UNITED STATES INTERNATIONAL TRADE COMMISSION

DRAMS AND DRAM MODULES FROM KOREA
Investigation No. 701-TA-431 (Preliminary)

DETERMINATION AND VIEWS OF THE COMMISSION
(USITC Publication No. 3569, December 2002)

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DETERMINATION

On the basis of the record[1] developed in the subject investigation, the United States International Trade Commission (Commission) determines,[2] pursuant to section 703(a) of the Tariff Act of 1930 (19 U.S.C. § 1671b(a)) (the Act), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from Korea of dynamic random access memory semiconductors (DRAMs) and DRAM modules, provided for in subheadings 8473.30.10 and 8542.21.80 of the Harmonized Tariff Schedule of the United States, that are alleged to be subsidized by the Government of Korea.

Pursuant to section 207.18 of the Commission's rules, the Commission also gives notice of the commencement of the final phase of its investigation. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in section 207.21 of the Commission's rules, upon notice from the Department of Commerce (Commerce) of an affirmative preliminary determination in the investigation under section 703(b) of the Act, or, if the preliminary determination is negative, upon notice of an affirmative final determination in that investigation under section 705(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigation need not enter a separate appearance for the final phase of the investigation. Industrial users, and, if the merchandise under investigation is sold at the retail level, representative consumer organizations have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigation.

BACKGROUND

On November 1, 2002, a petition was filed with the Commission and Commerce by Micron Technology, Inc., Boise, ID, alleging that an industry in the United States is materially injured or threatened with material injury by reason of subsidized imports of DRAMs and DRAM modules from Korea. Accordingly, effective November 1, 2002, the Commission instituted countervailing duty investigation No. 701-TA-431 (Preliminary).

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of November 8, 2002 (67 FR 68176). The conference was held in Washington, DC, on November 22, 2002, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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[1] The record is defined in sec. 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR § 207.2(f)).

[2] Commissioner Marcia E. Miller has recused herself from this investigation.

VIEWS OF THE COMMISSION

Based on the record in this investigation, we find that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of Dynamic Random Access Memory semiconductors ("DRAMs") and DRAM modules from Korea that are alleged to be subsidized by the Government of Korea.[3]

The petition in this investigation was filed on November 1, 2002, by Micron Technology, Inc. ("Micron" or "petitioner"), a domestic producer of DRAMs and DRAM modules.[4] Three other companies that engage in DRAM-related production activities in the United States also presented arguments in the preliminary phase of this investigation. Infineon Technologies Richmond ("Infineon") is 99 percent owned by Infineon Technologies North America Corp. of San Jose, California and one percent by Infineon Technologies Holding North America, Inc..[5] Hynix Semiconductor Manufacturing America is a subsidiary of Hynix Semiconductor America, which in turn is a subsidiary of Hynix Semiconductor Inc., a Korean producer of subject merchandise (collectively "Hynix").[6] Samsung Austin Semiconductor, LLC is part owned by Samsung Semiconductor, Inc., an importer and reseller of subject DRAMs and DRAM modules and by Intel Corp. of Santa Clara, CA, and Samsung Electronics America, Inc., which in turn is a wholly-owned subsidiary of Samsung Electronics Co. Ltd., the other known Korean producer of subject merchandise (collectively "Samsung").[7]

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATIONS

The legal standard for preliminary countervailing duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determination, whether there is a reasonable indication that a domestic industry is materially injured, threatened with material injury, or whether the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.[8] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[9]

II. DOMESTIC LIKE PRODUCT

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[3] Commissioner Miller did not participate in this investigation. See Mem. CO72-Z-006 (Dec. 6, 2002).

[4] Micron performs DRAM wafer fabrication and assembly of DRAMs and DRAM modules in the United States, and it operates wholly owned fabrication facilities ("fabs") in Italy and Japan, a joint-venture fab in Singapore, an assembly and test facility in Singapore, and a module manufacturing plant in the United Kingdom. See, e.g., Confidential Report, Memorandum INV-Z-196 (Dec. 9, 2002), as revised by Memorandum INV-Z-198 (Dec. 12, 2002) ("CR") at III-2 to III-3; Public Report ("PR") at III-1; Petition at Exh. 6.

[5] Infineon Richmond manufactures DRAMs and DRAM modules in its fully integrated production facilities. Infineon Technologies North America Corp. is owned by Infineon Technologies Holding North America Inc., and the company in turn is owned by Infineon Technologies Holding B.V. of The Netherlands, which in turn is owned by Infineon Technologies AG of Munich, Germany. See, e.g., Infineon's Postconference Brief at 1-2.

[6] See, e.g., CR at III-4, III-5; PR at III-3.

[7] See, e.g., CR at III-7; PR at III-4, III-5.

[8] 19 U.S.C. § 1671b(a); see also American Lamb Co. v. United States, 785 F.2d 994, 1001-04 (Fed. Cir. 1986); Aristech Chemical Corp. v. United States, 20 CIT 353, 354-55 (1996). No party argued that the establishment of an industry is materially retarded by reason of the allegedly unfairly traded imports.

[9] American Lamb, 785 F.2d at 1001 (Fed. Cir. 1986); see also Texas Crushed Stone Co. v. United States, 35 F.3d 1535, 1543 (Fed. Cir. 1994).

A. In General

To determine whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the "domestic like product" and the "industry."[10] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Act"), defines the relevant domestic industry as the "producers as a [w]hole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[11] In turn, the Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation … ."[12]

The decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[13] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[14] The Commission looks for clear dividing lines among possible like products, and disregards minor variations.[15] Although the Commission must accept the determination of the Department of Commerce ("Commerce") as to the scope of the allegedly subsidized subject merchandise, the Commission determines what domestic product is like the imported articles Commerce has identified.[16]

B. Product Description

In its notice initiating this countervailing duty investigation, Commerce defined the imported merchandise within the scope of this investigation as –

> Dynamic Random Access Memory semiconductors ("DRAMs") from Korea, whether assembled or unassembled. Assembled DRAMs include all package types. Unassembled DRAMs include processed wafers, uncut die, and cut die. Processed wafers fabricated in Korea, but assembled into finished semiconductors outside Korea

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[10] 19 U.S.C. § 1677(4)(A).

[11] Id.

[12] 19 U.S.C. § 1677(10).

[13] See, e.g., NEC Corp. v. Department of Commerce, 36 F. Supp.2d 380, 383 (Ct. Int'l Trade 1998); Nippon Steel Corp. v. United States, 19 CIT 450, 455 (1995); Torrington Co. v. United States, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), aff'd, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case' "). The Commission generally considers a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. See Nippon, 19 CIT at 455, n.4; Timken Co. v. United States, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

[14] See, e.g., S. Rep. No. 96-249, at 90-91 (1979).

[15] Nippon Steel, 19 CIT at 455; Torrington, 747 F. Supp. at 748-49; see also S. Rep. No. 96-249, at 90-91 (1979) (Congress has indicated that the domestic like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

[16] Hosiden Corp. v. Advanced Display Mfrs., 85 F.3d 1561, 1568 (Fed. Cir. 1996) (Commission may find single domestic like product corresponding to several different classes or kinds defined by Commerce); Torrington, 747 F. Supp. at 748-52 (affirming Commission's determination of six domestic like products in investigations where Commerce found five classes or kinds).

are also included in the scope. Processed wafers fabricated outside Korea and assembled into finished semiconductors in Korea are not included in the scope.

The scope of this investigation additionally includes memory modules containing DRAMs from Korea. A memory module is a collection of DRAMs, the sole function of which is memory. Memory modules include single in-line processing modules ("SIPs"), single in-line memory modules ("SIMMs"), dual in-line memory modules ("DIMMs"), small outline dual in-line memory modules ("SODIMMs"), Rambus in-line memory modules ("RIMMs"), and memory cards or other collections of DRAMs, whether unmounted or mounted on a circuit board. Modules that contain other parts that are needed to support the function of memory are covered. Only those modules that contain additional items which alter the function of the module to something other than memory, such as video graphics adapter ("VGA") boards and cards, are not included in the scope. This investigation also covers future DRAM module types.

