.²⁰⁰ However, sanctions may not have the same effect on Japan as they did in 1987.

195. For a definition of flash and its future sales potential, see *supra* notes 140-41 and accompanying text.

196. *Future Appears Bright for Flash Chips*, *supra* note 140, at B1.

197. Intel is known for its computer chips but has very little experience in consumer electronics. The alliance should give them a chance to produce chips for the segment. *Id.*

198. This alliance makes good business sense. Without the alliance, Intel has little hope of even holding onto a small share of the world market, and Sharp needs the chips. However, the alliance also underscores how, even when U.S. firms are technologically advanced, they still must rely on Japan for capital. See *id.* This fosters trade because it ultimately produces closer relationships between the two countries' industries, but it also gives the Japanese industry great power over its American counterpart.

199. "Japan's public recognition that the foreign market share of the Japanese semiconductor market will increase to a minimum of 20 percent by the end of 1992 is a historic milestone." *U.S. and Japan Sign Pact*, *supra* note 113, at 845 (statement of Wilfred Corrigan, chairman, SIA). "We're supposed to have 20% by year's end or dire things will happen." *U.S. Chip Makers Rail Against Japanese*, *supra* note 36, at B1 (statement of Mr. Corrigan).

This is a sensitive point. Development of good relationships without sales does the U.S. manufacturers little good. Whether U.S. manufacturers will put forth full effort to bring the required products to the Japanese market, however, remains to be seen.

200. In mid-March 1992, the SIA and its member firms complained loudly in the press about lack of improvement in market access and threatened to push for sanctions. See, e.g., *U.S. Chip Makers Rail Against Japanese*, *supra* note 36, at B1; Stephen K. Yoder, *Chip Association May Ask Sanctions Against Japanese*, WALL ST. J., Mar. 12, 1992, at B7. But see *SIA: Sanctions Only as Last Resort in Japan Market Access Dispute*, ELECTRONIC NEWS, Mar. 23, 1992, at 16 (discussing the SIA Board's decision to ask for sanctions if it appears that the Japanese will fail to satisfy their commitments).

In 1987 the United States had significantly more leverage than it has today. The United States had just forced Japan into a strong semiconductor agreement, sparing Japanese firms from astronomical antidumping duties. Furthermore, the United States had never before used sanctions against Japan in the post-war era,²⁰¹ increasing their significance and effectiveness. The sanctions remained in place over a four-year period, a relatively long period of time, and ended just before the current agreement went into effect. Nevertheless, the United States struggled to find a product mix which would not harm domestic manufacturers. In the end, the sanctions hurt many U.S. electronics companies which depended on Japanese parts to remain competitive because the Japanese companies restricted supplies of certain fundamental inputs.²⁰² While the effect of new sanctions on Japanese companies has clearly diminished, the effect of sanctions on U.S. companies remains much the same today. U.S. user industries still depend on Japanese suppliers and the United States just recently removed the sanctions which caused the Japanese suppliers to find alternate routes for their products. Renewed sanctions on electronics products, therefore, may have little effect on the Japanese but a large impact on the U.S. electronics industry.

Japanese manufacturers have moved several manufacturing and assembly operations to the United States, in part to avoid the 1987 sanctions.²⁰³ The number of American workers the Japanese employ gives Japanese manufacturers greater political leverage to combat sanctions. Even if the United States levied sanctions on imported products, Japanese manufacturers could evade some of the impact by tailoring the imported products to the definition of products not subject to the sanctions.²⁰⁴ In other words, the 1987 sanctions on electronics products did not greatly injure the Japanese companies subject to them and renewed sanctions would likely have little effect.

As an alternative to sanctions on electronic products, the

201. *Tariff Held to 16-bit CPUs, TV, Drives, T&M Escape*, *supra* note 48, at 8.

202. *See supra* notes 66-69 and accompanying text.

203. Other reasons for the move include diffusing protectionist fervor as well as typical business considerations. Minoru Inaba, *Japanese Firms Stress Gear's Local Content*, *ELECTRONIC NEWS*, Apr. 1, 1991, at 16. *See also supra* note 58.

204. This prediction envisions Japanese assembly operations in the United States using components made elsewhere and imported. Several Japanese manufacturers have moved some operations to the United States specifically to avoid the growing protectionist sentiment. *See supra* notes 57-58, 69 and accompanying text.

United States could impose sanctions on non-electronics products. This option also causes problems. Such measures do not focus the punishment on the Japanese user industries which impede penetration by the U.S. semiconductor manufacturers, and would provide little incentive for the Japanese electronics industry to buy more U.S.-made semiconductors. As protectionist pressures have escalated, the United States has threatened sanctions on many products. The same problems apply to sanctions on other products as to sanctions on electronics: United States reliance on the Japanese products will hurt the U.S. users or consumers more than the Japanese producers.

In the end, the SIA might have enough clout in Washington to persuade the U.S. government to impose sanctions. The semiconductor industry is central to the country's economic, technological, and military strength. The SIA presents a strong and unified position to Washington and maintains continuous contact with government officials and the press.²⁰⁵ The government gives some priority to the SIA and its demands.

In sum, the U.S. government faces severe constraints in imposing pressure on Japanese semiconductor manufacturers. Sanctions imposed for dumping violations may undercut the inroads made so far into the Japanese market. Sanctions imposed to spur market access may injure the U.S. electronics industry as they did in 1987.

Ultimately, U.S. semiconductor manufacturers will benefit most from the 1991 agreement by concentrating on making the agreement work. They must strive to penetrate remaining Japanese trade barriers, they must gain the attention of Japanese users by offering innovative and useful products, and they must consistently meet Japanese demands for quality, timeliness, and cooperation. With the prospect of sanctions weakened by deteriorating U.S. leverage, the U.S. industry should not focus on the potential failure of the 1991 agreement, but should work toward its success.

III. CONCLUSION

The 1991 United States-Japan Semiconductor Agreement marks a change in direction from the 1986 pact. It retreats from

205. The *Wall Street Journal* or the *New York Times* in any given week is likely to have at least one story about semiconductor issues. Other electronics industry associations appear to be much less focused and less unified than the SIA. The CSPP, while unified, has not maintained much of a public presence since the U.S. and Japan signed the 1991 agreement.

the heavy governmental involvement in pricing semiconductors and allows the market to take control. It builds on the efforts started in 1986 to encourage greater cooperation between the U.S. semiconductor industry and Japanese semiconductor producer and user industries.

The success or failure of the 1991 agreement depends in part upon whether dumping again becomes a problem and how the two countries react to it. Although growing interdependence of the worldwide industry may help to diffuse historic tensions, the 1991 agreement will ultimately be judged by the extent to which U.S. producers gain access to the Japanese market. U.S. sanctions, the impetus for change under the 1986 agreement, would have little effect given the adjustments made by the Japanese during the sanctions. The key remains whether U.S. companies can penetrate barriers despite market share goals and threats of sanctions. This requires that the U.S. companies put forth a sustained effort. Until the U.S. industry sees sales that demonstrate that it can freely access the Japanese market, tension will remain high and the relationship, stormy.