

Report for Congress

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The Semiconductor Industry and South Korea's Hynix Corporation

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Summary

In 2001, a trade dispute developed between the United States and South Korea over allegations that the Seoul government was propping up Hynix Semiconductor Inc., presently the world's third-largest producer of dynamic random access memory (DRAM) semiconductor chips. Since late 2000, the entire semiconductor industry has been mired in its worst slump ever, especially for manufacturers of DRAMs. Where once there were many DRAM producers, now only four companies, two of them from Korea, account for over 80% of worldwide sales. Global DRAM sales had reached nearly \$30 billion in 2000, but have declined by almost two-thirds since then. The U.S. industry has been winnowed from over ten DRAM producers to one: Micron Technology Inc., the world's second-largest producer.

Over the past two years, Micron, Members of Congress, and the Bush Administration protested when Hynix's leading creditors – most of which are owned by the Korean government – orchestrated a series of rescue packages that have kept Hynix in business by enabling it to restructure its debt of 8.6 trillion won (more than \$7 billion). Critics of the support packages have argued that they amounted to government-sponsored bailouts, and that by keeping Hynix in business they were contributing to the oversupply of DRAM chips in world markets. In early December 2001, the impetus for the dispute was apparently reduced by the announcement that Micron and Hynix had begun negotiating a possible strategic alliance. In April 2002, the two sides announced that Micron would acquire Hynix's DRAM business. Hynix's board, however, vetoed the deal.

On November 1, 2002, Micron filed a countervailing duty (CVD) case under U.S. law against both Hynix and Samsung, the other Korean DRAM producer. The U.S. International Trade Commission on December 13, 2002, made a preliminary finding of material injury. The Commerce Department investigation in April 2003 made a preliminary determination that Hynix had been subsidized and established a CVD rate of 57% on Hynix imported DRAMs from Korea. Final action on this case is scheduled for completion in June-August 2003. The European Commission also pursued a trade complaint against the Korean companies under European Union law, and in April announced a provisional 33% CVD against Hynix DRAM imports.

In the 108th Congress, legislation has been proposed on the one hand to require or encourage the Bush Administration to establish a high level of CVDs against Hynix DRAM imports (S. 492, S.Con.Res. 11 and H.R. 1494), or, on the other, to caution the Administration on the need to prevent the semiconductor case from raising tensions with Korea in a difficult period and to endanger the jobs of Americans who work for U.S. manufacturing plants of Korean semiconductor companies (S.Con.Res. 29 and H.Con.Res. 124).

This report examines the Hynix controversy. It assesses the status of the DRAM industry and the impact of the issue on U.S.-Korea relations. The report will be updated, especially as legal actions against Hynix proceed.

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The Semiconductor Industry and South Korea's Hynix Corporation

Introduction

Development of the Dispute. In 2001, a trade dispute developed between the United States and South Korea over financial assistance provided to Hynix Semiconductor, presently the world's third-largest producer of dynamic random access memory (DRAM) semiconductor chips. As Hynix was forced to the brink of bankruptcy by plummeting global chip prices, its creditors gave the company a string of aid packages that restructured the company's 8.6 trillion won in debt at that time (more than \$U.S. 7.1 billion).¹ Hynix's leading creditor banks have been government-owned since Korea's 1997 financial crisis, when Seoul used public funds to rescue a number of failing banks. Since 2000, Hynix has posted losses of over 9.5 trillion won (nearly \$8 billion). Hynix's net losses in 2002 were over 1.9 trillion won (\$1.7 billion). In the first quarter of 2003, Hynix posted a net loss of one trillion won (\$833 million).

For most of 2001, Micron Technology, the Idaho-based company that is the world's second largest producer of DRAMs, led a campaign against the support packages, arguing that they amounted to government-sponsored bailouts, which kept Hynix in business and allowed it to export at prices below the cost of production. Micron, which has been suffering from large losses, threatened to submit countervailing duty and anti-dumping petitions to the Bush Administration. Prodded by Micron and some Members of Congress, the Bush Administration raised the matter in bilateral and multilateral meetings with South Korea. U.S. officials publically criticized the rescue packages.² The Bush Administration also considered requesting that the World Trade Organization (WTO) establish a dispute settlement panel to investigate whether the support packages violate WTO rules against government subsidies.

In December 2001, however, Micron and Hynix announced that they were negotiating a possible merger. By April 2002, the companies had reached a tentative deal, whereby Micron would acquire the Hynix business, supported by the largest Hynix creditors and the Korean government. But in May the Hynix board vetoed the deal, arguing that the sale price was too low and that a rise in chip prices at that time meant that the company could survive independently. Hynix's creditors have managed the company since June 2002, when they acquired a majority ownership in

¹ Throughout this report, an exchange rate of \$1 = 1,200 won is used to approximate the dollar values of Korean figures.

² *The Asian Wall Street Journal*, November 1, 2001.

the aftermath of the board's decision to reject the company's sale to Micron. Micron states that it no longer has any interest in acquiring Hynix.

Legal Cases Brought Against Hynix. On November 1, 2002, several months after its bid to acquire Hynix had been rejected, Micron initiated a countervailing duty (CVD) case against both the Korean DRAM producers, Hynix and Samsung. Micron alleged that Korean government subsidization enabled the two competitors to cut prices and take market share in the United States from both Micron and the fourth major producer, Infineon Technologies. On December 13, 2002, the U.S. International Trade Commission (ITC), acting under Title VII of the Tariff Act of 1930, made a preliminary finding of material injury to U.S. producer interests and the Commerce Department made a preliminary subsidy determination on March 31, 2003. The preliminary finding against Hynix was for a subsidy of 57%, while for Samsung the finding was *de minimis* (less than 1%). Unless the Korean and U.S. governments can negotiate an agreement to suspend the preliminary CVD, it will be applied to Hynix imports, until the Commerce Department completes its investigation in June 2003 and the ITC makes a final injury determination by early August 2003. In May 2003, talks between Seoul and Washington over a suspension agreement broke down.

In addition to the Micron petition, the DRAM companies are involved in other legal actions. In June 2002 Infineon, the German-based fourth-largest producer of DRAMs, filed a petition with the European Commission alleging that Hynix and Samsung Electronics had received illegal subsidies. In April 2003, the Commission announced a preliminary subsidy finding against Hynix, and established a provisional countervailing duty of 33% against Hynix imports from Korea (see below). Also in June 2002 reports emerged that the U.S. Justice Department was pursuing an antitrust investigation against all four leading DRAM producers -- Micron, Samsung, Hynix and Infineon -- as well as some Taiwanese producers. According to one source, this step resulted from resentment by computer makers at an effort of DRAM manufacturers to raise prices earlier in 2002 despite the continuing weak PC market.³ That investigation is continuing.

The December 2002 Rescue Package. Shortly after the ITC's preliminary finding, in December 2002, Hynix's creditors finalized another long-anticipated support package that restructured nearly all of the company's 5.9 trillion won in debt and provided an additional \$188 million in loans to a Chinese company that was searching for financing to help purchase a Hynix subsidiary. The creditors, who emerged from the deal with an 86% stake in the company, have announced their intention to sell off additional assets and seek a buyer for Hynix. This strategy is believed to hinge upon a future rise in chip prices, which would be necessary not only to boost Hynix's value, but also to provide its competitors with the capital to complete a purchase. Micron and Infineon officials have charged that the latest rescue package is another instance of Seoul's subsidization of Hynix.

³ *Wall Street Journal*, June 20, 2002; Dow Jones wire service story, "Micron Confirms Justice Department Investigating DRAM Makers," June 19, 2002.

Since the dispute first broke out, Korean government and Hynix officials have countered such charges by arguing that the decisions on whether to aid Hynix have been entirely in the hands of the company's creditors. They have pointed out that some foreign banking interests have supported the rescue packages, while some government-owned banks have decided to write off their loans to Hynix rather than increase their exposure to the struggling company. Hynix and Samsung's representatives both testified at the preliminary ITC hearing that low prices were a general condition of the semiconductor market, that Micron had been telling investors that the company was in reasonable shape to weather the present industry downturn and, in Samsung's case, that there was no evidence of subsidies by the Korean government being paid or needed. The new Korean administration of President Roh Moo-hyun reappointed the same Minister of Trade, who reiterated these views. He maintained that Korea was continuing fundamental reforms of the banking sector, that government ownership of some banks was a temporary measure and that the government did not become involved in specific lending decisions.⁴

The economic stakes in this dispute are high. South Korea is the seventh largest U.S. trade partner, and semiconductors are the number one U.S. import from and export to Korea. Imports of South Korean DRAMs alone in 2000, before a crash in world prices, were nearly \$2.2 billion, or over 5% of Korea's exports to the United States.⁵ In contrast, Korea's exports of iron and steel to the United States totaled just over \$1.5 billion in 2000.⁶ A successful countervailing duty case would compel Hynix to pay higher duties on its DRAM exports to the United States, or possibly drive it out of the competitive U.S. market altogether. Any sudden, significant deterioration in Hynix's performance probably would have a major impact on South Korea's economy. Hynix accounts for an estimated 4% of South Korea's exports and over 150,000 Koreans are employed by Hynix and its network of suppliers. Additionally, Hynix shares are the most widely held stock in South Korea and some of Korea's largest banks are heavily exposed to Hynix.