The scope of this investigation additionally includes, but is not limited to, video random access memory ("VRAM"), and synchronous graphics RAM ("SGRAM"), as well as various types of DRAMs, including fast page-mode ("FPM"), extended data-out ("EDO"), burst extended data-out ("BEDO"), synchronous dynamic RAM ("SDRAM"), Rambus DRAM ("RDRAM") and Double Data Rate DRAM, ("DDR SDRAM"). The scope also includes any future density, packaging, or assembling of DRAMs. Also included in the scope of this investigation are removable memory modules placed on motherboards, with or without a central processing unit ("CPU"), unless the importer of the motherboards certifies with the Customs Service that neither it, nor a party related to it or under contract to it, will remove the modules from the motherboards after importation. The scope of this investigation does not include DRAMs or memory modules that are re-imported for repair or replacement.[17]

Such products are hereinafter referred to as DRAMs, DRAM modules, or collectively ("DRAM products").

C. Domestic Like Product

In previous investigations of DRAM products, the Commission defined the domestic like product as all DRAM products.[18] More specifically, the Commission concluded, based on its semifinished

[17] 67 Fed. Reg. 70927 (Nov. 27, 2002). Commerce noted that the DRAMs subject to this investigation are currently classifiable under subheadings 8542.21.8005 and 8542.21.8021 through 8542.21.8029 of the Harmonized Tariff Schedule of the United States ("HTSUS"). The memory modules containing DRAMs from Korea are currently classifiable under subheadings 8473.30.1040 or 8473.30.1080 of the HTSUS. It also noted that although the HTSUS subheadings are provided for convenience and Customs purposes, Commerce's written description of the scope of this investigation remains dispositive. Id.

[18] See, e.g., Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 at 6 (Dec. 1999); Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Prelim.), USITC Pub. 3149 at 7 (Dec. 1998); DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Remand), USITC Pub. 2997 at 2-3 (Oct. 1996); DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Final), USITC Pub. 2629 at 6-12 (May 1993); DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Prelim.), USITC Pub. 2519 at 3-10 (June 1992); 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Final), USITC Pub. 1862 at 3-11 (June 1986); Dynamic Random Access Memory Semiconductors of 256 Kilobits and Above from Japan, Inv. No. 731-TA-300 (Prelim.), USITC Pub. 1803 at 3-13

domestic like product analysis, that the domestic like product included cased and uncased DRAMs as well as DRAMs assembled into memory modules, and it concluded, based on its traditional domestic like product analysis, that the domestic like product also included all DRAM products regardless of density as well as specialty DRAM products. Petitioner argues that the Commission should define the domestic like product as all DRAM products, including both assembled and unassembled DRAMs, memory modules, all DRAM product applications or types, and all densities of DRAM products.[19] Respondents agree.[20]

The Commission must base its domestic like product determination on the record in this investigation, and is not bound by prior determinations, pertaining even to the same imported products, but the Commission may draw upon prior determinations in addressing pertinent domestic like product issues.[21] In light of the parties' agreement regarding the definition of the domestic like product, and in the absence of factual information on the record in the preliminary phase of this investigation contradicting the Commission's analysis in previous investigations, we find a single domestic like product consisting of all DRAM products regardless of density, including cased and uncased DRAMs as well as DRAMs packaged into memory modules, and including all DRAM product types, for the reasons stated in the previous investigations.

III. DOMESTIC INDUSTRY

A. In General

The domestic industry is defined as the "producers as a [w]hole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[22] In defining the domestic industry, the Commission's general practice has been to include in the industry all domestic production of the domestic like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.[23]

Based on the current record, during at least part of the period of investigation, eight firms performed wafer fabrication in the United States, four firms performed DRAM assembly (casing) operations, and two of those firms also assembled DRAM modules in the United States. During at least some part of the period of investigation, Micron, Infineon, Hynix Semiconductor Manufacturing

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(Jan. 1986); 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Prelim.), USITC Pub. 1735 at 3-4 (Aug. 1985). These findings are consistent with the Commission's definition of the domestic like product in Static Random Access Memory Semiconductors from the Republic of Korea and Taiwan, Inv. No. 731-TA-761 to 762 (Final), USITC Pub. 3098 at 5-8 (Apr. 1998).

[19] See, e.g., Petitioner's Postconference Brief at 2-5; Conference Tr. at 33-34.

[20] See, e.g., Respondents' Postconference Brief at 7, Exh. 1; Conference Tr. at 70.

[21] See, e.g., Acciai Speciali Terni v. United States, 118 F. Supp. 1095, 1304-05 (Ct. Int'l Trade 2000); see generally, e.g., Nippon Steel Corp. v. United States, 19 CIT 450, 455 (1995); Asociacion Colombiana de Exportadores de Flores v. United States, 693 F.Supp. 1165, 1169, n. 5 (Ct. Int'l Trade 1988) (particularly addressing like product determination); Citrosuco Paulista, S.A. v. United States, 704 F. Supp. 1075, 1087-88 (Ct. Int'l Trade 1988).

[22] 19 U.S.C. § 1677(4)(A).

[23] See, e.g., United States Steel Group v. United States, 873 F. Supp. 673, 681-84 (Ct. Int'l Trade 1994), aff'd, 96 F.3d 1352 (Fed. Cir. 1996).

America, Samsung Austin Semiconductor, Dominion Semiconductor,[24] Fujitsu,[25] IBM,[26] and NEC Electronics America[27] fabricated uncased DRAMs.[28] By the end of the period of investigation, there were four companies with DRAMs-related production activities in the United States: Hynix Semiconductor Manufacturing America, Samsung Austin Semiconductor, Micron, and Infineon. Hynix Semiconductor Manufacturing America and Samsung Austin Semiconductor export all of their U.S. fabricated wafers to Korea for final assembly (casing) into DRAMs, and during the period of investigation, Micron, Infineon, NEC, and IBM had operations to assemble (case) DRAMs in the United States.[29] Unlike in past investigations, the record in the preliminary phase of this investigation suggests that there are no longer any companies in the United States whose sole function is to assemble uncased DRAMs into cased DRAMs.[30] The record, however, indicates that *** imported uncased DRAMs fabbed in third-countries and assembled (cased) them in the United States for sale as DRAMs or DRAM modules.[31] There are also some DRAMs and DRAM modules sold in the United States that are from DRAMs fabbed in the United States, but assembled (cased) in third countries.[32] Finally, the record suggests that some companies, including PNY, Simple Technologies, Smart Modular, and Kingston assemble (package) DRAMs into DRAM modules in the United States, but these companies neither fabricate wafers nor assemble (case) DRAMs.[33]

B. What Constitutes Sufficient Production-Related Activities

In previous investigations, the Commission has concluded that the domestic industry producing DRAM products consists of those producers that fabricate DRAMs in the United States, and those producers that assemble (case) DRAMs in the United States, but that the industry does not include module "stuffers" or fabless design houses.[34] With respect to each of those operations, the Commission

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[24] At the beginning of the period of investigation, Dominion Semiconductor was a DRAM joint venture between Toshiba Corp. of Japan and International Business Machines ("IBM") of New York. IBM sold its stake in the venture in 2000, and in early 2002, Toshiba sold the entire facility to Micron. See, e.g., CR at III-3; PR at III-2.

[25] Fujitsu's facility was closed in 2001, and its DRAMs wafer starts ***. See, e.g., CR at III-4; PR at III-3.

[26] IBM reported *** and cessation of all U.S.-DRAMs fabrication in ***. See, e.g., CR at III-6; PR at III-4; Petition at 4, Exh. 4; Conference Tr. at 50.

[27] NEC ***, and stopped fabricating entirely in ***. See, e.g., CR at III-6 to III-7; PR at III-4; Petition at 3, Exh. 3; Conference Tr. at 50.

[28] See, e.g., CR/PR at Table III-1.

[29] See, e.g., CR/PR at Table III-1; Petition at 4 & n.5; Conference Tr. at 71 and 134; Respondents' Postconference Brief at 7, n.2.

[30] See, e.g., CR at III-1 at n.1; PR at III-1 at n.1; Petition at 4.

[31] (See questionnaire responses).

