

UNITED STATES INTERNATIONAL TRADE COMMISSION

DYNAMIC RANDOM ACCESS MEMORY SEMICONDUCTORS
OF ONE MEGABIT AND ABOVE FROM TAIWAN

Investigation No. 731-TA-811 (Preliminary)

DETERMINATION AND VIEWS OF THE COMMISSION

(USITC Publication No. 3149, December 1998)

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DRAMS OF ONE MEGABIT AND ABOVE FROM TAIWAN

DETERMINATION

On the basis of the record¹ developed in the subject investigation, the United States International Trade Commission determines,² pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from Taiwan of dynamic random access memory semiconductors (DRAMs) of one megabit and above, provided for in subheadings 8542.13.80 and 8473.30.10 through 8473.30.90 of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value (LTFV).

COMMENCEMENT OF FINAL PHASE INVESTIGATION

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 733(b) of the Act, or, if the preliminary determination is negative, upon notice of an affirmative final determination in that investigation under section 735(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 October 22, 1998, a petition was filed with the Commission and the Department of Commerce by Micron Technology, Inc., Boise, ID, alleging that an industry in the United States is materially injured and is threatened with material injury by reason of LTFV imports of DRAMs of one megabit and above from Taiwan. Accordingly, effective October 22, 1998, the Commission instituted antidumping investigation No. 731-TA-811 (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

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 Crawford did not participate in this investigation.

October 29, 1998 (63 FR 58066). The conference was held in Washington, DC, on November 13, 1998, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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”) from Taiwan that are allegedly sold in the United States at less than fair value (“LTFV”).¹

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATIONS

The legal standard for preliminary antidumping determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured, or threatened with material injury, by reason of the allegedly LTFV imports.² 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.”³

II. DOMESTIC LIKE PRODUCT AND INDUSTRY

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 the subject imports, the Commission first defines the “domestic like product” and the “industry.”⁴ Section 771(4)(A) of the Tariff Act of 1930, as amended (“the Act”), defines the relevant 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.”⁵ 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.”⁶

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.⁷ No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.⁸ The Commission

¹ Commissioner Crawford did not participate in this investigation.

² 19 U.S.C. § 1673b(a); *see also* American Lamb Co. v. United States, 785 F.2d 994 (Fed. Cir. 1986); Calabrian Corp. v. United States, 794 F. Supp. 377, 381 (Ct. Int’l Trade 1992).

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

⁴ 19 U.S.C. § 1677(4)(A).

⁵ *Id.*

⁶ 19 U.S.C. § 1677(10).

⁷ *See, e.g.*, Nippon Steel Corp. v. United States, 19 CIT 450, 455 (1995). 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 id.* at 455 n.4; Timken Co. v. United States, 913 F. Supp. 580, 584 (Ct. Int’l Trade 1996).

⁸ *See, e.g.*, S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979).

looks for clear dividing lines among possible like products, and disregards minor variations.⁹ Although the Commission must accept the determination of the Department of Commerce (“Commerce”) as to the scope of the imported merchandise allegedly sold at LTFV, the Commission determines what domestic product is like the imported articles Commerce has identified.¹⁰

B. Product Description

In its notice of initiation, Commerce defined the imported merchandise within the scope of this investigation as:

DRAMs from Taiwan, whether assembled or unassembled. Assembled DRAMs include all package types. Unassembled DRAMs include processed wafers, uncut die, and cut die. Processed wafers fabricated in Taiwan, but packaged or assembled into finished semiconductors in a third country are included in the scope. Wafers fabricated in a third country and assembled or packaged in Taiwan are not included in the scope.

The scope of this investigation includes memory modules. A memory module is a collection of DRAMs, the sole function of which is memory. Modules include single in-line processing modules (“SIPs”), single in-line memory modules (“SIMMs”), dual in-line memory modules (“DIMMs”), memory cards or other collections of DRAMs whether mounted or unmounted 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 that 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. Modules containing DRAMs made from wafers fabricated in Taiwan, but either assembled or packaged into finished semiconductors in a third country, are also included in the scope.