Furthermore, the Hynix packages call into question the Korean government's broader commitment to its economic reform program, which it launched in the aftermath of the virtual collapse of the country's finances in 1997. At the time, as part of a \$58 billion International Monetary Fund (IMF) rescue package spearheaded by the United States, Korea pledged to liberalize its corporate and financial sectors, to make them more responsive to market pressures, and to end the past practice of rescuing troubled conglomerates that were considered "too big to fail."

Congressional Interest in the Hynix Support Packages. As with most high-profile trade disputes with South Korea, Congress has closely monitored the Hynix situation. Several Members have protested the Korean government's alleged

⁴ Letter from Korean Minister of Trade Hwang Doo-yun to U.S. Trade Representative Robert Zoellick, March 17, 2003.

⁵ Semiconductors of all types accounted for nearly 20% of South Korea's total shipments to the United States in 2000.

⁶ Compiled from U.S. International Trade Commission, [<http://dataweb.usitc.gov>].

involvement in the support packages and urged the Bush Administration to act.⁷ In September 2001 an amendment sponsored by Senator Larry Craig, which protested the “Republic of Korea’s improper bailout of Hynix,” was incorporated into the Senate’s version of the FY 2002 appropriations bill for the Commerce, Justice, and State Departments, but was stripped from the bill in conference.⁸ As the Micron case moved forward in the early months of the 108th Congress, Senator Craig and other Members in both Houses of Congress introduced legislation critical of alleged Hynix “bailouts,” and urging or requiring corrective executive action (S. 492, S.Con.Res. 11 and H.R. 1494). On the other hand, resolutions were also introduced regarding the importance of U.S.-Korean relations and indicating that the dispute over semiconductors should not increase tensions or lead to U.S. job losses (S.Con.Res. 29 and H.Con.Res. 124). These proposals are discussed later in the report.

The story of Hynix’s support packages is a useful case study of South Korea’s economic reforms, a process U.S. trade officials and Members of Congress have monitored closely. Indeed, by virtue of Hynix’s size and political connections, the company’s fate is being closely watched as a litmus test of the government’s commitment to reforming Korea’s *chaebol* (conglomerates). Additionally, the Hynix case highlights the troubling issue of state ownership of Korea’s banking industry. Even before the dispute emerged, American officials had been asking their Korean counterparts to set a timetable for privatizing the banks that had been nationalized in the wake of the 1997 financial crisis. In the past the U.S. and South Korea have argued over alleged Korean government subsidies – most prominently in the steel industry. These bilateral disputes may resurface in the future and form a continued backdrop to strategic relations made more tense by the dispute over North Korea’s nuclear weapons and missile programs.

Global and Domestic Conditions in the Semiconductor Industry⁹

The immediate cause of the Hynix dispute was the collapse in DRAM semiconductor prices and demand that followed the “dot.com” crash and the electronics industry downturn in 2000. The semiconductor market is both global and cyclical. Semiconductors and other microelectronic components are the physical building blocks of industries – including hardware, software and applications – that are increasingly based on common international standards, worldwide interconnection, and interoperability. Demand in the semiconductor industry is, of course, linked to the general business cycle. But the semiconductor industry also has its own internal product development cycle, first described by the former CEO and co-founder of Intel, Gordon Moore. “Moore’s Law” states that the transistor capacity of semiconductor chips will double every 18 months.

⁷ See, for instance, July 11, 2001 letter to Ambassador Robert B. Zoellick from four U.S. Senators, reprinted in *Inside U.S. Trade*, July 13, 2001.

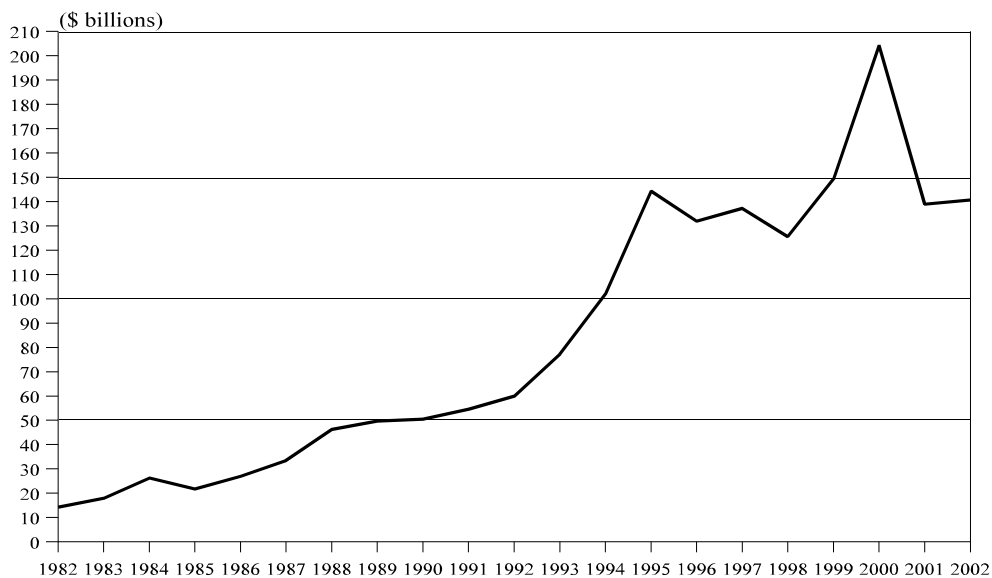
⁸ The amendment appeared as Section 626 of the Senate-passed bill.

⁹ Prepared by Stephen Cooney.

This means that the design, engineering and manufacturing of ever more powerful and compact integrated circuits (ICs) have required higher and higher investments by the microelectronics industry. Today's inexpensive pocket calculators, Palm Pilots and wireless phones contain more computing power than room-sized Pentagon computers of a generation ago, so manufacturing the semiconductor chips that are at the heart of these products has become ever more complex and expensive. A commercial-scale facility to fabricate the wafers from which chips are cut now cost upwards of a billion dollars to build.¹⁰ Moore's Law means that suppliers cannot simply shut production down, sit out a downturn and sell from inventory, as may be possible in some other industries. Inventory and technology become obsolete in a hurry. Similarly, if producers miss the wave of the next upturn, they may never catch the competition. Consequently, producers must expand output rapidly to meet increases in demand, while simultaneously investing large sums to shift rapidly to higher-speed products. Producers therefore are subject to serious financial problems when demand suddenly declines. This in part explains the semiconductor industry's "boom and bust" cycles.

Figure 1 shows that the dollar value of global sales of all semiconductors has increased by more than ten times over the past 20 years. But the industry is presently in its third sales slump during this period, and one that comes shortly after the prolonged down market of 1996-98, when the cumulative annual value of sales fell by 13% over a three-year period. Recovery was sharp in 1999-2000 as sales rebounded by 63% over two years to \$204 billion. But then sales fell again in 2001 by one-third, or \$66 billion. Sales rebounded by less than 2% in 2002, to just over \$140 billion – and that gain was solely because of a strong increase (almost 30%) limited to one region, Asia and the Pacific outside Japan.

Figure 1: World Semiconductor Sales



Source: Semiconductor Industry Association (World Semiconductor Trade Statistics)

¹⁰ Latest estimates for developing a new "fab" capable of handling the 12-inch chip wafers now becoming standard (Infineon already has one in production in Dresden, Germany) are \$3 billion. *Forbes*, "Hardships Are Driving Chip Rivals Together," Aug. 2, 2002.

