

The Japan-U.S. and Korea-U.S. Semiconductor Trade Dispute

Hyun Young LEE*

Abstract

The purpose of this study is to compare the trade disputes between Japan and the U.S. and Korea and the U.S. in the semiconductor industry. Although these disputes were similar, their outcomes were different. Japan, where the government and semiconductor industry have close ties, came to resolve the issue through a political agreement, while Korea settled its dispute in court. It is suggested that the differences in the relationship between government and industry led to a different methods of resolving the trade disputes in the semiconductor industry.

Keywords: *trade dispute, semiconductor industry, Japan, Korea, government*

1. Introduction

The international trading system underwent a revolution at the end of World War II. Trade barriers were progressively lowered, institutions such as the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) were set up to promote trade and investment, and the volume of international transactions increased at an unprecedented rate.

However, nontariff barriers, such as quotas and orderly marketing agreements, have become common in industries ranging from steel and textiles to telecommunications and semiconductors. Moreover many governments take action against dumping in order to protect their domestic industries.¹ From 1995 to 2002, the GATT recorded more than 2,000 antidumping cases.²

This paper will discuss the trade disputes between Japan and the U.S. and Korea and the U.S. in the semiconductor industry. It is meaningful to draw a comparison between them at a time of increasing trade disputes. Although these disputes were similar, their outcomes were different. Japan, where the government and semiconductor industry have close ties, came to resolve the issue through a political agreement, while Korea settled its dispute in court. The political solution that Japan chose resulted in the Japanese share of the North America DRAMs market to decline from 61

* Graduate student, Department of Value and Decision Science, Tokyo Institute of Technology
E-mail: ee0123@valdes.titech.ac.jp

¹ Complaining about the unfairness of foreigners has become the most popular way for an industry seeking protection from imports to make its case to its government.

² <http://www.wto.org>

percent to 52 percent during the period from 1987 to 1991. This drop increased the market share of East Asian suppliers (mainly Korea) from 7 percent to approximately 19 percent. As a result of the settlement with the U.S., the Korean semiconductor industry gained a considerable share of the semiconductor market. This paper will compare these two trade disputes and outcomes, by focusing on the effect of the relationship between government and industry.

This paper is organized as follows: The first part describes the development of the semiconductor industry in Japan and Korea, with a focus on the relationship between government and industry. The next part analyzes the different outcomes of trade disputes in the semiconductor industry between Japan and the U.S. and Korea and the U.S. Finally, I present some tentative conclusions and recommendations for further study.

2. The Semiconductor Industry in Japan and Korea

In this section, the development process of the semiconductor industry in Japan and Korea will be described with a focus on the relationship between the government and the industry, especially when trade dispute with the United States was intensified. In this paper, main focus is on the period from 1985 to 1987 of Japan and the U.S. trade dispute and on the period from 1992 to 1995 of Korea and the U.S. trade dispute in the semiconductor industry.

2.1. The Semiconductor Industry in Japan

Initially, the Japanese industry grew out of the application of transistors to consumer electronics products, later on followed by the substitution of semiconductors. From the birth of the industry in the early 1950s through the mid-1970s, the Japanese market was formally protected by a variety of legal measures.

The new law the 'Extraordinary Measures Law for Promotion of Electronics Industry' was a signal that the electronics industry was to be the object of a major national effort to catch up to the United States. Under the law, Ministry of International Trade and Industry (MITI), in consultation with the industry, was directed to select products and projects in research and development for special promotion, in order to set production, quantity, cost targets, and to ensure adequate funding of the programs both by providing subsidies and by directing bank lending activities. The law also authorized the creation of cartels in cases deemed useful by MITI; and established, under the control of MITI, an Electronics Industry Deliberation Council consisting of representatives of the industry, academia, and the press to develop plans and provide coordination of the semiconductor industry.

Moreover, the government consistently rejected all applications which were wholly owned foreign subsidiaries, joint ventures in which foreign firms that would hold majority ownership, and also restricted foreign purchases of equity in Japanese firms. In order to control imports high tariffs, restrictive quotas, and approval registration requirements were used.

Approval from the MITI was also required for all patent and technical assistance and licensing agreements. Through its control on the acquisition of foreign technology, MITI acted as a monopsonist buyer of such advanced technology and controlled technology diffusion among Japanese firms (Tyson, 1992, p.93).