The scope includes, but is not limited to, video RAM (“VRAM”), Windows RAM (“WRAM”), synchronous graphics RAM (“SGRAM”), as well as various types of DRAM, including fast page-mode (“FPM”), extended data-out (“EDO”), burst extended data-out (“BEDO”), synchronous dynamic RAM (“SDRAM”), and “Rambus” DRAM (“RDRAM”). The scope of this investigation also includes any future density, packaging or assembling of DRAMs. The scope of this investigation does not include DRAMs or memory modules that are reimported for repair or replacement.¹¹

DRAM is a class of volatile semiconductor memory that allows data to be both read from and written to the device’s storage locations in a non-linear fashion. DRAMs and DRAM modules (collections of DRAMs mounted on a printed circuit board) are used as the main memory in a variety of electronic products including computers and computer peripherals, telecommunications equipment, networking equipment, and

⁹ Torrington Co. v. United States, 747 F. Supp. 744, 748-49 (Ct. Int’l Trade 1990), *aff’d*, 938 F.2d 1278 (Fed. Cir. 1991).

¹⁰ Hosiden Corp. v. Advanced Display Manufacturers, 85 F.3d 1561 (Fed. Cir. 1996) (Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); Torrington, 747 F. Supp. at 748-752 (affirming Commission determination of six like products in investigations where Commerce found five classes or kinds).

¹¹ 63 Fed. Reg. 64040 (Nov. 18, 1998).

consumer electronics devices. By far, the largest use for DRAMs and DRAM modules is as the main memory in computer equipment.¹²

C. Domestic Like Product Issues in This Investigation

In this preliminary phase of the investigation, we have considered four like product issues: (1) whether cased (*i.e.*, assembled) and uncased (*i.e.*, unassembled) DRAMs are a single like product; (2) whether the like product includes DRAMs assembled into memory modules; (3) whether the like product includes all DRAMs regardless of density (*i.e.*, megabits of memory capacity); and (4) whether specialty DRAMs are part of the same like product as commodity DRAMs.¹³ For the reasons discussed below, we find that there is a single domestic like product consisting of all DRAMs, regardless of density, whether cased or uncased, and including DRAMs mounted on memory modules and specialty DRAMs.

1. Whether Cased and Uncased DRAMs are a Single Like Product

A finished or cased DRAM is created by separating a fabricated wafer into individual chips, wire bonding metal lead frames to the chips, solder plating the metal leads, trimming and forming the leads into a desired shape, and encapsulating the chips in either a plastic or ceramic housing.¹⁴ In addressing whether cased and uncased DRAMs constitute a single domestic like product, we have applied a semifinished product analysis.¹⁵ DRAM wafers and dice are dedicated to use in assembled DRAMs and have no independent use. They will ultimately be incorporated into an electronic product in the form of a cased DRAM. Although an uncased DRAM might be sold by a fabricator to an unrelated assembler, there is no independent commercial market for uncased DRAMs.¹⁶ The design and wafer fabrication stages, which result in the semifinished chip, impart the essential electrical and technical characteristics that will become those of both the uncased DRAM

¹² Confidential Report (“CR”) at I-5-I-7, Public Report (“PR”) at I-4-I-5.

¹³ Petitioner Micron Technology, Inc. (“Micron”) argues that the Commission should find a single domestic like product consisting of all DRAMs (including cased and uncased, memory modules and specialty varieties) with a density of one megabit or above, consistent with the scope. Transcript of Commission Staff Conference (Nov. 13, 1998) (“Conf. Tr.”) at 41. Respondents agree that there is one domestic like product, but consider that to be the one identified in prior investigations, which includes all DRAMs, regardless of density. *Id.* at 82-83. We must base our domestic like product determination on the record in this investigation and are not bound by prior determinations, even those pertaining to the same imported product. Nippon Steel, 19 CIT at 454-455; Asociacion Colombiana de Exportadores de Flores v. United States, 693 F. Supp. 1165, 1169, n.5 (Ct. Int’l Trade 1988). We note, however, that the Commission has previously found all DRAMs, whether unassembled, assembled, or assembled into modules, and regardless of density, to be a single like product. DRAMs of One Megabit and Above from the Republic of Korea, Inv. No. 731-TA-556 (Preliminary), USITC Pub. 2529 (June 1992), (Final) USITC Pub. 2629 (May 1993), (Remand) USITC Pub. 2997 (Oct. 1996) (“DRAMs from Korea”); Dynamic Random Access Memory Semiconductors of 256 Kilobits and Above from Japan, Inv. No. 731-TA-300 (Preliminary), USITC Pub. 1803 (Jan. 1986); 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Preliminary), USITC Pub. 1735 (Aug. 1985), and (Final) USITC Pub. 1862 (June 1986).