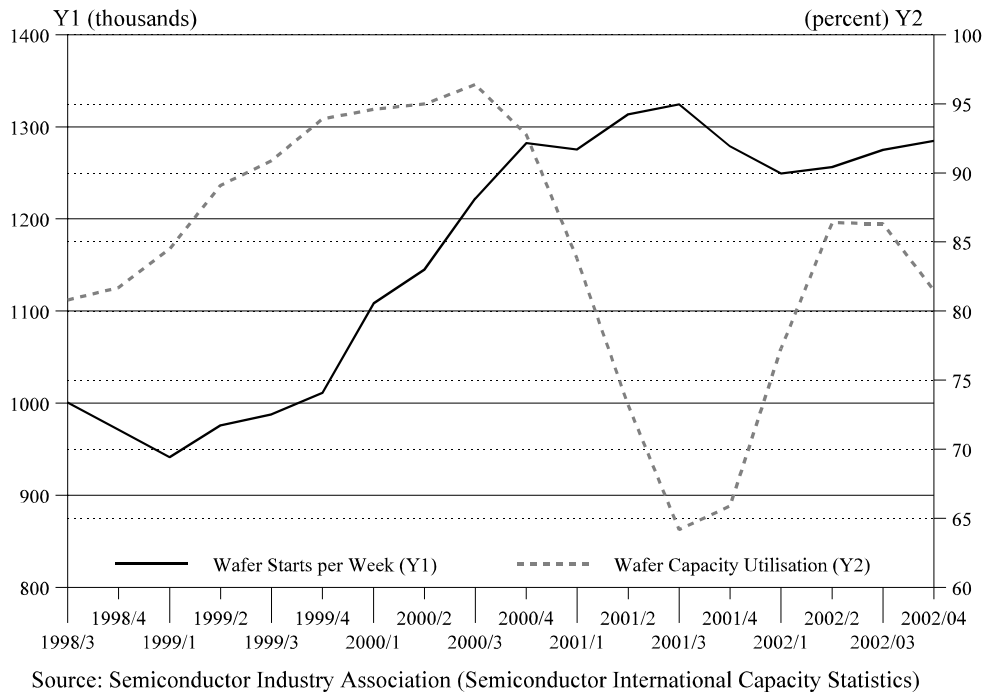
Figure 2: World Semiconductor Capacity Utilization

Figure 2 shows how the industry has been whipsawed over capacity. Companies were trying to gear up for the high rate of demand at the end of the 1990s, demand driven by strong U.S. growth, especially in the technology sector. Wafer manufacturing capacity surged more than 30% from late 1998 to early 2001 (capacity is shown on the left scale). By the middle of 2001, the industry had achieved a capacity of more than 1.3 million wafer starts per week. As it added capacity in 2000, the semiconductor industry was running flat out. The factory utilization rate (right scale) reached nearly 100% in mid-2000. But then, the bottom fell out of demand. Capacity utilization dropped to about 83% in the first quarter of 2001 and less than 73% by the second quarter, in keeping with plummeting global demand for electronics products following the “dot.com” crash. By the latter half of 2001, capacity utilization fell below 65%. It recovered somewhat in 2002, as small amounts of capacity went offline, but by the end of the year was still only just over 80%.

The Decline of Japanese Semiconductor Companies. The overall U.S. semiconductor market not only grew phenomenally in the 1990s, but sources of supply have also shifted dramatically. In the 1980s, U.S. companies were hard-pressed by Japanese competitors, whose market share in the Americas (according to SIA’s world industry statistics) rose from 10% in 1982 to more than a quarter by 1989. Starting with their commanding (86%) share of their home market, Japanese suppliers led the American companies by 46% to 39% in global market share.

After falling to near 60% of the home market in 1995, U.S. domestic companies share of this market stabilized at above 70% since then, and their annual dollar value

grew rapidly to \$45 billion in sales by 2000. Japanese companies' market share declined globally in the late 1990s. They were replaced in part by product from third countries, particularly Korea. By 2000, Japanese company sales were less than 12% of the Americas market (\$7.4 billion), while third-country company sales supplied 18% of the market (\$11.2 billion). U.S. companies in 2001 had more than 50% of the market share in every major regional market except Japan; even there, the home companies' share was down to about 70%. While Japan's global market share fell from 46% in 1991 to just 28% ten years later, third countries' market share was now regularly greater than 20%. Korean and Taiwanese producers have now closed the technological gap with Japan, not only in chips, but also in many downstream electronic products.¹¹

The Consolidation of the DRAM Industry. The strong recovery of the U.S.-based semiconductor business in the 1990s did not apply to DRAM chips, which are the long-time backbone of the semiconductor industry included in most electronic products. DRAM chips are characterized by an inability to fix or hold memory when electrically discharged, and have been substituted in many applications by more flexible, sophisticated and higher-value memory chips. However, in 2000 the global value of DRAM sales was still nearly \$30 billion, or more than 14% of all chips sold. But in 2001, as shown in **Figure 3**, sales of DRAMs fell by 60%.

While in the mid-1980s there were about a dozen U.S.-based DRAM producers, only one U.S.-based producer remains in business today – Micron Technology Inc. of Boise, Idaho. Ironically, the landmark 1986 U.S.-Japan agreement gave a significant boost to the Korean competition for both U.S. and Japanese-based DRAM manufacturers. The agreement created a process for monitoring penetration of non-Japanese-company source chips in the Japanese home market. While U.S. producers gained market share as a result of the agreement, Korea also became a big supplier.

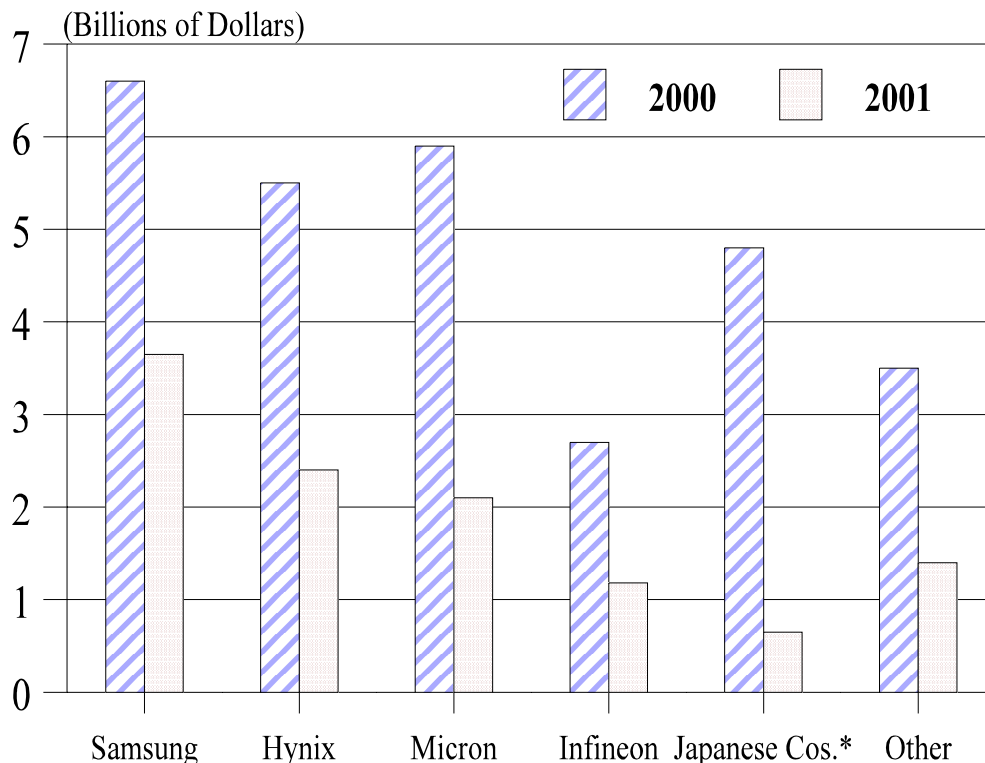
Fluctuations in semiconductor demand in the late 1990s hastened the exit of most well-known producers from the DRAM market. Four Japanese recessions in ten years and the East Asian economic crises of 1997-98 strongly affected the financial viability of many Asian firms, including the predecessors of Hynix. Strong U.S. growth created a surge in demand and a rise in prices among remaining DRAM manufacturers, as well as the rapid increase in capacity discussed above. When demand turned down in 2000, prices collapsed from \$12-13 per DRAM chip to as low as \$0.90-1.00.¹² Virtually all DRAM manufacturers were producing chips at a substantial loss. Yet, because of the competitive pressures described at the beginning of this section, individual producers felt they could not raise prices or temporarily halt production. Each player hoped that another company would be forced to exit the industry first, thereby removing capacity from the industry and pushing up prices. The most significant move in the last two years is the virtual departure of Japanese companies from the DRAM business.

¹¹ *Wall Street Journal*, June 20, 2002.

¹² *Nihon Keizai* newspaper, quoted in *Japan Digest* (October 24, 2001). Prices rose again in early 2002 to \$3-4, leading to speculation about price collusion among major suppliers and a Justice Department investigation.

By 2001, just four major companies dominated the worldwide DRAM market. Samsung of Korea was the world's leading supplier in 2000, with about 23% of global sales; that share increased to about a third of a much weaker market in 2001. Micron and Hynix, a new company created in 1999 by joining the semiconductor operations of South Korea's Hyundai and LG groups, each had about 20% of the market in 2000 and 2001. Infineon Technologies of Germany, a spinoff from the Siemens electrical group, is the only remaining significant European-based DRAM producer. Infineon accounted for only about 10% of sales, but now claims to be the technologically low-cost producer and has been aggressively seeking alliances with newer Taiwanese companies, having earlier sought its own deal with Hynix.¹³ The three Japanese DRAM companies together held a 16% market share in 2000, but have now almost disappeared. Hitachi and NEC have combined to create a new semiconductor spinoff, Elpida (to which the DRAM operations of Mitsubishi have recently been added), while Toshiba is no longer in DRAMs.