For example, when IBM tried to get around the raised computer tariffs by MITI in 1960 by manufacturing in Japan, MITI refused to permit such production until IBM agreed to license its basic patents to fifteen Japanese companies. Texas Instruments, the world's largest semiconductor manufacturer, received the same treatment in the early 1960s when, applied for permission to begin production in Japan. In return for licensing its patents, Texas Instruments was then permitted to manufacture in Japan, but with the proviso that it would take no more than 10 percent of the Japanese semiconductor market.

The 1970s marked the second phase of the industry's development in Japan due to the fact of flexible trade barriers. In response to external pressure, the Japanese government gradually eliminated formal trade barriers by 1976 and formal foreign investment restrictions by 1978. At the same time, beginning in 1971, the government formally targeted a series of advanced technologies, including semiconductor technologies, and provided financial aid to stimulate cooperative development with in semiconductor industries (Tyson, 1992, p.94). Between the period from 1971 to 1977, over 60 different projects; electron-beam exposure, Large-Scale Integration (LSI) production equipment, discrete devices, basic materials research, and low-power, high-performance semiconductors etc. received substantial public support. (Borras et al., 1983, pp.65-83).

Of all the Japanese support programs in the 1970s, the most successful was the Very Large Scale Integration (VLSI) cooperative R&D program which directed additional \$200 million in funds over four years, as well as interest-free loans, to several major manufactures of semiconductors, such as Fujitsu, Hitachi, Mitsubishi, NEC, and Toshiba.³ These firms formed cooperative laboratories for the joint development of basic semiconductors technology such as manufacturing technology and circuitry design, although not product development.⁴

The success of the industry R&D programs was an indirect result of government intervention, especially, the VLSI cooperative R&D program (Okimoto, 1984, pp.231-309). The industry approved this intervention of government and came to respect the MITI and its policy (Ooyane, 2002, p.62).

In summary, this period in the Japanese semiconductor industry is marked by the close

³ All of the companies were active participants in the Electronics Industries Association of Japan (EIAJ), a legal trade association with a long history of detailed exchanges of confidential information on cost, production, and company sales. Four of the six firms—Matsushita, Hitachi, Toshiba, and Mitsubishi—had a long history of overt and clandestine methods for cartelizing the consumer electronics market in Japan and coordinating export efforts abroad. The two others—NEC and Fujitsu—were the beneficiaries of preferential NTT policies in the procurement of computers and telecommunication equipment. Finally, all functioned in a lax antitrust environment in which there was no credible sanction against cooperative or collusive behavior (Tyson, 1992, p.99).

⁴ In comparison with similar programs in the United States (albeit skewed toward defense-related and not basic research), formal Japanese support for its semiconductor industry was modest at best. But the perception that the programs constituted “unfair industry targeting” by MITI was fully exploited by U.S. semiconductor producers and generated sympathy for their pleas in Washington (Irwin, 1996, p.26).

relationship, and trust, between the government and the semiconductor industry (Okimoto, 1988, p.68; Yeom, 1989, p.139).

2.2. The Semiconductor Industry in Korea

Semiconductor manufacturing was first introduced to Korea in 1965 by the establishment of a joint venture to produce simple transistors by a small American company, Komy. This modest project, however, passed unnoticed, had little impact upon subsequent development. The real beginning was by the investment of Fairchild, a leading America semiconductor manufacturer, in 1986.

Fairchild strongly requested as conditions of its investment permission to retain exclusive ownership of its subsidiary, and access to the domestic market for products manufactured on Korean soil. According to the existing laws and regulation governing foreign investment in Korea at that period, neither condition was allowed. With the strong endorsement of Ministry of Commerce and Industry (MCI) and Economic Planning Board (EPB) decided to comply with Fairchild's request with the hope that the deal with this world-famous corporation, which has ensuing publicity in the international business community, would pave the way for more foreign investment. The approval of the Fairchild project was, anticipated, followed by a rush of similar proposals from many established American semiconductor manufacturers such as, Signetics and Motorola, joined together to set up their wholly-owned subsidiaries in Korea (Yoon, 1989, p.46). As can be seen in Table 2.1, in contrast with the semiconductor industry situation in Japan, Korea's policy encouraged foreign direct investment.