¹⁴ CR at I-8-I-9, PR at I-6.

¹⁵ Accordingly, we have considered: (1) whether the upstream article is dedicated to the production of the downstream article, or has independent uses; (2) whether there are perceived to be separate markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles. *See, e.g.*, Fresh Atlantic Salmon from Chile, Inv. No. 731-TA-768 (Final), USITC Pub. 3116 at n.41 (July 1998).

¹⁶ Micron Postconference Brief at 5-6.

and the cased DRAM.¹⁷ The DRAM assembly process, while not insubstantial, appears to be somewhat less technologically complex and costly than the fabrication process.¹⁸ Accordingly, we find that cased and uncased DRAMs are part of a single domestic like product.

2. Whether the Like Product Includes DRAMs Assembled Into Memory Modules

A DRAM memory module is a packaging arrangement generally consisting of a printed circuit board that contains two or more DRAMs.¹⁹ Applying a semifinished product analysis, we find that the essential physical and functional characteristics of a module are imparted to it by the DRAM chip(s).²⁰ Although a DRAM can be used either as part of a DRAM memory module or separately, and therefore is not dedicated to use in DRAM modules, the uses of DRAMs and DRAM modules are essentially the same. Both are sold to original equipment manufacturers and distributors and are ultimately used as the main memory in a variety of electronic products, principally including computers.²¹ Moreover, the DRAM chips incorporated in a DRAM memory module account for approximately 90-95 percent of the value of the module, reflecting the fact that the module assembly process is neither costly nor technologically complex.²² Accordingly, we determine that DRAM memory modules are part of the same like product as upstream DRAM products.

3. Whether the Like Product Includes All DRAMs Regardless of Density

The density of a DRAM, measured in “bits,” reflects its capacity to hold information. The density of commercially available DRAMs has increased dramatically over the past 20 years, with 4 megabit, 16 megabit, and 64 megabit DRAMs currently accounting for the largest part of the market.²³

We find that there are no clear dividing lines between currently developed DRAMs of different densities, whether under or over 1 megabit. A DRAM is a die enclosed in a plastic or ceramic housing, with thin metal leads which allow it to be attached to a circuit board, that is designed to store information as electrical charges. DRAMs of varying densities are, to some extent, interchangeable, since memory module purchasers are typically indifferent to the number of individual chips that are used to provide the required memory capacity.²⁴ DRAMs of different densities also share common distribution channels, being sold to original equipment manufacturers, module assemblers and other resellers.²⁵ With the exception of different mask sets,²⁶ DRAMs of different densities are generally manufactured in common facilities and with the same

¹⁷ CR at I-7-I-8, PR at I-5-I-6; Micron Postconference Brief at 5-6, 10.

¹⁸ CR at I-8-I-9, PR at I-6.

¹⁹ CR at I-7, PR at I-5.

²⁰ CR at I-7-I-8, PR at I-5-I-6; Petition at 6.

²¹ CR at II-5, PR at II-3; Micron Postconference Brief at 6. A personal computer, for instance, may be designed so that the function of DRAM memory may be performed either by DRAM chips that are attached directly to the PC motherboard or by a DRAM module attached to the PC motherboard. *Id.*

²² CR at I-7 n.17, I-9, PR at I-5, I-7; Conf. Tr. at 37, 80.

²³ CR at I-5-I-6, PR at I-4.