Figure 3: Major World DRAM Producers



* Japanese Companies = 2000: Hitachi, NEC, and Toshiba; 2001: Elpida (merger of NEC and Hitachi chip production facilities), and Toshiba (exited the market).

Source: Electronic Buyers News. "Market Focus: Top Semiconductors Suppliers," June 10, 2002.

¹³ Infineon press releases, "Infineon to Cooperate with Taiwanese Winbond and Mosel Vitelic to Secure Higher Memory Chip Capacity" (Mar. 11, 2002) and "Infineon and Nanya to Cooperate on DRAM Memory Chips by Collaborating on Technology Development and Founding a Production Joint Venture" (May 2, 2002); *Financial Times* (Dec. 10 and 11, 2002).

Since 1998, most companies producing DRAMs in the United States have exited the business or are leaving it:

- Hitachi sold its DRAM plant in Texas to Texas Instruments, which subsequently closed the plant and left the DRAM business.
- NEC closed its California DRAM plant.
- IBM has left the DRAM manufacturing business and sold its share in a joint venture manufacturing plant in Virginia to Toshiba. Toshiba subsequently has announced its own exit from the DRAM manufacturing business and has sold the Virginia plant to Micron.
- Motorola has left the DRAM business, deciding instead to focus on more advanced static random access memory chips. Motorola sold its share in a joint venture manufacturing plant in Virginia to Infineon, its original partner there.
- The two major Korean companies, Samsung and Hynix, each have a U.S. wafer fabrication plant. Samsung's operation is in Austin, Texas. The Hynix plant in Eugene, Oregon, was closed for a period, but has been revamped and resumed production in late 2001.

This wave of mergers, closings and exit decisions leaves Micron's three wafer fabrication plants (two in Idaho, one in Virginia) as not only the last U.S.-owned DRAM manufacturing facilities, but also among the few still operating in the United States. In its 2001 and 2002 financial years, Micron's total losses were \$1 billion per year.¹⁴ On February 18, 2003, the company announced its first layoffs since 1985: 10% of its workforce, or about 1,800 people. This included 560 workers in Virginia, about half of that plant's workforce, with most of the remaining reductions at the Idaho facilities.¹⁵

DRAMs and U.S. National Security. With respect to national security implications, Micron reported that primary Defense Department contractors use their products in "a wide variety of military products, including satellites, smart bombs, rockets, rocket launchers, tanks, ground combat vehicles, communications devices and recording devices. In addition, Micron memory is used in the F15, the F16, the F22, Comanche helicopters and Stinger missiles."¹⁶

The Department of Defense Office of Industrial Policy was contacted with respect to the national security implications of relying solely on offshore or foreign-owned DRAM producers for defense-related applications. The response was that the

¹⁴ Testimony of Micron CEO Steve Appleton, USITC staff conference (Investigation no. 701-TA-431), November 22, 2002, p. 5.

¹⁵ *Washington Post*, February 22, 2003.

¹⁶ Memorandum from Bonnie Byers, Hale & Dorr, on behalf of Micron Technology Inc. (October 22, 2001).

Defense Department currently does not maintain a broad program regarding semiconductor availability and relies on the commercial market. The Defense Advanced Research Projects Agency (DARPA) in the 1990s did have a program to sustain a U.S.-based source for active-cell matrix liquid crystal displays used in aircraft instrument panels, but this project failed to sustain a U.S. manufacturing base. Currently the sole manufacturing source for active-cell matrix LCDs is from Korea, and the office noted no other special domestic semiconductor industry programs. South Korea and the United States have shared a Mutual Defense Treaty since the end of the Korean War.

The Dispute over the Hynix Rescue Package¹⁷

The collapse in DRAM prices in 2000 and 2001 had a particularly devastating effect on Hynix. As mentioned above, Hynix was formed in May 1999 by the merger of rivals Hynix¹⁸ and LG Semiconductor. The merger was one of the so-called “big deals” the South Korean government instigated in the aftermath of Korea’s 1997 economic crisis to try to force each of the country’s largest conglomerates to concentrate in fewer business activities. As a result of the merger, Hynix took on 6 trillion won in LG’s debt on top of its own.¹⁹ Simultaneously, other members of the Hyundai conglomerate began to suffer from cash-flow shortfalls. Since Hynix was flush with cash due to the electronics boom of 1999 and 2000, it was tapped for funds to prop up ailing members of the Hyundai corporate family – then a common practice among Korean conglomerates. Thus, Hynix had few reserves to draw upon when the bottom fell out of the DRAM market in 2000.

Since the beginning of 2001, Hynix has been kept afloat by four financial assistance packages, the first three of which are the centerpiece of Micron’s countervailing duty petition.²⁰ (See box below.²¹) This section of the report deals only with these cases of specific assistance to Hynix. Note that additionally, Micron alleges that Hynix (as well as Samsung) have benefitted from certain types of subsidies that have been given to the Korean semiconductor industry in general. The debate over Hynix’s financial assistance packages has revolved around three questions:

¹⁷ Prepared by Mark Manyin.

¹⁸ Until it separated from the Hyundai conglomerate in March 2001, Hynix was known as Hyundai Electronics Industries (HEI). For the sake of simplicity, the name Hynix will be used to refer to HEI throughout this report.

¹⁹ *Business Asia*, September 19, 2001, as published by the Economist Intelligence Unit Viewswire.

²⁰ Countervailing Duty Petition (Public Version) Submitted by Micron Technology Inc., “Dynamic Random Access Memory Semiconductors from Korea,” Case No: C-580-851. Because the petition covered the period from January 1, 2001 - June 30, 2002, Hynix’s December 2002 rescue package was not included in the countervailing duty investigation.

²¹ Note that the box does not list Hynix’s June 2001 sale of \$1.3bn via global depository receipts because, in contrast to the other new financing Hynix received in 2001, this sale was market-based.

- To what extent is the Korean government involved in the Hynix rescue? That is, were the rescue packages market-based initiatives or government subsidies?
- Is Hynix suffering from structural problems or temporary liquidity difficulties?
- Finally, does the Korean government's involvement violate the WTO rules prohibiting certain subsidies?

These issues will be examined after a review of the details of the rescue packages.

Details of the Rescue Packages. Only the first of the four assistance packages ostensibly was sponsored by the government. In January 2000, the state-owned Korea Development Bank (KDB) unveiled a bond-refinancing program to assist companies that were likely to default on their debts at a time when the Korean bond market had effectively ceased to function due to a severe credit crunch. Hynix was one of four affiliates of the Hyundai conglomerate (and six companies overall) to qualify for the program, under which 80% of the company's 3.6 trillion won (\$3 billion) in maturing debt was rolled over, repackaged (with government guarantees) and resold to the public. Charging that the program amounted to a government-led bailout of Hyundai, the Bush Administration raised the issue in a WTO subsidies committee, and told Seoul that it was considering filing a case against Korea at the WTO. The Korean government denied these charges, arguing that the program was open to all "qualified" and economically viable firms, would run for only one year, and used market-based interest rates.

The Korean government did not play a direct role in subsequent assistance packages to Hynix, perhaps because of the criticism of the KDB plan. Instead, when Hynix's cash flow problems worsened in the winter and spring of 2001, it was Hynix's creditors that orchestrated the company's bailout. On October 31, 2001, after months of negotiations, over 100 creditors agreed upon a massive financial assistance package that restructured virtually all of the company's then 8.6 trillion won (\$7.2 billion) in debt, including 650 billion won (\$541 million) in fresh loans from five creditor banks. The package was widely interpreted as an attempt to tide Hynix over until semiconductor prices recover and presumably restore the company's profits.

The December 2002 Rescue Package. Hynix, however, continued to post huge losses. In December 2002, over 100 creditors agreed to another large scale rescue package that granted the company relief on all but 1 trillion won of its 5.9 trillion won (\$4.92 billion) in debt, three-quarters of which was due to mature in 2003 and 2004. The net result of the package reduced Hynix's total debt to 4.3 trillion won (\$3.6 billion) and reduced its monthly interest payments from 35.4 billion won (\$29.5 million) to 20 billion won (\$16.7 million). The creditors had taken a controlling stake in June 2002, shortly after Hynix's board had rejected a deal between the creditors and Micron for the latter to purchase the company.