[32] For example, Micron reports that it has a large DRAMs assembly facility in Singapore that utilizes dice fabricated in Italy, Japan, and the United States, in addition to the dice fabricated in Singapore. It also believes that U.S. dice fabricated by producers other than Micron are assembled (cased) in third countries and imported for sale in the U.S. market from Canada and Mexico. Micron reports that the countries with known DRAMs fabrication facilities currently in operation are the United States, Korea, Taiwan, Japan, Singapore, China, Italy, and Germany. It reports that countries that do not fabricate DRAMs but have significant DRAMs assembly facilities include Portugal, Malaysia, and Canada. See, e.g., Petition at 130-32. ***.

[33] See, e.g., Petition at 5 & n.6.

[34] See, e.g., Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 at 7-12 (Dec. 1999); Static Random Access Memory Semiconductors from Korea and Taiwan, Invs. Nos. 731-TA-761 to 762 (Final), USITC Pub. 3098 at 9-10 (Apr. 1998); Dynamic Random Access Memory Semiconductors from Korea, Inv. No. 556 (Final), USITC Pub. 2629 at 12-14 (May 1993); 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Final), USITC Pub.

identified the relevant inquiry as whether the operations in question constituted sufficient production-related activities in the United States. In assessing the nature and extent of production-related activities in the United States associated with a particular operation, the Commission generally considers six factors:

> (1) source and extent of the firm's capital investment;
> (2) technical expertise involved in U.S. production activities;
> (3) value added to the product in the United States;
> (4) employment levels;
> (5) quantity and type of parts sourced in the United States; and
> (6) any other costs and activities in the United States directly leading to production of the like product.[35]

No single factor is determinative and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation.[36] The parties generally agree with the Commission's analysis in previous investigations regarding what activities constitute sufficient production-related activities for inclusion in the domestic industry.[37] In light of the parties' agreement and the absence of factual information on the record in the preliminary phase of this investigation contradicting the Commission's analysis in previous investigations, we find that fabrication of uncased DRAMs and assembly (casing) operations in the United States constitute sufficient production-related activities, so we include producers that fabricate uncased DRAMs and producers that assemble (case) DRAMs in the United States in the domestic industry for the reasons stated in the previous investigations. Because companies that package ("stuff") DRAMs into DRAM modules and fabless design houses do not engage in sufficient production-related activities, we do not include them in the domestic industry for the reasons stated in the previous investigations.

Respondents argue that DRAMs and DRAM modules containing DRAMs that are fabbed in the United States and assembled (cased) in the United States should be considered domestic production, but that DRAMs and DRAM modules containing DRAMs that are fabbed in third-countries and assembled (cased) in the United States should be considered non-subject imports. They argue that the Commission's approach of treating fabrication as determinative of country of origin in all cases except where DRAMs and DRAM modules contain DRAMs that are fabbed in third-countries and assembled (cased) in the United States is internally inconsistent, masks the role of non-subject imports on the condition of the domestic industry, and is inconsistent with U.S. proposals in WTO negotiations on non-

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1862 at 11-12 (June 1986).

[35] See, e.g., Greenhouse Tomatoes from Canada, Inv. No. 731-TA-925 (Final), USITC Pub. 3499 at 10-11 (Apr. 2002); Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 at 7 n.27 (Dec. 1999); Certain Seamless Carbon and Alloy Steel Standard, Line, and Pressure Pipe from the Czech Republic, Japan, Mexico, Romania, and South Africa, Invs. Nos. 731-TA-846 to 850 (Prelim.), USITC Pub. 3221 at 12 n.49 (Aug. 1999); Fresh Atlantic Salmon from Chile, Inv. No. 731-TA-768 (Final), USITC Pub. 3116 at 9 (July 1998); Static Random Access Memory Semiconductors from Korea and Taiwan, Invs. Nos. 731-TA-761 to 762 (Final), USITC Pub. 3098 at 9 n.59 (Apr. 1998); Large Newspaper Printing Presses and Components Thereof from Germany and Japan, Invs. Nos. 731-TA-736 and 737 (Final), USITC Pub. 2988 at 8-9 (Aug. 1996).

[36] See, e.g., Aramid Fiber Formed of Poly Para-Phenylene Terephthalamide from the Netherlands, Inv. No. 731-TA-652 (Final), USITC Pub. 2783 at I-8 to I-9 & n.34 (June 1994) ("no single factor – including value added – is determinative and … value added information becomes more meaningful when other production activity indicia are taken into account").

[37] See, e.g., Conference Tr. at 34, 72-73.

preferential rules of origin, and with the practices of Commerce, the European Union, Japan, and Korea.[38]

Micron argues that DRAMs and DRAM modules containing DRAMs that were either fabbed or assembled (cased) in the United States should be treated as domestic shipments, consistent with the Commission's practice in other investigations. Micron disagrees with respondents regarding the weight accorded to fabbing and assembly (casing) operations in the United States, stating that both operations (not just fabbing) are significant, such that if either or both operations are performed in the United States, the resulting DRAMs or modules containing those DRAMs should be considered domestic shipments.[39]

To be included in the domestic industry, the statute requires that a company be a producer of a domestic like product.[40] There is no dispute that cased DRAMs are part of the domestic like product. Nor is there any dispute that DRAM assembly (casing) operations constitute sufficient production-related activities. The record in the preliminary phase of this investigation indicates that DRAM assembly (casing) operations are not as sophisticated a process as fabrication, but they do involve a moderate degree of technological sophistication and warrant continuing R&D and capital spending to keep up with the latest product and process developments.[41] Similarly, while fabrication involves greater value added than assembly (casing) operations, total value added by the assembly (casing) process is more than minimal in absolute terms, and particularly over the life of DRAM products, at least as measured by Micron's experience.[42] Assembly operations also employ a significant number of domestic production and related workers ("PRWs") and source domestically *** of uncased DRAMs used.[43] Accordingly, we find that operations fabricating uncased DRAMs as well as operations assembling (casing) DRAMs in the United States involve sufficient production-related activity to qualify as domestic production.

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[38] See, e.g., Respondents' Postconference Brief at 8, Exhs. 1, 2; Conference Tr. at 70-77, 114-15.

[39] See, e.g., Petitioner's Postconference Brief at 5-10.

[40] 19 U.S.C. § 1677(4)(A).

[41] The cost of a new fabrication facility (and equipment) is estimated to be more than $2 billion, whereas the cost of a new assembly (casing) facility is estimated to be approximately $300 million. See, e.g., CR at I-10 to I-11 & n.26; PR at I-7 to I-8 & n.26; Respondents' Nov. 22, 2002, PowerPoint submission; Conference Tr. at 64. The fabrication process is very automated, takes two to three months to complete, is the stage where the electrical and technical characteristics of the individual dice are developed, and is the process on which Commerce bases its country of origin determinations in Title VII investigations. See, e.g., CR at I-6, I-10; PR at I-4, I-7; Petition at 6-7, Exh. 6; Petitioner's Postconference Brief at 6. Assembly (casing) operations are somewhat more labor intensive than fabrication, but are nevertheless a highly automated and technologically sophisticated process that takes an estimated seven to fourteen days; U.S. Customs uses assembly (casing) operations as the basis for country of origin determinations. Whereas a fabrication plant requires a Class 1 clean room and involves more than 100 different material inputs and 180 operations, respondents report that a DRAM assembly (casing) plant only requires a Class 1,000 clean room, 10 material inputs, and 10 operations. See, e.g., CR at I-4 to I-5; PR at I-2 to I-4; Petition at 6, Exh. 6; Respondents' Nov. 22, 2002, PowerPoint submission.

[42] See, e.g., Conference Tr. at 59-60; Petitioner's Postconference Brief at 7.

[43] See, e.g., CR/PR at Table III-7 (with respect to domestic producers that currently both fabricate and assemble (case) DRAMs in the United States, they employed *** PRWs in fabrication operations and *** PRWs in assembly (casing) operations in the most recent 12-month period measured by the data on the record in the preliminary phase of this investigation. (Figures were derived from questionnaire responses).

Based on domestic production data reported in questionnaires, in billions of bits U.S.-cased DRAM products incorporating U.S.-fabricated DRAMs were *** in 1999; *** in 2000; *** in 2001; and *** in interim 2002 compared to *** in interim 2001, while U.S.-cased DRAM products incorporating third-country fabricated DRAMs were *** in 1999; *** in 2000; *** in 2001; and *** in interim 2002 compared to *** in interim 2001. *** of the domestically cased DRAM products incorporated Korean fabricated DRAMs during the period of investigation. (Figures were derived from questionnaire responses).