²⁴ CR at I-10-I-11, PR at I-7-I-8; Micron Postconference Brief at 7. As discussed *infra*, while a large number of low density DRAMs could in theory provide the same amount of memory as one high density DRAM, practical interchangeability is probably limited to DRAMs one generation apart in density. CR at I-10 n.30, PR at I-7.

²⁵ CR at I-13, PR at I-9-I-10; Petition at 6.

²⁶ Mask sets are made of glass and contain the design for each layer of circuitry that will be built up on a silicon wafer in the course of the DRAM fabrication process. CR at I-8, D-4, PR at I-6, D-4.

equipment, processes, and production workers.²⁷ Price differentials among DRAMs of different densities appear to be a function of memory capacity.²⁸ Based on all these factors, we find that all DRAMs, regardless of density, constitute a single domestic like product.

4. Whether Specialty DRAMs are Part of the Same Like Product as Commodity DRAMs

There are several specialty DRAM products included in the scope of Commerce's investigation: Video RAM (VRAM), Windows RAM (WRAM), and synchronous graphics RAM (SGRAM).²⁹ Specialty DRAMs have the same basic physical characteristics and uses as commodity DRAMs, but have been configured to provide enhanced performance over commodity DRAMs in specific applications.³⁰ At least at the computer design stage, commodity and specialty DRAMs are somewhat interchangeable.³¹ Commodity and specialty DRAMs share the same channels of distribution and manufacturing process, equipment and employees.³² While specialty DRAMs tend to command a price premium when first introduced, as those products exit the introductory phase of their product life cycle and an increasing number of suppliers join the market, they are rapidly transformed into commodity goods.³³ For all these reasons, we find that specialty and commodity DRAMs are all included within a single domestic like product.

Based on the foregoing discussion, we find a single domestic like product, consisting of all DRAMs, regardless of density, including cased and uncased DRAMs, DRAMs assembled into memory modules, and specialty DRAMs.

D. Domestic Industry

The domestic industry is defined as "the producers as a [w]hole of a domestic like product."³⁴ In defining the domestic industry, the Commission's general practice has been to include in the industry all of the domestic production of the like product, whether toll produced, captively consumed, or sold in the domestic merchant market.³⁵

There are several issues in this investigation concerning the definition of the domestic industry: (1) whether assembly of uncased DRAMs into cased DRAMs constitutes domestic production; (2) whether assembly of cased DRAMs into DRAM modules constitutes domestic production; and (3) whether the

²⁷ CR at I-9, PR at I-6.

²⁸ CR at I-14, PR at I-10.

²⁹ None of the parties in this preliminary investigation suggests that specialty DRAMs merit treatment as separate domestic like products. Micron Postconference Brief at 6-7; Conf. Tr. 82-83.

³⁰ CR at I-6, PR at I-4-I-5.

³¹ CR at I-11, PR at I-7; Micron Postconference Brief at 9.

³² CR at I-9, I-13, PR at I-6, I-9.

³³ CR at I-14, PR at I-10.

³⁴ 19 U.S.C. § 1677(4)(A).

³⁵ See United States Steel Group v. United States, 873 F. Supp. 673, 682-83 (Ct. Int'l Trade 1994), *aff'd*, 96 F.3d 1352 (Fed. Cir. 1996).

domestic industry includes “fabless” design houses.³⁶ In each instance, the question before us is whether the pertinent companies engage in sufficient production-related activity in the United States to be included in the domestic industry.³⁷ As explained below, we define the domestic industry to include fabricators and assemblers of DRAMs, but not module assemblers or fabless design houses.³⁸

1. Whether Assembly of Uncased DRAMs Into Cased DRAMs Constitutes Domestic Production

The manufacture of DRAMs includes both fabrication and assembly phases. During the period of investigation, 7 of the 12 domestic companies that fabricated uncased DRAMs in the United States also assembled DRAMs in the United States. In addition, two companies without U.S. fabrication facilities assembled DRAMs in the United States.³⁹