There was also participation of domestic capital in the semiconductor industry. Most visibly, an independent semiconductor assembly firm, Anam, was established in 1969 to start production the following year as a subcontractor for various foreign semiconductor firms. Samsung-Sanyo and Goldstar also started to assemble simple semiconductor devices in 1970, although they were minuscule in quantity and exclusively for the captive market (Yoon, 1989, p.64).

The period before 1980s, direct foreign investment continued to have overwhelming presence, and the manufacturing process conducted in Korea was limited to labor-intensive final assembly process (Yoon, 1989, p.66). In other words, the semiconductor industry in Korea emerged from the concurrence of interest between the Korean government's drive to increase exports and America and Japanese firms' striving for production cost reduction.

In sharp contrast to its internationally acclaimed expansion in 1970s, the performance of the Korean economy in the early 1980s was a far cry from a success story (Haggard and Moon, 1983, p.178).⁵ In 1980, the annual production of electronic goods shrunk for the first time by 13%, and all three top domestic electronics firms—Samsung, Goldstar, and Taihan—reported losses in the first half of the year (*The Economist*, September 1980, p.68).

⁵ The immediate cause was evidently the slack in both domestic demand and exports amid worldwide recession.

Table 2.1 Foreign Investment in Korea Semiconductor Firms, 1965-1973

Approval Date	Name of Firm	Foreign Investment Investor / Country	Foreign Ownership(%)	Location
1965.12	Komy	Komy/U.S.	25	Seoul
1966.4	Semikor	Fairchild/U.S.	100	Seoul
1966.7	Signetics	Signetics/U.S.	100	Seoul
1966.12	KoreaMicro	KMI/U.S.	49	Seoul
1967.3	Motorola	Motorola/U.S.	100	Seoul
1968.7	IMEC	Komy/U.S.	100	Seoul
1969.1	Minsong	Hahn-American/U.S.	35	Seoul
1969.7	Toshiba	Toshiba/Japan	70	Kumi
1969.9	Samsung-Sanyo	Sanyo+Sumitomo/Japan	40+70	Seoul
1970.3	Taehan Micro	AMI/U.S.	100	Seoul
1970.3	Electrovoice	EV/U.S.	50	Kumi
1970.7	Varadyne	Veradyne/U.S.	49	Kumi
1970.7	Korea IC	Tesco/U.S.	50	Kumi
1970.12	Toko	Toko/Japan	100	MAFEZ
1971.9	KTK	Toko/Japan	100	MAFEZ
1972.7	Rohm	Rohm/Japan	95	Seoul
1972.11	Tokyo Silicon	Sanyo/Japan	100	MAFEZ
1973.5	Sanken	Sanken/Japan	100	MAFEZ

Source: Yoon, 1989 ,p.48

Note: MAFEZ: Masan Free Export Zone

Paradoxically, the setback in the electronics industry turned out favorably for the development of the Korean semiconductor industry. That is, it further strengthened the recognition of the importance of strong indigenous semiconductor production for the continuing develops electronics industry. Domestic wafer fabrication private firms continued to expand and commit to securing a firm footing in the business.

In 1984, evident signs appeared that the industry (domestic private firms) was taking command of the development in the semiconductor industry. First, the government decided to dispose Korean Institute of Electronics Technology (KIET), including both research facilities and personnel, via competitive bidding. As a matter of fact, the decision was based on the assessment that KIET had become virtually obsolete, given the tremendous vitality of the industry (*Far Eastern Economic Review*, April 1983, pp56-58). Second, beginning in 1984, the government took a series of measures to restrict the expansion of Chaebol.⁶ Under these circumstances, the Korean

⁶ The succeeding military-controlled regime, which took power in May 1980, attempted to distance itself from the previous regime in an effort to consolidate its power base and political legitimacy. Among the first major economic reforms undertaken by the new regime was a sweeping attempt to reorganize heavy and chemical industries. To reorganize heavy and chemical industries, extensive curtailment of the investment naturally entailed a corresponding reduction in

government was not in a position to lend active support to the semiconductor firms, which were affiliated with the four largest Chaebol groups; Goldstar, Daewoo, Hyundai and Samsung (*The Wall Street Journal*, September, 1984). Furthermore, Korean semiconductor industries' dependence upon the government for access to financial resources rapidly decreased, with a phenomenal increase in the scale of investment starting in 1984. Foreign capital and internal funds emerged as the major sources of financing, replacing domestic bank credit, over which the state continued to exercise considerable control, even after the privatization of commercial banks (Yoon, 1989, p.137).