The December package included a \$188 million in loans to Beijing Orient Electronics (BOE) Technology Group Co. to help the China-based company finance its \$380 purchase of Hydis, Hynix's flat-panel display unit. \$180 million of these loans are to be issued by the Korea Development Bank (KDB, \$100 million), the Korea Exchange Bank (KEB, \$50 million), and Woori Bank (\$30 million), banks in which the Korean government has a majority ownership stake.²² Officials with KEB, Hynix's lead creditor, have stated that the debt restructuring is designed to put creditors in a better position to eventually sell Hynix. At a February 25, 2003, Hynix general shareholders' meeting, the debt relief plan was approved over the loud protests of a group of minority shareholders. In the days after the meeting, about 50 top executives, including the Chief Executive Officer, resigned.

Summary of Financial Support Packages for Hynix in 2001 and 2002

January 2001 - 1.3 trillion won (\$1.08 billion) in new aid. The state-owned Korea Development Bank (KDB) unveiled a bond-refinancing program to assist several troubled major companies that were likely to default on their debts at a time when the Korean bond market had effectively ceased to function due to a severe credit crunch. Hynix was one of four Hyundai affiliates (and six companies overall) to qualify for the program, under which creditor banks rolled over 80% of the company's 1.625 trillion won (\$1.35 billion) in maturing debt that was rolled over for one year, repackaged (with government guarantees) and resold to the public.

May 2001 - 17 of Hynix's Korean creditor banks agreed to buy 1 trillion won (\$833 million) in Hynix bonds.

October 2001 - Over 5 trillion won (\$4.2 billion) in new aid. More than 100 creditors agreed to a sweeping plan to restructure virtually all of the 8.6 trillion won (\$7.2 billion) they held in Hynix debt. The package included: a 3 trillion won (\$2.5 billion) debt-for-equity swap, which will take place in 2002, until which time Hynix will make no interest payments; a 3-year rollover of 4.4 trillion won (\$3.7 billion) in debts and maturing bonds, with interest rates slashed in half (a reduction of about 276 billion won [\$230 million] in interest burdens); an infusion of 650 billion won (\$542 million) in new loans by five creditors; a writeoff of 1.2 trillion won (\$1 billion) in debt at just over 25% of face value by seven banks that refused to issue fresh loans to Hynix. Hynix pledged to raise 2.6 trillion won (\$2.2 billion) by the end of 2002 by selling assets and retiring debt.

December 2002 - Hynix received relief on all but 1 trillion won of its 5.9 trillion won (\$4.92 billion) in debt, three-quarters of which was due to mature in 2003 and 2004. Over 100 creditors agreed to a package that included: a rollover until 2006 in the maturity of 3 trillion won (\$2.5 billion) in debt, the interest of which was reduced from 6.7% to 3.2%; a 1.9 trillion won (\$1.6 billion) debt-for-equity swap; a 21-1 capital write-down (*i.e.* every 21 shares of existing Hynix stock will be converted into 1 share); the sale of future Hynix assets; and \$188 million in loans to BOE Technology Group Co. to help the Chinese company finance its \$380 purchase of Hynix's flat-panel display unit. \$180 million of these loans are to be issued by creditors that are owned by the Korean government. This rescue package was not included in Micron's anti-subsidy petition.

²² As of the end of 2002, the South Korean government's stakes were as follows: KDB, 96%, KEB, 43.17%, Woori, 100%. As of December 2002, the South Korean government also owned 80.04% of Chohung Bank, another major Hynix creditor.

Were the Rescue Packages Government Subsidies? Critics of the Hynix support packages have charged that they have been orchestrated by the government. As evidence, they point out that the assistance packages have been organized by a consortium of banks that have been owned or controlled by the Korean government since 1998, when Seoul nationalized many weak banks in the aftermath of the country's 1997 financial crisis. As **Table 1** shows, for instance, over 90% of the new loans given in October 2001 to Hynix were from banks whose largest shareholder is the Korean government. This has led to widespread speculation that Seoul financial officials, who historically have maintained a considerable involvement in the financial system, put direct or indirect pressure on Korean banks to bail Hynix out.²³

Critics of the bailouts also charge that Korean government officials had broader political and diplomatic motives for allegedly orchestrating the rescue packages. Government support was given to Hynix, the argument runs, in part to repay Hynix for taking over LG Semiconductor in 1999. The Kim government pushed for the dismantling of the Hyundai conglomerate – a process that began in the spring of 2001 – and thus had an interest in having the process proceed with a minimum of disruption. Furthermore, it has been widely speculated that the South Korean government was reluctant to cause economic disruption before the December 2002 presidential election, in which Roh (pronounced “noh”) Moo-hyun, the candidate of current president Kim Dae Jung's party, won a narrow victory.

Some suspect that the Kim government may have allegedly pursued a bailout to repay the Hyundai conglomerate for being the only major South Korean conglomerate to support Kim Dae Jung's “sunshine policy” of engaging North Korea by investing in the North.²⁴ Indeed, Hyundai officials have admitted they illegally transferred \$500 million to North Korea just days before President Kim's historic summit in June 2000 with North Korean leader Kim Jong-il. Hyundai and Korean government officials deny any linkage between the payments and the summit, saying the payments were made to win the North Korean government's support for business projects.

Hynix's backers, as well as some independent analysts, argue that the evidence of government involvement in the creditors' decisions is circumstantial at best. Seoul and Hynix officials repeatedly have argued that the decisions on whether to aid

²³ For an example of such speculation, see Don Kirk, *The New York Times*, November 10, 2001, in which the soon-to-retire President of Korea First Bank, Wilfred Horie, speaks about the indirect pressure he received when his bank refused to participate in the January 2001 KDB bond rollover program. For more on the history of government intervention and guidance of the banking system, see Marcus Noland, *Avoiding the Apocalypse: The Future of the Two Koreas*, (Washington, DC: Institute for International Economics, 2000); and Catherine L. Mann, “Korea and the Brave New World of Finance,” in *Joint U.S.-Korea Academic Studies*, Vol. 10, 2000, (Washington, DC: Korea Economic Institute of America).

²⁴ Jay Soloman, Hae Won Choi, “Southern Exposure: At Huge Korean Conglomerate, Bridge to North Takes Its Toll – Leading the Drive for Business Across the DMZ, Hyundai Suffers Big Losses, Scandal,” *Wall Street Journal*, March 4, 2003.

Hynix have been entirely in the hands of the company's creditors. They point out that many foreign banking interests – notably Citibank and Commerzbank (which oversees the credit decisions of Hynix's leading creditor, the Korea Exchange Bank) – have supported the rescue packages.²⁵ Non-Koreans sit on the boards of directors of several of Hynix's creditors, including the Korea Exchange Bank, Kookmin Bank, Hana Bank, and KorAm Bank. Also, at the time of the October 2001 rescue package, some government-owned banks (such as Seoul Bank) decided to write off their loans to Hynix, accepting 75% losses rather than increasing their exposure to the struggling company.

Table 1. Hynix Semiconductor's Major Bank Creditors

(Billions of won)

Bank Name	Before Oct. 2001 Package	Oct. 2001 Package		Total Dec. 2002 Ownership Share in Hynix
	Total Exposure to Hynix	Fresh Loans (estimate)	Write-off (estimate)	
Korea Exchange Bank (KEB) ^a	970.1	247.4		20%
Korea Development Bank	1,138.9			11%
Hanvit Bank (now part of Woori Financial Holdings)	944.5	240.9		19%
Chohung Bank	732.8	117.2		11%
Kookmin Bank ^b	753.9		324.1	n.a.
Shinhan Bank	400.6		260.3	n.a.
Korea First Bank	273.8		127.7	n.a.
Seoul Bank	242.1		105.2	n.a.
Hana Bank	206.8		128.8	n.a.
KorAm Bank	191.6		106.1	n.a.
National Agricultural Cooperative Federation	167.9	26.9		n.a.
Citibank Korea	110.0	17.6		n.a.
Total	6,133.0	650.0	1,052.2	61%

Source: Korea Exchange Bank (KEB) for 2001 figures; Korean Financial Supervisory Service for 2002 figures.

Note: Shaded rows indicate banks in which the Korean government is the largest shareholder.

^a KEB's second largest investor, Germany's Commerzbank, oversees KEB's credit decisions.

^b Includes figures for Korea Housing & Commercial Bank, which was absorbed by Kookmin in November 2001.

A Shared Interest in Keeping Hynix Afloat. The reality may be more nuanced. Even if Hynix's most enthusiastic supporters – KEB, Hanvit Bank, and

²⁵ Note that, as Table 1 shows, Citibank's exposure to Hynix was relatively low (110 billion won, or \$92 million) and accounted for less than 2% of Hynix's total bank exposure at the time the latest support package was unveiled in October 2001.