At the heart of respondents' argument is whether U.S. assembly (casing) operations on DRAMs that were fabricated in third-countries constitute sufficient production-related activity to warrant considering the resulting DRAM products that are sold in the U.S. market as domestic shipments. According to the record in the preliminary phase of this investigation, such shipments ***. The estimated volume of such domestic shipments of DRAM products made from DRAMs fabricated in third countries but assembled (cased) in the United States increased in billions of bits from *** in 1999 to *** in 2000 and then fell to *** in 2001 and was *** in interim 2002 compared to *** in interim 2001.[44] In effect, what respondents request is for the Commission to give determinative weight to the "quantity and type of parts sourced domestically" factor on a transaction-by-transaction basis. If the assembly (casing) operations involve DRAMs fabbed domestically, they agree that the resulting products are domestic shipments, but if the DRAMs were fabbed in third-countries, then they argue that U.S. assembly (casing) operations are not sufficient production-related activities to call the resulting products "domestic shipments." Petitioner argues that it is absurd to consider a PRW a domestic worker when he assembles (cases) U.S. fabbed DRAMs but not when the PRW assembles (cases) DRAMs fabbed in third-countries.

The Commission has never given determinative weight to an individual factor in previous investigations, including previous investigations of DRAM products and SRAM products, nor has it examined an individual factor on a company-specific basis, let alone on a transaction-specific basis for each company. For example, in the Taiwan DRAMs investigation, the Commission found DRAM assembly (casing) operations constitute domestic production, "regardless of whether the producer is integrated and regardless of the origin (domestic or imported non-subject) of the uncased DRAMs assembled in the United States."[45] In that case, Commerce's scope defined subject imports as DRAM products containing DRAMs fabricated in Taiwan, regardless of assembly (casing) location. By contrast, domestic production data categorized as domestic shipments both DRAM products containing U.S.-fabricated dice, regardless of where assembled, and DRAM products containing third-country (but not Taiwan) dice assembled (cased) in the United States.[46] In that case, the Commission rejected arguments that domestic production should be defined to include assembly (casing) operations of integrated domestic producers when performed on domestically fabricated dice, but should not include assembly (casing) of domestic dice by independent domestic assemblers or assembly (casing) of third-country fabricated dice by domestic assemblers. It noted –

> While the percentage of domestic inputs used in a product or production process is one of the factors typically considered by the Commission in determining whether an activity constitutes domestic production, it is not generally treated as dispositive. See, e.g., Certain All Terrain Vehicles from Japan, Inv. No. 731-TA-388 (Final), USITC Pub. 2163 at 13-14 (Mar. 1989) (finding that a "modest percentage of domestically-sourced parts or raw materials as a percentage of cost does not necessarily mean that a firm is not a domestic producer"). Moreover, the Commission generally considers this factor (and the other factors) on an industry-wide basis, rather than on a company-by-company basis, as petitioner appears to propose.[47]

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[44] CR/PR at Table IV-4. In value terms, domestic shipments of DRAM products produced from DRAMs fabricated in third countries but assembled (cased) in the United States increased from *** in 1999 to *** in 2000 then declined to *** in 2001, and was *** in interim 2002 compared to *** in interim 2001. CR/PR at Table IV-4.

[45] Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 at 7-9 (Dec. 1999).

[46] Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Prelim.), USITC Pub. 3149 at 9 n.45 (Dec. 1998).

[47] Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 at 9 n.40 (Dec. 1999).

The approach taken by the Commission in the Taiwan DRAMs investigation, and the approach that we take for purposes of the preliminary phase of this investigation, is consistent with the approach taken in other investigations of DRAM products (and SRAM products). Although the identities and activities of the various players in the U.S. market have fluctuated over the years, the Commission has consistently treated assembly (casing) operations as domestic production activities.[48] We recognize that there is some inconsistency to this position to the extent that under this approach we treat assembly (casing) operations of certain domestic companies which did not fabricate the DRAMs at issue, as significant enough to be considered domestic product, regardless of the source of the input, while treating the assembly (casing) operations of foreign producers as insufficient to transform the origin of the product. Under this approach, an imported DRAM fabbed in a third-country that was assembled (cased) in the United States becomes the product of a domestic producer, yet a domestically produced DRAM assembled (cased) abroad and subsequently re-imported does not become a third-source product, and is only counted as an import of "domestic" product in this investigation. We intend to reexamine this issue in any final phase investigation.[49]

C. Related Party Issues

Micron argues that Samsung Austin Semiconductor and Hynix Semiconductor Manufacturing America are related parties, and it contends that appropriate circumstances exist to exclude *** from the domestic industry.[50] Respondents concede that Samsung Austin Semiconductor and Hynix Semiconductor Manufacturing America are related parties, but they assert that appropriate circumstances do not exist to exclude either from the domestic industry.[51] We find that both Samsung Austin Semiconductor and Hynix Semiconductor Manufacturing America are related parties, and for purposes of the preliminary phase of this investigation, we find that appropriate circumstances do not exist to exclude either company from the domestic industry. We intend to revisit this issue in any final phase investigation.

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[48] See, e.g., 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Final), USITC Pub. 1862 at 11-12 (June 1986); Static Random Access Memory Semiconductors from the Republic of Korea and Taiwan, Invs. Nos. 731-TA-761 to 762 (Final), USITC Pub. 3098 at 9 (Apr. 1998) (this finding was not challenged on appeal); Dynamic Random Access Memory Semiconductors from Korea, Inv. No. 556 (Final), USITC Pub. 2629 at 12-14 (May 1993) (this finding was not challenged on appeal).

[49] We also recognize, as a factual matter, that not all producers and importers of DRAMs and DRAM modules are able to distinguish products by source of fabrication. Only 10 of 17 responding producers and importers always know the country of fabrication for purchases and internal transfers of cased DRAMs, and 12 of 19 always know the country of fabrication of dice incorporated into modules that are purchased or internally transferred. *** See, e.g., CR at II-8 & n.10; PR at II-5 & n.10.

[50] See, e.g., Petition at 3; Nov. 13, 2002, Supplement to Petition at 1-2; Petitioner's Postconference Brief at 10-14; Conference Tr. at 34-36.

[51] See, e.g., Respondents' Postconference Brief at Exh. 1; Conference Tr. at 77-78, 117.

1. Hynix Semiconductor Manufacturing America

Hynix Semiconductor Manufacturing America, which has fabrication operations in the United States, is a wholly-owned subsidiary of Hynix Semiconductor America, ***, which in turn is a wholly-owned subsidiary of Hynix Semiconductor Inc., a Korean producer of subject merchandise.[52] Hynix Semiconductor Manufacturing America is a related party because importer Hynix Semiconductor America and exporter Hynix Semiconductor, Inc. are legally or operationally in a position either directly or indirectly to exercise restraint or direction over Hynix Semiconductor Manufacturing America.

Hynix Semiconductor Manufacturing America is not equipped to assemble (case) DRAMs or assemble (package) DRAM modules, and it sends all uncased DRAMs to Korea for assembly.[53] The company has operated a wafer fab in Eugene, Oregon *** since production began in 1998. The facility, which accounted for *** percent of domestic production of uncased DRAMs in 2001,[54] processed ***.[55] The value of Hynix Semiconductor Manufacturing America's fixed assets ***,[56] and it made ***.[57] Although ***, Hynix Semiconductor Manufacturing America made capital expenditures over the period of investigation ***.[58] Hynix Semiconductor Manufacturing America opposes the petition.[59] As a ratio to net sales, Hynix Semiconductor Manufacturing America's operating margin ***, and Micron argues ***.[60] As a ratio to Hynix Semiconductor Manufacturing America's U.S. production, Hynix Semiconductor America's subject imports to the U.S. market in billion bits was *** percent in 1999, *** percent in 2000, *** percent in 2001, and was *** percent in interim 2002 compared to *** percent in interim 2001.[61] Based on these facts Hynix Semiconductor Manufacturing America ***. For purposes of the preliminary phase of this investigation, we find that appropriate circumstances do not exist to exclude Hynix Semiconductor Manufacturing America from the domestic industry.