In summary, before the 1980s, the government played a commanding role in creating an exclusively export-oriented semiconductor industry in Korea by dint of the off-shore assembly activities of, first, American firms, and, then, Japanese ones. During the 1980s, however, the four largest Chaebol groups, with their cross-sectoral, group-side resources, took the initiative to build the semiconductor manufacturing as a highly technology-intensive sector.

3. The Japan-U.S. and Korea-U.S. Semiconductor Trade Dispute

3.1. The Japan-U.S Semiconductor Trade Dispute

On June 14, 1985, the Semiconductor Industry Association (SIA) filed a petition with the Office of the U.S. Special Trade Representative (USTR) under Section 301 of the Trade Act of 1974. The petition focused on four aspects of Japan's semiconductor policy. First, the petition provided circumstantial evidence of market barriers in Japan. Second, the SIA argued that structural barriers in the Japanese market, such as "buy Japan" attitudes and reciprocal trading or tie-in relationships among firms, were an impediment to the U.S. entry. Third, the Japanese government condoned anticompetitive practices and undertook countermeasures such as administrative guidance and VSLI subsidies to undermine the liberalization in 1975. Finally, by reducing investment risks and adding to capacity, these government policies promoted the dumping of semiconductors by Japan firms (Irwin, 1996, p.41).

Trade action against Japan in semiconductors was not limited to the Section 301 case. By the end of 1985, three suits had been filed charging Japanese firms for selling of semiconductors in the United States below the actual cost of production. In late June, soon after the Section 301 petition was filed, Micron Technology charged Japanese semiconductor firms with dumping 64K DRAMs (Dynamic Random Access Memory-chips). Then, in late September, Intel, AMD, and National Semiconductor claimed that Japanese firms were dumping EPROMs (Erasable Programmable Read Only Memorys). Finally, the Department of Commerce "Self-initiated" a case in early December and charged Japanese firms with dumping 256K and upper size DRAMs (Yoffie, 1990, p.462).

The deadline imposed by Section 301 statute for the negotiation was on July 1, 1986, although this was later extended to July 31, which was also when the final antidumping

financial support to large Chaebol groups involved. It also could cater to the mounting popular criticism against Chaebol and serve as evidence of the new regime's intent to redress the previous regime's unduly favorable treatment of Chaebol.

determinations were due from the Commerce Department (Irwin, 1996, p.46).

In March 1986, the Commerce Department announced preliminary dumping margins on EPROMs, 256K, and higher DRAMs. Reported with the Commerce Department's usual precision, the margins were astounding, ranging from 21.7 to 188.0 percent for EPROMs and from 19.8 to 108.72 percent (for a weighted average of 39.68 percent) for 256K and 1M DRAMs. At the end of April, the Commerce Department issued its final dumping determination in the 64K DRAM case against four major Japanese firms, with a weighted average 20.75 percent dumping margin (ranging from 11.87 to 35.54 percent). The final Commerce Department determinations on EPROMs were due on July 30, and on 256K and higher DRAMs on August 1, with the final ITC rulings in these cases slated for September.

Japan had to settle the case to avoid the automatic and nonnegotiable imposition of these duties, as well as possible Section 301 sanctions. In the end, Japan largely capitulated and acceded to most of the U.S. negotiator's demands.

In August 1986, the United States and Japan announced that the two countries had reached an accord on semiconductor trade. The Japanese agreed to increase their purchase of foreign-made chips to slightly over 20% of the Japanese market over a five-year period, effectively doubling U.S. semiconductor sales in Japan. Japan intended to establish an organization that would provide sales assistance for foreign semiconductor manufactures. The Japanese also agreed to have MITI monitor export prices on a wide range of semiconductor products—including EPROMs, 256K DRAMs, and 8-bit and 16-bit microprocessors—to prevent Japanese chipmakers from selling at less than the fair market value in the United States or in other third countries. The United States reserved the right to add or drop products from the 1986 Semiconductor Agreement in the future (Yoffie, 1990, p.463).