The assembly stage of DRAM production involves the separation of the wafer into individual chips, wire bonding metal lead frames to the chips, solder plating the metal leads, trimming and forming the leads into a desired shape, encapsulating the chips in plastic or ceramic, and final testing.⁴⁰ While somewhat more labor intensive than fabrication, DRAM assembly is nevertheless a highly automated and technologically sophisticated process.⁴¹ The record in this preliminary phase investigation does not contain enough information to allow us to isolate the capital investment or value added associated with DRAM assembly. The record does indicate, however, that during the interim period (January - September of 1998), U.S. DRAM assembly operations employed *** production related workers (PRWs), while domestic fabrication facilities employed 8,549 PRWs.⁴² Moreover, the percentage of domestically cased DRAMs incorporating U.S.-fabricated dice was *** percent in 1995, *** percent in 1996, *** percent in 1997, and *** percent in interim 1998.⁴³

³⁶ Petitioner argues that the domestic industry consists of companies that fabricate DRAMs in the United States, including their assembly operations, as well as other assembly operations using domestically fabricated dice. Micron Postconference Brief at 10-12, 14. Respondents contend that, in addition to fabrication facilities, the industry includes companies that case unassembled DRAMs or assemble cased DRAMs into memory modules in the United States, regardless of the source of the dice used, as well as fabless design houses. Taiwan Semiconductor Industry Association (“TSIA”) Postconference Brief at A-1-A-3, A-12-A-13; Alliance Postconference Brief at 2-8.

³⁷ To assess whether a firm qualifies as a domestic producer, we analyze the nature and extent of a firm's production-related activities in the United States. *See, e.g., Certain Stainless Steel Sheet and Strip from France, Germany, Italy, Japan, the Republic of Korea, Mexico, Taiwan, and the United Kingdom*, Inv. Nos. 701-TA-380-382 and 731-TA-797-804 (Preliminary), USITC Pub. 3118 at 14 n.88 (Aug. 1998). 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. *Id.*

³⁸ Although we are not bound by prior determinations, we note that this result is consistent with the Commission's definition of the domestic industry in *DRAMs from Korea*, USITC Pub. 2629 at 12-16, and in *Static Random Access Memory Semiconductors from the Republic of Korea and Taiwan*, Inv. Nos. 731-TA-761-762 (Final), USITC Pub. 3098 at 8-10 (Apr. 1998) (*SRAMs*).

³⁹ Table III-1, CR at III-3, PR at III-2.

⁴⁰ CR at I-8-I-9, PR at I-6.

⁴¹ CR at I-8, PR at I-6; TSIA Postconference Brief at A-2; *** Producer Questionnaire at Question II-12; *** Producer Questionnaire at Question II-13.a.

⁴² Table III-7, CR at III-15, PR at III-10.

⁴³ Derived from staff worksheet on Cased DRAMs Production.

Based on the technical sophistication, significant employment, and substantial use of domestic inputs associated with domestic DRAM assembly operations, we find that DRAM assembly facilities should be included in the definition of the domestic industry.^{44 45}

2. Whether Assembly of Cased DRAMs Into Memory Modules Constitutes Domestic Production

The current record contains limited information on capital investment or employment in the domestic assembly of DRAM modules.⁴⁶ The parties agreed, however, that the DRAM chips on a module account for 90 to 95 percent of its value, from which it can be inferred that module assembly involves little value added.⁴⁷ The percentage of domestically produced modules made with domestically-fabricated dice was *** percent in 1995, *** percent in 1996, *** percent in 1997, and *** percent in interim 1998.⁴⁸ Because module assembly appears to add little value to cased DRAMs, and given the relatively unsophisticated nature of the module assembly process and the failure of respondents to offer any factual support for their argument that module assembly constitutes domestic production,⁴⁹ we find that module assembly does not constitute domestic production.