2. Samsung Austin Semiconductor

Samsung Austin Semiconductor, which has DRAM fabrication operations in the United States, is *** percent owned by Samsung Semiconductor, Inc., an importer and reseller of subject DRAMs, *** percent owned by Intel Corp. of Santa Clara, CA, and *** percent owned by Samsung Electronics America, Inc. In turn, Samsung Semiconductor, Inc. is ***. Samsung Electronics America, Inc. is a ***

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[52] See, e.g., CR at III-4, III-5; PR at III-3; Nov. 13, 2002, Supplement to the Petition at 1-2, Exh. 1.

[53] See, e.g., CR at III-4 to III-5; PR at III-3; Conference Tr. at 71 and 134; Respondents' Postconference Brief at 7, n.2.

[54] See, e.g., CR/PR at Table III-1.

[55] See, e.g., CR at III-4 to III-5; PR at III-3. The record indicates that ***. See, e.g., CR at III-4 to III-5; PR at III-3.

[56] See, e.g., CR/PR at Table VI-4.

[57] For example, ***. See, e.g., CR at III-4 to III-5; PR at III-3; Hynix Semiconductor Manufacturing America's producer questionnaire response at 5.

[58] CR/PR at Table VI-4.

[59] CR/PR at Table III-1.

[60] CR/PR at Table VI-3. At the Preliminary Conference, Mr. Swanson of Hynix testified that Hynix negotiates with global customers for DRAMs from all of its fabs – Korean and U.S. – together, and he noted that most customers do not qualify by source of fabrication. Conference Tr. at 125.

[61] CR/PR at Table III-2. As a practical matter, Hynix ***. See, e.g., CR at II-5; PR at II-3. Whereas at the conference respondents reported that Hynix Semiconductor Manufacturing America has similar capabilities and production processes as affiliated production facilities in Korea, and any differences in product mix are generally short-lived, in their postconference brief, they reported that Hynix Semiconductor Manufacturing America produces a different product mix than the Korean facilities, with more emphasis on the large-volume products. See, e.g., CR at II-9 to II-10; PR at II-5 to II-6.

of Samsung Electronics Co., Ltd., the other Korean producer of subject merchandise.[62] We find that Samsung Austin Semiconductor is a related party, because importer Samsung Semiconductor, Inc. and exporter Samsung Electronics Co., Ltd. are legally or operationally in a position either directly or indirectly to exercise restraint or direction over Samsung Austin Semiconductor.

Samsung Austin Semiconductor, which opposes the petition, operates a dedicated DRAM wafer fabrication plant, for which construction began in March 1996 and production began in 1997.[63] Although ***, Samsung Austin Semiconductor's fixed assets *** and it has made capital expenditures over the period of investigation ***.[64] The Austin facility only has fabbing operations, and all wafers fabricated there are sent to Korea for assembly (casing), and ***.[65] As a percentage of the volume of Samsung Austin Semiconductor's U.S. fabrication, Samsung Semiconductor's subject imports in billion bits was *** percent in 1999, *** percent in 2000, *** percent in 2001, and was *** percent in interim 2002 compared to *** percent in interim 2001.[66] The plant is currently processing *** wafers per month, and accounted for *** percent of domestic production of uncased DRAMs in 2001.[67] As a ratio to net sales, Samsung Austin Semiconductor's operating margin ***.[68] Based on these facts Samsung Austin Semiconductor ***. Thus, for purposes of the preliminary phase of this investigation, we find that appropriate circumstances do not exist to exclude Samsung Austin Semiconductor from the domestic industry.

Accordingly, we define the domestic industry as Micron, Dominion, Infineon, Samsung Austin Semiconductor, Hynix Semiconductor Manufacturing America, Fujitsu, IBM, and NEC.

IV. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF ALLEGEDLY SUBSIDIZED SUBJECT IMPORTS

In the preliminary phase of countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[69] [70] In making this

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[62] See, e.g., CR at III-7; PR at III-4 to III-5; Samsung Austin Semiconductor's producer questionnaire response; Samsung Semiconductor, Inc.'s importer questionnaire response.

[63] See, e.g., CR at III-7; PR at III-4 to III-5.

[64] See, e.g., CR/PR at Table VI-4.

[65] See, e.g., CR at III-7; PR at III-4; Conference Tr. at 71; Respondents' Postconference Brief at 7, n.2.

[66] See, e.g., CR/PR at Table III-2. ***. See, e.g., CR at II-5; PR at II-3.

[67] See, e.g., CR at III-7; PR at III-5; CR/PR at Table III-1.

[68] See, e.g., CR/PR at Table VI-3.

[69] 19 U.S.C. § 1671b(a).

[70] By statute, imports from a subject country corresponding to a domestic like product that account for less than three percent of all such merchandise imported into the United States during the most recent twelve months for which data are available preceding the filing of the petition shall be deemed negligible. 19 U.S.C. § 1677(24)(A)(i)(I). The statute also provides that, even if imports are found to be negligible for purposes of present material injury, they shall not be treated as negligible for purposes of a threat analysis should the Commission determine that there is a potential that imports from the country concerned will imminently account for more than three percent of all such merchandise imported into the United States. 19 U.S.C. § 1677(24)(A)(iv). The Commission is authorized to make "reasonable estimates on the basis of available statistics" of pertinent import levels for purposes of deciding negligibility. 19 U.S.C. § 1677(24)(C); see also Uruguay Round Agreements Act ("URAA") Statement of Administrative Action ("SAA") at 856. By operation of law, a finding of negligibility terminates the Commission's investigations with respect to such imports. 19 U.S.C. § 1671b(a)(1).

Negligibility is not an issue in this investigation because the subject imports from Korea accounted for *** percent of imports of DRAM products into the United States in the most recent twelve month period preceding the filing of the petition for which data are available. (Figures were derived from CR/PR at Tables IV-1, IV-2). These

determination, the Commission must consider the volume of imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[71] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[72] In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[73] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[74]

For the reasons discussed below, we determine that there is a reasonable indication that the domestic industry producing DRAM products is materially injured by reason of subject imports of DRAM products from Korea that are allegedly subsidized.

A. Conditions of Competition and the Business Cycle[75]

The Commission identified a number of conditions of competition in the investigation of DRAMs from Taiwan that the parties argue are equally applicable here. Those conditions of competition, updated to reflect the facts on the record of the preliminary phase of this investigation, as well as additional conditions of competition pertinent to our analysis, are discussed below.

1. Product Life Cycle

The DRAM products market is characterized by rapid technological advancements in terms of density (the amount of memory contained in a chip), die shrinks (the number of chips that can be produced on a wafer of a certain size),[76] and addressing technology (which affects interface speed – the speed with which a DRAM product can be accessed by other elements of a computer). Each time a

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data are based on questionnaire responses, because official statistics do not adequately categorize the imports. Customs classifies DRAM products based on country of assembly rather than country of fabrication, and the HTS classifications for uncased DRAMs and DRAM modules are basket categories that also include products other than DRAM products. See, e.g., CR at I-2, I-5 to I-6 & n.10, IV-1; PR at I-2, I-4 & n.10, IV-1; CR/PR at Table IV-3 & n.1.

[71] 19 U.S.C. § 1677(7)(B)(i). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each [such] factor . . . [a]nd explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B); see also Angus Chemical Co. v. United States, 140 F.3d 1478 (Fed. Cir. 1998).

[72] 19 U.S.C. § 1677(7)(A).

[73] 19 U.S.C. § 1677(7)(C)(iii).

[74] 19 U.S.C. § 1677(7)(C)(iii).

[75] If domestic producers internally transfer significant production of the domestic like product for the production of a downstream article and sell significant production of the domestic like product in the merchant market, and the Commission finds that other statutory factors are met, then the Commission in determining market share and certain factors affecting financial performance shall focus primarily on the merchant market for the domestic like product. 19 U.S.C. § 1677(7)(C)(iv). Based on the record in the preliminary phase of this investigation, internal transfers accounted for *** percent of the reported volume of producers' U.S. shipments of DRAM products and commercial (merchant) shipments accounted for *** percent in the most recent 12-month period measured by the data. See, e.g., CR/PR at Table III-5. We find that the statutory captive production provision does not apply in this investigation because the threshold requirement that domestic producers internally transfer significant production of the domestic like product for the production of a downstream article is not met.