3.2. The Korea-U.S. Semiconductor Trade Dispute

In April 1992, Micro Technology Inc., a leading U.S. chipmaker, filed an antidumping petition with U.S. agencies, alleging that the Korean makers were selling memory chips below production cost. The U.S. Commerce Department, in October 1992, slapped an antidumping ruling on three Korean exports of DRAMs, saying that the makers have sold their products at prices between 5.99 percent and 87.4 percent lower than fair value in the U.S. market. The government, deeply concerned about the adverse effects the U.S. preliminary dumping ruling would have on Korea's semiconductor exports, conducted negotiations with U.S. officials to minimize the damages (*The Korea Herald*, October 23, 1992).

The Korean government, however, unsuccessfully tried to secure an agreement to suspend U.S. dumping probe into Korean-made DRAMs. Korean chip makers have since expressed deep worry over being driven out of the U.S. economic ties under president Kim Young-sam and president Bill Clinton amid fears of mounting U.S. protectionism (*The Korea Herald*, March 18, 1993).

The U.S. Commerce Department, beyond expectation, slapped lower-tax-expected dumping margins on Korean-made DRAMs, in final antidumping ruling. The positive antidumping ruling

determined a dumping margin of 0.74 percent for Samsung Electronics Co. and 4.97 percent for Goldstar Electronics Co., a sharp drop from 87.4 percent and 52.41 percent respectively as imposed in a preliminary ruling.⁷ The final dumping margins had a minimal effect on exports of Korean-made DRAMs to the United States and other markets.

Afterwards, Korean semiconductor chips faced considerably lower anti-dumping duties in the lucrative American market as a result of the ruling by the Court for International Trade (CIT) in August 1995. The CIT ruled that the three leading Korean makers of semiconductors will all receive the benefit of lower anti-dumping duties which they were denied under the decision made in 1993, which reportedly involved a miscalculation.⁸ The new duties, which the Department of Commerce was directed to implement, were 0.22 percent for Samsung Electronics, 5.15 percent for Hyundai Electronics Industries and 4.28 percent for LG Semicon.⁹

3.3. Comparing Cases

Although Japan and Korea had a similar trade dispute with the U.S. in the semiconductor industry, the outcome of these two disputes were different. Why do these two trade disputes differ? In this section, trade disputes will be closely compared, specifically with respect to the relationship between government and industry.

In Japan and Korea, the relationship between the government and the industry differs depending on how the semiconductor industry was developed. The semiconductor industry of Japan which has a close relationship with the MITI, the government section that controls trade and industry. On the other hand, in Korea, the government's passive support led to the development of Chaebols within the semiconductor industry, therefore the dependence on the government is weak.

Because of the different type of relationship between government and industry in Japan and Korea, the form of the petition by the U.S. semiconductor industry against Japan and Korea differed. While the U.S. industry filed Section 301 and three dumping suits against Japan, the U.S. industry charged Korean firms only with dumping suit. Section 301 calls for the U.S. president to make a formal finding based on evidence that a "foreign country" is engaging in unfair acts, and then to negotiate an end to the unfair trade acts or to retaliate against the concerning company until the unfair trade act ceases. Section 301 calls for the U.S. government to take action against foreign government whereas a dumping petition only takes action against the industry which actually committed the unfair act. If a company exports a product at a price lower than the domestic market

⁷ Lee Chun-wook, a spokesman for Samsung Electronics Co. said the U.S. Commerce Department took into account much of the Korean chip maker's views in calculating the cost of production to determine final dumping rates (*The Korea Herald*, March 18, 1993).

⁸ A Samsung Electronics official said that the U.S. department totally dismissed data presented by his company and Goldstar Electro as "insincerely collected". He said that the methods of calculating dumping margins of calculating dumping margins are widely different between the two countries (*The Korea Herald*, October 23, 1992).

⁹ The decision holds special meaning for Samsung since a tariff of less than 0.5 percent for a period of three years, with the lack of any further intention to conduct anti-dumping deliberations, directly leads to the abolition of the tariff.

price, it is known as “dumping” that product, Article 6 of GATT allows countries to take action against those countries that are dumping.