3. Whether Fabless Design Houses Are Part of the Domestic Industry Producing DRAMs

“Fabless” design companies focus on the design stage of DRAM production. The design stage involves using skilled technical employees and computer-aided design systems to create the design of the circuit layout for a DRAM, which is then placed on a mask set (by the design house or by a subcontractor). Unlike integrated DRAM fabricators, which design and then fabricate DRAMs, fabless design houses own no fabrication facilities (“fabs”). Instead, they contract out the production of DRAMs bearing their designs to

⁴⁴ Petitioner argues that only domestic assembly operations that assemble U.S.-fabricated dice should be considered domestic production. Micron Postconference Brief at 11-12. The Commission has typically decided whether to classify a certain kind of activity as domestic production based on an assessment of all the relevant factors for all companies performing the type of activity in question. Whether domestic companies performing limited domestic production activities (such as finishing operations) use domestic inputs of the relevant semi-finished product is one criterion considered, but is not necessarily determinative. *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”). We intend to examine this issue further in any final phase of this investigation.

⁴⁵ Commissioner Askey notes that the data upon which the Commission has relied in reaching this preliminary determination categorize as subject imports DRAMs containing dice fabricated in Taiwan, regardless of where assembled, in accordance with Commerce’s scope. By contrast, the data on domestic production categorize as domestic both DRAMs containing U.S.-fabricated dice, regardless of where assembled, and DRAMs containing third country (but not Taiwan) dice that are assembled in the United States. In any final phase investigation, Commissioner Askey intends to examine whether the Commission should include in the domestic like product products that are not comparable to those covered by the scope of the investigation. In this regard, she intends to seek relevant information on this issue and requests that the parties address this issue in any final investigation.

⁴⁶ *See* Table H-2, CR at H-4, PR at H-3; Table III-7, CR at III-15, PR at III-10; CR at III-2 n.3, PR at III-1.

⁴⁷ Conf. Tr. at 37, 79-80. Moreover, the module assembly process is not technologically complex. CR at I-10, PR at I-7.

⁴⁸ Derived from staff worksheet on DRAM Modules Production.

⁴⁹ TSIA Postconference Brief at A-1.

foundry producers, many of which are located in Taiwan.⁵⁰ Design houses also contract out the assembly stage either to the foundry or to another assembler. Each design house then generally markets the finished DRAMs under its own brand name.⁵¹

The Commission has previously determined that fabless design houses located in the United States are not part of the domestic industry producing static random access memory semiconductors (“SRAMs”) because they do not actually engage in production of a domestic like product.⁵² The Commission reasoned that SRAM designs, although necessary to SRAM production, were not “like” SRAMs and SRAM modules and therefore were not part of the domestic like product. To the contrary, the Commission found that the designs are incorporated into SRAMs that Commerce had included in the definition of the subject merchandise, despite a request to Commerce by fabless producers that Commerce exclude such SRAMs from the scope.⁵³

We find that the Commission’s analysis of fabless design houses in the SRAMs investigation is equally applicable to the instant investigation. Commerce has defined the subject merchandise to include unassembled and assembled DRAMs and DRAM modules, but not DRAM designs or mask sets. As in SRAMs, fabless design houses do not actually produce anything in the United States falling within the definition of the corresponding domestic like product. As the Commission noted in SRAMs, the fact that design-type activities have previously been considered a “production-related” activity in applying the six-factor test for domestic production does not mean that a design-only company should be considered a domestic producer. Rather, in all those cases, the company in question actually produced something that fell within the definition of the like product.⁵⁴ Accordingly, we find that fabless DRAM design houses are not part of the domestic industry producing DRAMs.⁵⁵

E. Related Parties

We must further determine whether any producer of the domestic like product should be excluded from the domestic industry pursuant to section 771(4)(B) of the Act.⁵⁶ That provision of the statute allows the Commission, if appropriate circumstances exist, to exclude from the domestic industry producers that are related to an exporter or importer of subject merchandise, or which are themselves importers. Exclusion of such a producer is within the Commission’s discretion based upon the facts presented in each case.⁵⁷

⁵⁰ Foundry producers are companies that have capacity to produce DRAMs and/or other semiconductor products which they use to produce other companies’ designs under contract.

⁵¹ CR at I-8 n.22, PR at I-5-I-6 n.22; Alliance Postconference Brief at 2-3.

⁵² See SRAMs, USITC Pub. 3098 at 9-10.