[76] Die shrinks are often achieved by improving designs for use on existing equipment, by purchasing and utilizing newer equipment capable of producing smaller device sizes, or a combination of the two. See, e.g., CR at I-12; PR at I-9.

producer moves to a new density, die shrink, or addressing technology, it starts a new "learning curve" or product life cycle. At the beginning of the product life cycle, production costs initially rise and yields (the percentage of usable dice obtained from a single wafer) decline. As each product moves through its life cycle, experience is gained and production volume increases, resulting in declining costs and rising yields. Price trends are generally correlated with the product life cycle. They start high for a new, state-of-the-art product, decline rapidly as the product becomes a commodity, and continue to decline until the product is replaced by the next generation of technology; prices may increase slightly once the product becomes a "legacy" product, to the extent that supply of the product is more limited.[77]

At present, the pace of advances in chip density and die shrinks appears to be accelerating, at least for many computer applications, which account for the majority of consumption. This results in shorter life cycles both for a particular density generation or die shrink and, to some extent, the equipment used to produce DRAM products. By contrast, some other applications, such as telecommunications equipment and consumer electronics, have not followed the computer industry in switching to each new density. Thus, there is a continuing market in these applications for lower density ("legacy") chips, and a greater diversity in the range of products offered by the remaining DRAM producers.[78]

2. High Capital Expenditures

To keep developing new technology, DRAM producers must invest constantly in new capital equipment as well as R&D. Historically, that capital equipment has a productive life cycle of about three years, although, as noted above, it may be getting shorter. The cost of constructing a new fab facility (including equipment) presently exceeds $2 billion.[79] Equipment costs continue to rise as the production technology needed to produce smaller circuitry becomes more sophisticated. As a result of increased capital intensity, respondents contend that the number of players worldwide has declined, and the number of producers world-wide and in the U.S. market has been consolidated.[80]

3. Demand

The industry's need to innovate is driven, in part, by continually rising demand for more and faster memory.[81] During the period of investigation, apparent domestic consumption of DRAMs and DRAM modules, in terms of billions of bits, increased from 54.8 million in 1999 to 91.7 million in 2000 and 133.8 million in 2001, and was 124.8 million in interim 2002 compared to 89.6 million in interim 2001.[82]

4. Supply

To meet rising demand, both in the United States and worldwide, capacity to produce DRAMs has increased significantly over the period of investigation. Production capacity (in terms of bit output) can be increased in two ways: increasing wafer starts (i.e., by constructing a new fab) or by producing more bits per wafer (i.e., shrinking die sizes). Worldwide capacity has increased in both ways during the

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[77] See, e.g., CR at I-12, I-15; PR at I-8, I-10 to I-11; Petitioner's Postconference Brief at 14, 35-36; Conference Tr. at 47-49.

[78] See, e.g., CR at II-1; PR at II-1; Respondents' Postconference Brief at 18-19.

[79] See, e.g., CR at I-10, II-9 to II-10; PR at I-7, II-5 to II-6.

[80] See, e.g., Respondents' Postconference Brief at 22-23.

[81] See, e.g., CR at I-8; PR at I-6; Petitioner's Postconference Brief at 14-15, 37.

[82] See, e.g., CR/PR at Table IV-5.

period of investigation. The scale on which DRAM production must take place assures that the opening of a new fab or the introduction of a new die shrink results in a large immediate increase in production capacity. Because growth in demand for DRAM products has been constant but supply increases are sporadic, supply and demand in the DRAM products market tend to be chronically out of equilibrium.[83]

During at least part of the period of investigation, eight firms performed wafer fabrication in the United States (Micron, Dominion, Fujitsu, Hynix Semiconductor Manufacturing America, Samsung Austin Semiconductor, IBM, Infineon, and NEC), four firms performed DRAM assembly (casing) operations in the United States (Micron, Infineon, IBM, and NEC), and two of those firms also assembled DRAM modules domestically.[84]

In addition to subject DRAMs and DRAM modules from Korea, there were also shipments into the U.S. market of DRAMs and DRAM modules made from DRAMs fabbed and assembled (cased) in third countries.[85] During the period of investigation, the volume of U.S. shipments of non-subject imports in billions of bits increased from *** in 1999 to *** in 2000, and to *** in 2001, and was *** in interim 2002 compared to *** in interim 2001.[86] As a share of apparent domestic consumption by quantity, non-subject imports increased from *** percent in 1999 to *** percent in 2000 and *** percent in 2001, and were *** percent in interim 2002 compared to *** percent in interim 2001.[87] We intend to examine the role of non-subject imports (however defined) in any final phase investigation.

5. Business Cycle

Because of the stark product life cycles and the chronic disequilibrium between supply and demand, the DRAM market has, since its inception in the 1970s, been characterized by repeated boom and bust cycles.[88] In the course of the normal business cycle, the industry will typically experience several years of short supply and high profitability, followed by about a year of oversupply and poor profitability.[89]

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[83] See, e.g., CR at I-10 to I-12, II-6; PR at I-7 to I-9, II-3 to II-4; Conference Tr. at 58-59, 96-98.

[84] See, e.g., CR at III-1; PR at III-1; CR/PR at Table III-1. As we indicated earlier in our discussion of the domestic industry, some of these producers exited the DRAM products industry during the period of investigation, and Micron purchased the facilities formerly owned by Dominion Semiconductor.

[85] See, e.g., CR/PR at Table IV-5.

[86] See, e.g., CR/PR at Table IV-4.

[87] See, e.g., CR/PR at Table IV-5.

[88] See, e.g., CR at II-6; PR at II-3. As noted above, per bit DRAM prices decline over the long term. Although prices might increase in a market upturn, reportedly the boom cycle in this industry is not necessarily defined by rising prices and can occur even as prices continue to decline in a manner consistent with the product life cycle. See, e.g., CR at I-15 to I-16; PR at I-10 to I-11; Respondents' Postconference Brief at 13. According to petitioner, over the long term, there has been about a 20 percent decline in the price of DRAMs on an annual basis. See, e.g., Petitioner's Postconference Brief at 36.

[89] See, e.g., Conference Tr. at 17-18, 23-25; Petitioner's Postconference Brief at 15-16, 38, 40.

6. Commodity Nature of Product

Questionnaire responses indicate that within the DRAM product family, DRAMs of similar density, access speed, and type (regular DRAM, VRAM, SGRAM, etc.) are generally interchangeable regardless of the origin of fabrication. For example, a 64Mb SDRAM manufactured by a Korean producer should be fully interchangeable with a similarly configured domestically produced device, as well as with a non-subject import. Substitutability also exists between similarly configured DRAMs of different density, but to a more limited degree. For example, for use in a memory module, two 64Mb SDRAMs should be interchangeable with one 128Mb SDRAM. In addition, though perhaps less common, a limited degree of interchangeability appears to exist among different varieties of DRAMs as well as among those with different addressing modes/access speeds. It appears, however that this substitution must occur during the design of the electronic system. For example, according to numerous questionnaire responses, after an electronic system has been designed to operate using a specific type of DRAM, the system would likely not function optimally using a different type. Similarly, with regard to the different addressing modes, once a memory controller has been designed for an electronic system, a specific addressing mode such as EDO or SDRAM has also been incorporated into the design.[90]

Petitioner claims that DRAMs are commodity products sold on the basis of price alone, and that Korean DRAMs are equivalent to domestically produced DRAMs in terms of performance.[91] Respondents generally concur, with some exceptions. Hynix argues that ***.[92] The record in the preliminary phase of this investigation indicates that the degree of substitution between domestic and imported DRAMs and DRAM modules depends upon such factors as relative prices, quality (e.g., standards, reliability of supply, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, payment terms, product services, etc.). Based on available data, we find that there is a high degree of substitutability between the domestic and subject product. Both domestic producers and importers of the subject product sell a substantial share of DRAMs and DRAM modules for the same uses, and to the same customers.[93] Most responding domestic producers and importers reported that domestically produced and subject DRAMs and DRAM modules are generally interchangeable and there are no important differences in product characteristics or sales conditions between them. Over the period of investigation, domestic and subject producers produced many of the same products in terms of density, although Hynix Semiconductor, Inc. may have continued producing some of the legacy products longer than domestic producers, and Samsung Electronic Co. Ltd. also produced RAMBUS products that were not produced in the United States.[94]