The U.S. considered that Japan’s industrial structure and competitive dynamics made dumping inevitable (Prestowitz, 1988, p.57). In other words, The original Japanese intervention in the market had given rise to market distortion that could be corrected only by further intervention through a certain kind of comprehensive agreement (Prestowitz, 1988, p.62). Moreover, the U.S. believed that if MITI could give “guidance” to its companies to restrain exports, as it did in the case of automobiles, the possibility of guidance to increase imports of chips or to restrain the Japanese investment binge that was leading to vast overcapacity and chronic dumping (Prestowitz, 1988, p.53). Therefore, the industry did not ask for retaliation or protection through Section 301 but rather asked President Ronald Reagan to negotiate for a commitment from Japan to encourage its companies to buy significantly more U.S. chips and to observe the U.S. and international dumping laws (Prestowitz, 1988, p.56).

Previously, it was thought that Korea and Japan had similar relationships between their governments and industries. However, only the Korean semiconductor industry was investigated for unfair trade practices not the Korean government. Deputy USTR Representative S. Lim Williams said,

“There are certainly indications that the Korean government would like to go the way of the Japanese government. That is, with a government-business partnership after the Japanese pattern. It is not clear that will work in Korea (*Business Korea*, November, 1989, p.48)”.

Therefore, the Korean semiconductor industry was charged with dumping and the Korean government request for suspension of the dumping lawsuit was denied.¹⁰

Finally, focusing on the effects of the semiconductor trade dispute in Japan and Korea. While USTR did quite well in securing what the SIA wanted, the Electronic Industries Association of Japan (EIAJ) felt abandoned by MITI, which leads to its later reluctance to adhere to the MITI’s guidelines that enforce the agreement (Irwin, 1996, p.46). According to one Japanese writer, during the negotiations MITI had neither consulted with nor reported fully to the industry on the anti-dumping aspects of the negotiation (Namiki, 1989, pp.167-168). Therefore, although some of the largest firms cooperated with MITI, some Japanese producers did not take the agreement seriously or were overly zealous in their pursuit of other markets, and violated the pricing agreement in third countries. A few of the companies that violated the agreement were those that MITI had not fully persuaded at the time of the agreement, or with whom MITI had not completely shared information with during the negotiations (Krauss, 1993, p.287). As a result, the Regan administration determined that Japan had violated a 1986 bilateral agreement on international trade

¹⁰ Even though the form of the petition by the U.S. against Japan and Korea differed, there were great incentives for both Japan and Korea to settle the dispute with petitioners directly, such as VER (Voluntary Export Restraints), rather than to see the antidumping process through in the hopes of vindication (Irwin, 1996, p.45).

in semiconductors. On April 17, 1987, President Regan imposed 100 percent tariff on \$300 million worth of laptop computers, desktop computers, televisions, and power tools imported from Japan.¹¹ Moreover, MITI tried to boost the price of DRAMs by issuing recommendations, in February 1987, to reduce the output by 10 percent the production cuts were a natural outcome of the agreement. The major DRAMs users of the U.S., such as IBM, switched to Korean-made products due to the shortage of Japanese production (Irwin, 1996, p.53). From 1987 to 1991, the Japanese share of the North American DRAMs market declined from 61 percent to 52 percent, while the share of East Asian suppliers, mainly Korean, increased from 7 to approximately 19 percent (Tyson, 1992, p.126).

In Korea, although the suspension agreement was refused and anti-dumping duties was ruled by ITC in 1995, there was minimal effect on the export of Korean-made DRAMs to the United States and other markets. By 1998, Samsung, the largest Korean semiconductor producer, became the largest producer of all memory chips in the world.

4. Conclusion

The outcome of Japan and the U.S. and Korea and the U.S. trade dispute in the semiconductor industry differed due to the difference in the involvement of the government. In Japan, where the semiconductor industry developed from government initiatives, resolved the trade dispute with the U.S. with political action. Whereas, in Korea, with its passive government support of the semiconductor industry, settled the dispute in court.

Unlike the Korean semiconductor industry, which was developed by the industry initiatives, the fiber industry was developed by government initiatives in both Japan and Korea. In this sector, Multi-fiber Arrangement (MFA) was created as a result of trade disputes with the United States.

What remains to be examined is the comparison between the semiconductor trade dispute and the trade dispute of the fiber industry between Japan and the U.S. and Korea and the United States.

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¹¹ According to administration calculations, \$135million of the retaliation was for the injury suffered by domestic firms from continued third-country dumping, and \$165 million for lack of progress in increasing the foreign market share (Irwin, 1996, p.54).

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