Chohung Bank – were not owned by the government, they would have powerful incentives for keeping Hynix afloat. These institutions are among Korea's weakest banks, which is why they were taken over by the government in the first place. A default by Hynix would be financially damaging to these banks, which have invested large sums in the company. Furthermore, a Hynix collapse could have a cascading effect that would further hurt these banks, which are known to have significant exposure to other members of the former Hyundai conglomerate. Although the Hyundai group is being dismantled under pressure from creditors and the government, several members of the former Hyundai corporate family still own nearly 10% of Hynix shares.

Thus, at the very least, Hynix's leading creditors share the government's interest in propping up the company in the hope that DRAM prices will recover. Hynix accounts for an estimated 4% of South Korea's exports, employs over 14,000 people directly, and has approximately 2,500 subcontractors and suppliers that employ another 150,000, representing over 0.5% of South Korea's total workforce.²⁶ Hynix also is the most widely held stock in South Korea, with over 300,000 individual shareholders.

Moreover, the institutional culture of the Korean banking industry is likely to have played a role in the decision to keep Hynix on life-support. Historically, Korean financial institutions have been silent partners in the government-business-finance relationship. Credit was allocated to politically connected or preferred firms, not according to an assessment of risk and return.²⁷

By many accounts, this banking culture has been changed – or at least, has begun to be changed – by the economic reforms enacted in the aftermath of South Korea's financial crisis in 1997. Since then, the country's financial industry has undergone a fundamental restructuring. After 1998, nearly a quarter of Korea's financial institutions, including 9 of 26 banks, were merged or liquidated, and thousands of financial service employees were laid off. The government imposed more stringent accounting rules, including a requirement that banks raise their capital adequacy ratios to over 10%, above the international standard of 8%.

However, it is unclear whether these broader changes apply to the case of large companies; in other words, there is anecdotal evidence that in some cases, the “too big to fail” dynamic may still be at work in South Korea. Furthermore, the government has preferred to deal with insolvent manufacturing firms primarily by relying upon bank-led workout programs rather than legal bankruptcy proceedings. The result has been that relatively few failing firms have been forced to change management, and even fewer have exited the market. While the policy may have helped to avoid widespread corporate and financial crises in the short term, it has allowed hundreds of non-profitable, “zombie” firms to continue operating, thereby draining financial resources and creating incentives to dump products on the market in the medium term. For instance, generous debt relief packages kept financially

²⁶ *Financial Times*, August 31, 2001. 0.5% of the U.S. workforce is nearly 700,000.

²⁷ Mann, “Korea and the Brave New World of Finance,” p.56-58; Noland, *Avoiding the Apocalypse*, p. 199-203.

ailing Daewoo Motors in business for nearly three years after the collapse of the Daewoo conglomerate. Many of Hynix's leading creditors – including Korea Development Bank, Woori Bank, Chohung Bank and Korea Exchange Bank – were also major lenders to Daewoo Motors. In 2002, General Motors purchased the company for a fraction of the offer it made, and the government rejected, in 1999.

Restructuring by Hynix – Is It a Viable Company? A related issue is whether the financial assistance packages have been accompanied by restructuring plans from Hynix. On the one hand, there have been a number of changes since the KDB program was unveiled in January 2001. Most importantly, after changing its name from Hyundai Electronics in the spring of 2001, Hynix left the Hyundai conglomerate, as part of the dismantling of the Hyundai corporate family. Other steps have included the sale or spinning-off of most of Hynix's non-semiconductor-related assets, the temporary suspension of production in the company's factory in Oregon, the sale of Hydis, and rotating furloughs given to Hynix's Korean employees. None of these moves has entailed significant layoffs in South Korea.

Supporters of the Hynix bailout packages have argued that Hynix continues to be a highly competitive company that only needs short-term assistance to weather the current downturn in global demand for semiconductors.²⁸ Their position assumes that chip prices rebound significantly in near future. Others, however, contend that Hynix is suffering not from temporary liquidity problems, but from fundamental structural flaws that will prevent the company from becoming self-sufficient in the near future. Additionally, Hynix's financial troubles are preventing it from keeping pace in technological improvements. For example, one source noted that Samsung, spending about \$4 billion in technology upgrades in 2001, would outspend Hynix by 20-to-1.²⁹ Hynix's December 2002 rescue package did not include funds for such investments, meaning that Hynix somehow will have to raise on the order of 1 trillion won to keep pace with its competitors. In recent months, Hynix has announced new investments in research and development, including \$100 million to upgrade its D-RAM chip manufacturing facilities of the Eugene plant. In the first quarter of 2003, Hynix posted a net loss of one trillion won (\$833 million), the fourth consecutive quarterly loss and the largest shortfall since the fourth quarter of 2001.

²⁸ *Business Week*, October 1, 2001.

²⁹ *Asian Wall Street Journal*, October 26, 2001. More recently, Samsung announced increased planned capital expenditures for 2003, despite declines in quarterly profits in semiconductors – a move designed apparently to increase pressure on both Hynix and Micron; *Financial Times*, April 19-20, 2003.

The Micron Countervailing Duty Case Against Korean DRAM Producers³⁰

On November 1, 2002, Micron filed a countervailing duty case under U.S. law against both Korean DRAM producers, Samsung as well as Hynix. The petition charges that the Korean companies are subsidized by their government, enabling them to continue to sell DRAMs into the U.S. market at competitive prices, a practice that has consistently undercut the market shares of Micron and Infineon. The Commerce Department announced in a November 27, 2002, *Federal Register* notice that it would pursue an investigation of the alleged subsidization.³¹

The ITC on December 13, 2002, made a preliminary determination of material injury to the petitioner, based on its initial investigation.³² Subsequently, the Commerce Department made a preliminary determination on March 31, 2003, that subsidies are being provided to Korean producers, and announced its findings in an April 7, 2003, *Federal Register* notice.³³ The Department determined that the total estimated net countervailable subsidy rates for Hynix and Samsung are, respectively, 57.37% and 0.16%.³⁴ According to a *Financial Times* analysis, if the Hynix preliminary countervailing duties stand, “it could be a fatal blow” to Hynix. The

³⁰ This section is written by Stephen Cooney and Jeanne J. Grimmer. More detail on relevant U.S. trade law is available in *Antidumping and Countervailing Duties*, by Jeanne J. Grimmer, from the CRS Trade Briefing Book at [<http://www.congress.gov/brbk/html/ebtra67.html>].

³¹ Dept. of Commerce. International Trade Administration. “Initiation of Countervailing Duty Investigation: DRAMs from South Korea,” November 21, 2002, and 67 *Fed. Reg.* 70927 (2002); “U.S. to Pursue Micron’s Chip Charges,” *Wall St. Journal*, November 25, 2002; *DER*, “Commerce to Investigate Allegations of Subsidies for Korean Semiconductors” (Dec. 3, 2002).

³² USITC. News Release 02-114, “ITC Votes to Continue Case on DRAMs and DRAM Modules from Korea,” (Investigation No. 701-TA-431), December 13, 2002; International Trade Commission. “Drams and Dram Modules from Korea,” 67 *Fed. Reg.* 79148 (2002); *DER*, “Korea Semiconductor Imports Injurious, ITC Reports in Preliminary Determination” (Dec. 16, 2002).

³³ Dept. of Commerce. International Trade Administration. “Preliminary Affirmative Countervailing Duty Determination: Dynamic Random Access Memory Semiconductors from the Republic of Korea,” 68 *Fed. Reg.* 16766 (2003).

³⁴ The Department also found an “all others” rate of 57.37 % (the rate applies to companies not individually investigated and new exporters and producers). Once it made its affirmative preliminary determination and announced estimated countervailable subsidy rates, the Department was also required to order the posting of cash deposits, bonds or other security for each imported entry based on the estimated rates, and to order the suspension of liquidation of entries of the subject merchandise entered on or after the date the preliminary subsidy determination was published in the *Federal Register*. Tariff Act of 1930, § 703(d), 19 U.S.C. § 1671b(d). Entries from Samsung are not subject to this suspension of liquidation because Samsung’s rate was preliminarily determined to be *de minimis*. See 68 *Fed. Reg.* at 16783, and note 14, *infra*.

subsidy findings on Samsung were described in the same article as “insignificant.”³⁵ The Korean government tried to have the imposition of preliminary countervailing duties suspended, in talks associated with the visit to Washington of President Roh in May 2003, but this effort was unsuccessful.³⁶

The Commerce Department must now make a final determination within 75 days of its preliminary finding, or on or about June 14, 2003. If the Department makes a final determination that confirms subsidization, the ITC must then make a final determination as to whether material injury to the domestic industry is caused or threatened by the subsidized imports. The ITC currently lists a completion date of August 4, 2003, for its investigation.