7. Sales Terms

DRAMs and DRAM modules produced in the United States are largely sold to the same customers and through the same channels of distribution as subject DRAMs and DRAM modules. Most DRAMs and DRAM modules are used in computers or peripheral equipment. Most DRAMs and DRAM modules are sold to three types of customers – major PC manufacturers ("PC OEMs"), manufacturers of other electronic equipment such as communications equipment, and purchasers other than OEMs. Many of the non-OEM customers are producers of memory or video modules, and contract electronic

[90] See, e.g., CR at I-13 to I-14; PR at I-9 to I-10.
[91] See, e.g., Conference Tr. at 16-17.
[92] See, e.g., Hynix Semiconductor America's Importer Questionnaire response.
[93] See, e.g., CR at II-7 to II-8; PR at II-4 to II-5.
[94] See, e.g., CR at II-8 to II-12; PR at II-5 to II-8; CR/PR at Tables II-1, II-2.

manufacturers. There are also some sales through authorized electronics distributors.[95] Sales to major OEMs are usually on a contract basis. These contracts for multiple shipments generally do not specify price and quantity, but may specify the share of overall purchases awarded to a supplier. Within the contract period, price and quantity are determined for shorter intervals of one week to three months. Both domestic producers and importers generally negotiate contracts for multiple shipments to larger customers and participate in the spot market.[96]

8. Competition-Related Issues

In the early 1970s, DRAM semiconductors (chips) with a density of 1,024 storage cells or bits per chip (1 kilobit or 1Kb) were introduced. Since then, improvements in semiconductor processing and circuit designs have allowed for continued increases in density. Throughout the 1970s and 1980s, 4Kb, 16Kb, 64Kb, 256Kb, 1Mb, and 4Mb DRAMs were introduced. During the 1990s through 2002, 16Mb, 64Mb, 128Mb, and 256Mb chips entered the market, and 512Mb chips are just now in the very early stages of production ramp up. In terms of value, 128Mb and 256Mb DRAMs currently account for the largest part of the market. Until the introduction of the 128Mb DRAM, each new generation of DRAM chips quadrupled the number of bits of memory contained on a single chip. The switch to 128Mb DRAMs doubled the bit content of a single chip over that of a 64Mb DRAM. Petitioner estimates that the life cycle has been condensing over the past few generations such that the expected lifetime of a particular density of DRAMs is shorter today than several generations ago.[97]

Respondents emphasize that the market for DRAMs is world-wide, and the largest U.S. customers require a single worldwide price for their DRAM purchases, and the largest customers purchase DRAMs pursuant to long-term agreements. Respondents also argue that the DRAM market is fragmenting with the concurrent existence in the market of a number of different densities and interface modes. While acknowledging that all of the major DRAM suppliers participate in all product segments, respondents noted that, at any particular time, one supplier may be more active in a specific segment than another supplier. Reportedly, Samsung Electronics Co. Ltd. is by far the largest supplier of Rambus products while Hynix Semiconductor, Inc. is strong in graphics DRAMs and has a niche in legacy products. According to Samsung, *** percent of 2001 sales by its U.S. sales subsidiary were Rambus and other specialty DRAM products. In contrast, ***. According to Hynix Semiconductor America, *** percent of its 2001 subject imports were lower density (4Mb, 16Mb, and 64Mb) DRAMs. Fabrication of all density products under 128Mb by domestic producers in 2001 accounted for only *** percent of total domestic production.[98]

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[95] CR at II-1; PR at II-1. Responding domestic producers and importers report that cased DRAMs account for 85 to 95 percent of the cost of DRAM modules. Responding domestic producers and importers reported that DRAMs and DRAM modules account for a small share of the overall cost of most electronic equipment. Reportedly, DRAMs and DRAM modules account for 3 to 15 percent of the cost of a PC or laptop, and a slightly higher share of the total cost of a server. *** reported that DRAMs and DRAM modules account for 15-17 percent, 4-40 percent, and 10-20 percent of the total cost of a new server, respectively. Other reported uses for DRAM products and the share of DRAM product cost in total cost were game consoles (10-20 percent); network equipment (less than 1 percent); graphics cards (13-15 percent); and digital equipment such as PDAs and DVD players (1-2 percent). See, e.g., CR at II-7; PR at II-4.

[96] See, e.g., CR at V-3; PR at V-2.

[97] See, e.g., CR at I-8; PR at I-6; Petitioner's Postconference Brief at 36; Conference Tr. at 54-55, 67.

[98] See, e.g., CR at I-14 to I-15; PR at I-9 to I-10; Respondents' Postconference Brief at 18-22; Conference Tr. at 77-83.

A significant and increasing share of domestic production was exported over the period of investigation; by the end of the period, exports exceeded U.S. shipments.[99]

9. Previous Antidumping Duty Order

DRAM products, including DRAM products from Korea, have been the subject of prior antidumping duty investigations in the United States. On April 22, 1992, Micron filed an antidumping duty petition alleging that an industry in the United States was materially injured and threatened with further material injury by reason of DRAM products of one megabit and above from Korea. The Commission determined that the domestic industry producing DRAM products was materially injured by reason of subject DRAM products from Korea that Commerce determined were sold in the U.S. market at less than fair value.[100] Respondents subsequently appealed the final determinations of both Commerce and the Commission to the U.S. Court of International Trade ("CIT"), and Micron appealed Commerce's final determination as well. The schedule in the appeal of the Commission's final determination was postponed pending final resolution of the appeals of Commerce's determination. Commerce issued a remand determination on August 24, 1995, in which it found a de minimis margin for Korean producer Samsung Electronics Co., and thus it excluded Samsung Electronics Co. from the antidumping duty order. After the CIT affirmed Commerce's remand determination, at the request of Korean producers Hyundai and LG Semicon, the CIT ordered the Commission to reconsider its determination in light of Commerce's revised final determination. In its remand determination, the Commission found that the domestic industry was materially injured by reason of subject imports of DRAM products from Korea.[101] The Commission's remand determination was affirmed by the CIT on May 2, 1997,[102] and the CIT's opinion was not subsequently appealed to the Federal Circuit.

On November 2, 1999, Commerce initiated and the Commission instituted five-year reviews of the antidumping duty order on DRAM products from Korea.[103] Both Commerce and the Commission determined to conduct full reviews of the order. In its preliminary results of full review, Commerce found that revocation of the antidumping duty order on DRAM products from Korea would likely lead to continuation or recurrence of dumping at 20.88 percent margins for Hyundai and 4.55 percent margins for all others. Commerce issued a duty absorption finding with respect to sales by Hyundai, and the reported rate for Hyundai reflected the absorption adjusted rate.[104] Before Commerce had issued the final results of its full five-year review, and before the Commission held a hearing in its five-year review of the order, Micron withdrew its notice of intent to participate in Commerce's five-year review and stated its support for revocation of the order. Because no domestic interested party was thus participating in the five-year review, Commerce revoked the order on October 5, 2000,[105] and the Commission terminated its five-year review investigation effective the same date.[106]

C. Volume of Subject Imports

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[99] See, e.g., CR/PR at Table III-6.

[100] See DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Final), USITC Pub. 2629 (May 1993).

[101] See DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Remand), USITC Pub. 2997 (Oct. 1996) (reflecting the opinions of Commissioners Nuzum and Newquist, as well as Commissioner Bragg, who was not a member of the Commission at the time of the original determination and who considered the record de novo).

[102] Hyundai Electronic Industries Co., Ltd. v. United States, Slip Op. 97-53.

[103] 64 Fed. Reg. 59160; 64 Fed. Reg. 59202.

[104] 65 Fed. Reg. 34439 (May 30, 2000); Commerce's Issues and Decision Memorandum (May 22, 2000).

[105] 65 Fed. Reg. 59391 (Oct. 5, 2000).

[106] 65 Fed. Reg. 60975 (Oct. 13, 2000).