Under U.S. trade law, domestic antidumping (AD) and countervailing duty (CVD) proceedings may be self-initiated by the Department of Commerce or, as in this case, requested in a petition filed with the Commerce Department by an “interested person,” including a firm, on behalf of the affected domestic industry. In deciding whether to initiate a case by petition, the Commerce Department had to determine whether there was sufficient industry support for the proceeding. While it decided that there is sufficient domestic industry support in the case, it also determined that wafers fabricated at the Hynix and Samsung facilities in the United States are not included in the scope of this case, even if the chips are then shipped to Korea for final assembly in modules and re-imported into the United States. “The principal reason for this determination is that in numerous past proceedings on DRAMs and similar products...the Department has consistently maintained that the country of origin is the country where the wafer fabrication has occurred.”³⁷ This could ultimately be of some significance in the determination of the final level of injury.

Micron alleges in this case that the financial arrangements involving Hynix, as noted in the table in this report, are direct and indirect subsidies from the government-controlled banks. With respect to Samsung, Micron stated that it “has not received subsidies of the same magnitude as Hynix,” but “the subsidies it has received have provided the company with an unfair advantage over non-subsidized competitors outside Korea.” These subsidies have included direct government support of product development, export subsidies and a structure of the Korean “financial and banking system [to funnel] both public and private resources and financial assistance to favored industries.”³⁸ These subsidies allowed both Hynix and

³⁵ Joshua Chaffin and Andrew Ward, “Huge Import Sanctions May Cripple S. Korea’s Hynix,” *Financial Times* (April 2, 2003).

³⁶ Andrew Ward, “Hynix Semiconductor Loses US Tariff Battle,” *Financial Times* (May 19, 2003).

³⁷ Dept. of Commerce. International Trade Administration. “Notice of Initiation of Countervailing Duty Investigation: Dynamic Random Access Memory Semiconductors from the Republic of Korea,” 67 *Fed. Reg.* 70927, 70928 (2002); *DER*, “Commerce to Investigate Allegations of Subsidies for Korean Semiconductors” (Dec. 3, 2002).

³⁸ On Samsung’s inclusion, see Micron Technology Inc. Countervailing Duty Petition before (continued...)

Samsung to keep up with Micron in technological developments and to price product at a level low enough to hold or gain market share, Micron argued in the ITC preliminary injury staff conference on November 22, 2002.³⁹

In response, counsel for Hynix argued that Micron in statements to investors emphasized the company's relative health and strong cash position, despite expected operating losses during a periodic industry downturn. And counsel for Samsung stated that there was no evidence at all that Samsung had received subsidy assistance, implying that Samsung was only included in the petition to inflate the amount of subject imports and therefore the likelihood of a material injury finding.⁴⁰

The South Korean government has vigorously denied that any government subsidization of Hynix occurred and has threatened to take the issue to the WTO, should U.S. trade penalties be imposed. Although some banks were nationalized during the 1997-98 financial crisis, the government did not directly control their subsequent lending decisions, Korean government officials argued at the time that the U.S. anti-subsidy case was filed.⁴¹ The Korean Minister of Commerce, under the administration of newly elected President Roh Moo-hyun, reiterated this point in a March 12, 2003, letter to the Commerce Department. Furthermore, in a separate attachment, the Minister made the case that as the Hynix market share of the U.S. DRAM market fell during the ITC period of investigation in 2001, Hynix could not have been a source of injury to Micron, whose own market share in the United States remained stable during the period, the Minister claimed. His conclusion is that the general fall in world DRAM market prices, not Korean government subsidization of Hynix, is the source of Micron's problems.⁴²

In its preliminary determination, the Department of Commerce found that the government of Korea directed loans to the semiconductor industry through 1998, and, for the period from 1999 through June 30, 2002, directed or provided loans and other benefits that were specific to current or former Hyundai Group companies, including Hynix.⁴³ It also determined, however, that the Korean government did not direct

³⁸ (...continued)

the International Trade Administration of the Dept. of Commerce and the U.S. International Trade Administration (public version). *Dynamic Random Access Memory Semiconductors from Korea* (Nov. 1, 2002), pp. 124-26.

³⁹ USITC staff conference (Investigation No. 701-TA-431), November 22, 2002. Testimony of Steve Appleton and Michael Sadler, Micron Technology, Inc., and Bonnie Byers, Hale and Dorr, LLP.

⁴⁰ *Ibid.* Testimony esp. of James P. Durling of Wilkie Farr & Gallagher, on behalf of Hynix and Warren E. Connelly of Akin, Gump, Strauss, Hauer & Feld, LLP on behalf of Samsung.

⁴¹ "U.S. to Pursue Micron's Chip Charges," *Wall St. Journal*, November 25, 2002.

⁴² Letter, with attachment, of Korean Minister of Commerce, Industry and Energy Yoon Jin-sik to U.S. Secretary of Commerce Donald Evans, March 12, 2003.

⁴³ For a domestic subsidy to be countervailable, it must be specific in law or in fact to an enterprise or industry, or group of enterprises or industries, within the jurisdiction of the authority providing the subsidy. Tariff Act of 1930, §§ 771(5)(A), (5A)(D), 19 U.S.C. §§ (continued...)

credit to Samsung or the semiconductor industry as a whole during the latter period. The benefits to Hynix were found to be conferred primarily through programs associated with its financial restructuring and recapitalization, including benefits from long-term and short-term loans, new bonds, and debt-to-equity swaps. The Commerce Department further determined that Hynix benefitted from debt forgiveness and the Korea Development Bank “Fast Track” Debenture program, developed to enable companies to deal with liquidity problems from especially heavy corporate borrowing following the 1997 Korean financial crisis. Commerce also found that both Hynix and Samsung benefitted from government-directed loans provided prior to 1999. The net countervailable subsidy from the above-described programs and activities was determined to be 57.23% for Hynix and 0.01% for Samsung.

The Commerce Department additionally determined that benefits accrued to Samsung from a temporary investment tax credit and to both Hynix and Samsung from a government interest-free loan program supporting new semiconductor technologies; countervailable benefits of less than 1% were found for the companies from these two programs. Thus, while Samsung is found to have received some benefit from Korean government programs, the level of benefit is considered *de minimis* under U.S. trade law.⁴⁴ Should subsidization of imports from Samsung be found to be *de minimis* in the final Commerce determination, a question the ITC may consider is whether imports from Hynix alone could be a source of material injury to Micron.

If both the Commerce Department and the ITC make affirmative final determinations in the case, duties will be imposed on the subject DRAMs and DRAM modules in the amount of the net subsidy. The Commerce Department could also subsequently suspend an investigation, if it enters into an agreement with exporters or with the government of a country where the countervailable subsidy practice is alleged to occur either for the exports to cease, or for the subsidy to be offset or eliminated.⁴⁵

Beyond the U.S. action, the European Union has also hit Hynix with heavy countervailing duties. Infineon filed an anti-subsidy and antidumping petition with the European Commission, which claimed that Samsung and Hynix are subsidized by the Korean government. Micron, which has EU manufacturing facilities as well,

⁴³ (...continued)
1677(5)(A), (5A)(D).

⁴⁴ In the case of imports from developed countries, a countervailable subsidy is considered *de minimis* if DOC determines that the aggregate of the net countervailable subsidies is less than 1% *ad valorem* or the equivalent specific rate for the merchandise under investigation. Tariff Act of 1930, § 703(b)(4), 19 U.S.C. § 1671b(b)(4). The Tariff Act requires the Commerce Department to disregard any *de minimis* countervailable subsidy in making preliminary and final determinations in a CVD proceeding. Accordingly, under DOC regulations, the Department excludes from an affirmative final subsidy determination any exporter or producer for which it determines an individual net countervailable subsidy rate of zero or *de minimis*. 19 C.F.R. § 351.204(e)(1).

⁴⁵ See *Asian Wall Street Journal*, April 8, 2003.

agreed with the substance of this complaint. The European Commission pursued this petition and sent its investigators to Korea.⁴⁶ They returned with a finding that Hynix was subsidized in two ways, a bond program set up through the Korean Development Bank to benefit Hynix, and the October 2001 financing package provided by Korean banks. On April 24, 2003, the European Commission applied a provisional 33% CVD on imports of Hynix DRAM chips, pending a final decision that will be taken by the Commission in August 2003. As with the U.S. Commerce Department, the European Commission also found subsidization of Samsung to be below the *de minimis* threshold.⁴⁷ The *Financial Times* article cited above concludes that, “Together the Washington and Brussels sanctions ... will price Hynix out of the U.S. and European semiconductor markets, making it heavily reliant on sales in Asia.”⁴⁸

Proposed Legislation on the Hynix Issue

Members of Congress, especially from directly affected states and districts, have been closely following the Hynix subsidy issue and semiconductor trade case. In September 2001 an amendment sponsored by Senator Larry Craig of Idaho, which protested the “Republic of Korea’s improper bailout of Hynix,” was incorporated into the Senate’s version of the FY 2002 appropriations bill for the Commerce, Justice, and State Departments.⁴⁹ The amendment noted that in 1998, the Omnibus Fiscal 1999 Appropriations Act (P.L. 105-277) required that the IMF’s \$58 billion assistance package not be used to support South Korean companies that compete unfairly with U.S. companies. The Craig amendment was stripped from the bill in conference. Senator Craig also joined in co-sponsoring the controversial Dayton-Craig Amendment to the Senate version of the 2002 Trade Act that granted President Bush trade promotion authority. The amendment would have required a separate vote in Congress to approve any changes negotiated in trade agreements to U.S. trade remedy laws. While approved 61-38 in the Senate, the provision was dropped in conference.⁵⁰

Early in the 108th Congress, legislation was introduced in the Senate that specifically focused on the issue of Korean government subsidies to Hynix, in the wake of the case brought by Micron, and following large layoffs announced by

⁴⁶ *Asian Wall Street Journal*, July 25, 2002; Dow Jones International News, “South Korea Government Denies Providing Subsidies to Chip Makers,” Sept. 24, 2002.