Section 771(C)(i) of the Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[107]

As an initial matter, for purposes of this preliminary determination and as in previous determinations,[108] we have focused on bits for purposes of assessing the volume of imports, because total bits are a uniform measure of the quantity of DRAM products. We recognize, however, that the use of bits as a unit of measurement can present difficulties for our analysis, as total bits are a function of chip density and product mix, both of which have changed over the period of investigation. Accordingly, we do not view the increase in subject imports in the DRAM products market measured in terms of bits the same way we might view an increase of such magnitude in the volume of imports of another product. Nevertheless, the increase in the volume of subject imports over the period of investigation was substantial.

Apparent domestic consumption of DRAM products measured in billions of bits increased each year of the period of investigation from 54.8 million in 1999 to 91.7 million in 2000 and 133.8 million in 2001, and was 124.8 million in interim 2002 compared to 89.6 million in interim 2001.[109] The volume of subject imports in billions of bits increased from *** in 1999 to *** in 2000 and *** in 2001, and was *** in interim 2002 compared to *** in interim 2001.[110] In terms of their share of apparent domestic consumption, shipments of subject imports decreased from *** percent in 1999 to *** percent in 2000, then increased to *** percent in 2001, and were *** percent in interim 2002 compared to *** percent in interim 2001.[111]

As subject imports increased absolutely and relative to apparent domestic consumption and domestic production, and as apparent domestic consumption grew, domestic producers lost U.S. market share, with their share declining from 45.8 percent in 1999 to 33.1 percent in 2001, and their share was 31.0 percent in interim 2002 compared to 32.1 percent in interim 2001.[112]

Based on the record available in the preliminary phase of this investigation, we find that the substantial volume of subject imports that is increasing in both absolute terms and relative to consumption and production in the United States, is significant.

D. Price Effects of Subject Imports

Section 771(C)(ii) of the Act provides that, in evaluating the price effects of the subject imports, the Commission shall consider whether –

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[113]

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[107] 19 U.S.C. § 1677(7)(C)(i).

[108] See, e.g., Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 (Dec. 1999).

[109] See, e.g., CR/PR at Table C-1.

[110] See, e.g., CR/PR at Table IV-3.

[111] See, e.g., CR/PR at Table C-1.

[112] See, e.g., CR/PR at Table C-1.

[113] 19 U.S.C. § 1677(7)(C)(ii).

As discussed above in regard to the conditions of competition, within the DRAM product family, DRAMs of similar density, access speed, and variety are generally interchangeable regardless of country of fabrication. The record indicates a high degree of substitutability between the domestic and subject product, and the domestic and subject product were sold through the same channels of distribution to many of the same customers.[114] We also find that price trends in the DRAM products industry are generally correlated with the product life cycle. They start high for a new, state-of-the-art product, decline rapidly as the product becomes a commodity, and continue to decline until the product is replaced by the next generation of technology.[115]

The Commission collected data on six pricing products, all of which were among those sold in the largest volumes by domestic producers and importers of DRAMs and DRAM modules, and all of which are standard DRAM products rather than specialty DRAM products.[116] Overall, the pricing data are mixed in terms of overselling and underselling, but show mostly underselling by subject imports in 2001 and in interim 2002, the period in which prices were the lowest.[117] Prices of domestic shipments and subject imports of the various pricing products to PC OEMs, other OEMs, and non-OEMs trended similarly and generally declined by approximately 80 percent or more over the period of investigation, beginning at the end of 1999.[118] With respect to lost sales and lost revenue allegations, the record indicates that ***.[119]

Accordingly, we find that there is significant price underselling by subject imports as compared with the price of the domestic like product, and that the effect of such subject imports has depressed prices to a significant degree.

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[114] In any final phase investigation, we intend to examine the extent of product differentiation between subject imports and the domestic like product.

[115] During the preliminary phase of this investigation, the parties argued about the role of oversupply, changes in expectations, and the role of global pricing for global purchasers in these price declines. We intend to more closely examine these issues in any final phase investigation.

[116] See, e.g., CR at V-5; PR at V-4.

[117] Of the 656 possible price comparisons to the various channels of distribution for sales of the various pricing products, 347 show underselling by subject imports from Korea, and 309 show overselling by subject imports from Korea compared to domestic prices. See, e.g., CR/PR at Table V-14. Subject imports undersold domestic DRAM products in 55 percent and 61 percent of possible comparisons in 2001 and interim 2002, respectively. See, e.g., CR/PR at Table V-14.

[118] See, e.g., CR/PR at Table V-1, Tables V-2 to V-13. These declines are more dramatic than we would have expected simply by operation of product life cycles. It appears that the product life cycle causes prices to fall approximately 20 percent annually. See, e.g., Petitioner's Postconference Brief at 36; Dynamic Random Access Memory Semiconductors of One Megabit and Above from Taiwan, Inv. No. 731-TA-811 (Final), USITC Pub. 3256 (Dec. 1999).

[119] See, e.g., CR at V-33; PR at V-8; CR/PR at Table V-15.

E. Impact of Subject Imports

In examining the impact of the subject imports on the domestic industry, we consider all relevant economic factors that bear on the state of the industry in the United States.[120] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, and research and development. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[121]

Domestic industry performance, as measured by many of the statutory performance factors, declined over the period of investigation. Average domestic production capacity declined from 2.8 million wafers in 1999 to 2.6 million wafers in 2001, and was 2.0 million wafers in interim 2002 compared to 2.1 million wafers in interim 2001.[122] Domestic production, as measured by wafer starts in terms of 1,000 wafers declined from 2,630 in 1999 to 2,359 in 2001, and was 1,798 in interim 2002 compared to 1,856 in interim 2001.[123] As subject imports increased both in volume and U.S. market share over the period, the volume of U.S. producers' shipments declined, and their market share by quantity declined from 45.8 percent in 1999 to 33.1 percent in 2001, and their market share in interim 2002 was 31.0 percent compared to 32.1 percent in interim 2001.[124] Domestic producers' capacity utilization rates also declined over the period of investigation from 94.7 percent in 1999 to 90.3 percent in 2001, and was 89.4 percent in interim 2002 compared to 90.3 percent in interim 2001.[125] Some indicators showed positive trends. The number of PRWs increased and hourly wages improved over the period of investigation, and domestic production and shipments, in terms of billions of bits, increased.[126]

The domestic industry's operating expenses increased over the period of investigation, and by 2001, the industry experienced more than $2 billion in operating losses.[127] As a share of net sales, operating income increased from 6.3 percent in 1999 to 24.0 percent in 2000 before declining to a loss of 81.9 percent in 2001; operating losses as a share of net sales in interim 2002 were 44.9 percent compared to 74.0 percent in interim 2001.[128] During this time, domestic producers continued to make capital expenditures, with reported capital expenditures increasing from $1.2 billion in 1999 to $1.7 billion in 2000 before declining to $1.5 billion in 2001; capital expenditures in interim 2002 were *** compared to $1.2 billion in interim 2001.[129]

Given the increased volume of and market share held by subject imports of DRAM products, evidence of significant underselling and price depression by subject imports, and declines in many of the domestic industry's performance indicators during a time of increased apparent U.S. consumption, we

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[120] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports." Id. at 885).

[121] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 and Live Cattle from Canada and Mexico, Invs. Nos. 701-TA-386 and 731-TA-812 to 813 (Preliminary), USITC Pub. 3155 (Feb. 1999) at 25, n.148.

[122] CR/PR at Table C-1.

[123] CR/PR at Table C-1.

[124] CR/PR at Table C-1.

[125] CR/PR at Table C-1.

[126] CR/PR at Table C-1.

[127] CR/PR at Table C-1.

[128] CR/PR at Table C-1.

[129] CR/PR at Table C-1.

conclude under the standard applicable to this preliminary investigation[130] that subject imports are having a significant adverse impact on the domestic industry producing DRAM products.

CONCLUSION

For the reasons stated above, we determine that there is a reasonable indication that the domestic industry producing DRAM products is materially injured by reason of subject imports of DRAM products from Korea that allegedly are subsidized.

[130] American Lamb, 785 F.2d at 1001 (Fed. Cir. 1986); see also Texas Crushed Stone Co. v. United States, 35 F.3d 1535, 1543 (Fed. Cir. 1994).