⁴⁷ *DER*, “EU Commission Imposes Interim CV Duties on Korean DRAM Chips Produced by Hynix,” April 25, 2003.

⁴⁸ *Financial Times* (April 2, 2003). Reflecting its own concern with a diversion of Korean DRAMs, Taiwan is also reportedly considering initiation of a trade safeguard action and an antidumping investigation; *Financial Times*, April 19-20, 2003.

⁴⁹ The amendment appeared as Section 626 of the Senate-passed bill.

⁵⁰ *Congressional Record* (May 14, 2002), pp. S4299-4326; BNA. *Daily Executive Report (DER)*, “House Democrats Push to Include Dayton-Craig in Trade Conference Bill” (May 24, 2002) and “TAA Deal, Dumping of Dayton-Craig Clause Crucial to Agreement on Omnibus Trade Bill” (July 29, 2002). The 2002 Trade Act, without the Dayton-Craig amendment, was signed into law by President Bush as P.L. 107-210 on August 6, 2002.

Micron at its plants in Idaho and Virginia. On February 27, 2003, Senator Craig introduced S. 492, which would direct the Secretary of Commerce and the Customs Service effectively to impose an 80% ad valorem countervailing duty on all DRAM semiconductors entered into the United States that are “produced or imported by Hynix Semiconductor.”⁵¹ On the same day, Senators Crapo and Allen introduced S.Con.Res. 11, which would urge the Administration to consult with Korea, while undertaking trade enforcement actions against alleged Korea government subsidization of Hynix.⁵² Both S. 492 and S.Con.Res. 11 were referred to the Finance Committee.

On March 27, 2003, the two House members from Idaho, later joined by a member from Virginia, introduced H.R. 1494. The bill was similar in intent to S. 492, in that it mandated an 80% CVD, but only when and if the “administering authority” made an affirmative subsidy determination against Hynix Semiconductors. The 80% level was established in the bill “in lieu of any amount that would otherwise be ordered.” H.R. 1494 was referred to the Trade Subcommittee of the Ways and Means Committee.

Members of Congress from Oregon, where Hynix has its U.S. wafer fabrication plant, have responded by sponsoring resolutions urging caution in managing the trade dispute with Korea on semiconductor issues. S.Con. Res. 29, introduced on March 25, 2003, by Senators Smith and Wyden, and H.Con. Res. 124, co-sponsored two days later by the five members of the Oregon House delegation, sought to moderate concerns on the issue. These two identical resolutions noted current “geopolitical tensions” involving Korea. They emphasized that semiconductor trade issues should not “create geopolitical or economic tensions between the United States and the Republic of Korea,” nor “result in the loss of highly skilled jobs in the United States,” including jobs at U.S. “facilities of Korean semiconductor manufacturers.” These resolutions were also respectively referred to the Senate Finance Committee and the House Ways and Means Committee Trade Subcommittee.

Concluding Remarks⁵³

Continued Shakeout of the DRAM Industry. The Hynix dispute highlights important economic transformations that are currently taking place. One is the increased globalization and concentration of the semiconductor industry, including its requirement for repeated expensive upgrades in manufacturing equipment. Whether U.S. companies, and, for that matter, European and Japanese companies, stay in the DRAM business would appear to depend in part on whether their governments are willing to undertake, or at least to threaten, trade remedy action against alleged dumping by and subsidization of the other countries’ producers, such as, in the present case, Korea. While “national champion” companies are no longer

⁵¹ S. 492 §2 (a).

⁵² See introductory remarks by Sen. Crapo, *Congressional Record*, pp. S2979-80 (February 27, 2003).

⁵³ Prepared by Mark Manyin and Stephen Cooney.

fashionable in international trade, that may well be what is emerging with respect to DRAM production, along the following rationalized lines:

- Samsung, as the major Korean producer;
- Micron, the U.S.-based producer, which recently acquired Toshiba's remaining U.S. plant;
- The Japanese Hitachi-NEC-Mitsubishi consortium, Elpida;
- Infineon, the remaining European producer;
- A group of Taiwanese producers, which generally began as semiconductor foundry operations, and of which the largest is Nanya.

A Future Challenge from China? A significant unknown factor, and perhaps the key reason Micron was interested in Hynix, is China. China is emerging as a major semiconductor customer, especially given its potential appetite for cheaper DRAM applications. The Chinese market for many applications, notably telecommunications equipment, is substantial, but still largely in the future. But the experience with China so far, as it emerges as a new and active WTO member, is that its government and industry appear not be content only to supply the domestic market. It appears also to have significant export ambitions.⁵⁴ Additionally, the president of Hynix's leading creditor, the Korea Exchange Bank, has said that Hynix's creditors may try to sell the firm, or shares in it, to buyers in China.⁵⁵

Korea's Economic Reforms. Another significant transformation is South Korea's attempt to create a domestic economic system less concentrated in the hands of a few giant conglomerates, less reliant upon guidance from the central government, and more responsive to the information, incentives and pressures provided by the market. The ambiguity of the Korean government's role in rescuing Hynix encapsulates the mixed record of President Kim Dae Jung's economic reform program. For instance, two of the country's largest conglomerates, Hyundai and Daewoo, have been dismantled since 1999. But many of their constituent parts continue to remain in business despite insolvency.

It is unclear how the administration of newly inaugurated South Korean President Roh Moo-hyun ultimately will handle the Hynix issue. On the one hand, Roh campaigned on a platform of improving income distribution and reforming Korea's conglomerates, which continue to dominate the country's economy. Roh's early moves indicate a commitment to follow through on his pledges. Additionally, unlike his major opponent in the 2002 election, Roh did not endorse explicit government support for Hynix. It is unclear what level of priority Roh gives the Hynix issue. To date he has made few if any public comments on the Hynix situation, and during his trip to Washington, DC, in May 2003, Roh reportedly did not raise the subject in meetings with U.S. government officials.

⁵⁴ *Business Week* has particularly focused on the phenomenon of Chinese development, as in "High Tech in China: Is It a Threat to Silicon Valley?" (Oct. 28, 2002) and "Greater China" (Dec. 9, 2002). See also *Electronic News*, "China Gains as U.S. Economy Struggles," (Sept. 23, 2002).

⁵⁵ "Hynix Semiconductor Sale In China Possible," *Korea Industry Update*, May 8, 2003.

On the other hand, Roh campaigned as a populist candidate, and clearly benefitted from a surge in Korean nationalism that has occurred over the past year. Additionally, if his government does not support Hynix, Roh could risk antagonizing South Korean organized labor, which is one of the few big and coherent interest groups with which Roh has close ties. These political considerations may lead his government to be more supportive of – or at least not to oppose – granting further support packages to Hynix. Reportedly, the Hynix dispute was not raised by Roh or U.S. government officials

A key determinant will be how quickly Roh's administration moves to continue the privatization of the Korean financial sector. Over the last four years, Korea's banking system has undergone a major restructuring, including the merging or liquidating of one-third of the country's banks. However, most of these actions were made possible through nationalization. The government has only begun to follow through on its pledge to privatize its stake in the financial industry.

The government's ownership of major Korean banks at best raises questions about the independence of those banks' decisions. As the Hynix case shows, these decisions can have global repercussions. At worst, government ownership provides a vehicle for Seoul to influence bankers' lending decisions – through direct pressure or through subtle guidance. Either way, the partial nationalization of the Korean banking system is inhibiting the development of a system of credit-analysis that rewards profitability, not size or personal connections. These characteristics of the Korean financial industry will no doubt be highlighted if the Hynix controversy remains a significant U.S.-Korean international trade dispute.

For Additional Reading

CRS Report RL31708. *Semiconductors: The High-Technology Downturn and Issues in the 108th Congress*, by Stephen Cooney.