⁵³ *Id.*

⁵⁴ For example, in Certain Cased Pencils from the PRC and Thailand, Inv. Nos. 731-TA-669-670 (Preliminary), USITC Pub. 2713 (Dec. 1993), a case cited by respondents, Alliance Postconference Brief at 7, the company turned plain pencils into decorated pencils, which fell within the definition of the like product.

⁵⁵ In any final phase investigation, Commissioner Hillman invites the parties to submit additional factual information regarding the activities performed by fabless design houses and, in particular, the value added by such activities.

⁵⁶ 19 U.S.C. § 1677(4)(B).

⁵⁷ See Sandvik AB v. United States, 721 F. Supp. 1322, 1331-32 (Ct. Int’l Trade 1989), *aff’d without opinion*, 904 F.2d 46 (Fed. Cir. 1990); Empire Plow Co. v. United States, 675 F. Supp. 1348, 1352 (Ct. Int’l Trade 1987). The primary factors the Commission has examined in deciding whether appropriate circumstances exist to exclude such parties include: (1) the percentage of domestic production attributable to the importing producer; (2) the reason the U.S. producer has decided to import the product subject to investigation, *i.e.*, whether the firm benefits from the LTFV sales or subsidies or whether the firm must import in order to enable it to continue production and compete in the U.S. market, and (3) the position of the related producer vis-a-vis the rest of the industry, *i.e.*, whether inclusion or exclusion of the

(continued...)

In this investigation, Mitsubishi Semiconductor America, Inc. (“Mitsubishi”) is a related party by virtue of having imported subject merchandise during the period of investigation. Accordingly, we have considered whether appropriate circumstances exist to exclude it from the domestic industry.

During the period of investigation, Mitsubishi operated a *** in Durham, North Carolina. In addition to ***,⁵⁸

In interim 1998, Mitsubishi accounted for less than *** percent of domestic uncased DRAM production and *** percent of assembly.⁵⁹ Mitsubishi’s imports of subject merchandise rose from *** in 1995 and 1996 to *** of its domestic production in 1997 and *** of its domestic production in interim 1998.⁶⁰ Mitsubishi’s financial performance was *** the industry average in all periods except *** the industry average.⁶¹ Mitsubishi *** the petition.⁶²

Mitsubishi contends that the closure of its U.S. fab was not caused by competition from subject imports. Rather, it contends that the closure reflected (1) a larger reorganization and consolidation of U.S. assets by its parent company, and (2) the fact that its U.S. fab was producing 4 megabit chips on outdated equipment that could not be upgraded to produce higher-density DRAMs.⁶³ Mitsubishi also indicates that it imported subject merchandise ***,⁶⁴

In light of Mitsubishi’s progression from domestic producer to importer over the period of investigation, the fact that its financial performance *** after it closed its U.S. fab, and its ***, we believe that Mitsubishi’s interests lie principally in importing rather than in domestic production. Accordingly, we find that appropriate circumstances exist to exclude Mitsubishi from the domestic industry. We note, however, that its exclusion does not change industry-wide financial trends.⁶⁵

In addition, we note that a number of other domestic producers are or may be related parties either by virtue of having imported subject merchandise or through corporate or contractual relationships with Taiwan producers.⁶⁶ In any final phase investigation, we will consider whether appropriate circumstances exist to exclude any additional related parties from the domestic industry. In particular, we will seek further

⁵⁷ (...continued)

related party will skew the data for the rest of the industry. *See, e.g., Torrington Co. v. United States*, 790 F. Supp. 1161, 1168 (Ct. Int’l Trade 1992), *aff’d without opinion*, 991 F.2d 809 (Fed. Cir. 1993). The Commission has also considered the ratio of import shipments to U.S. production for related producers and whether the primary interest of the related producer lies in domestic production or importation. *See, e.g., Sebacic Acid from the People’s Republic of China*, Inv. No. 731-TA-653 (Final), USITC Pub. 2793, at I-7 - I-8 (July 1994).

⁵⁸ Mitsubishi’s parent company, Mitsubishi Electric Corp. of Japan, also owns Mitsubishi Electronics America, Inc., another importer of the subject merchandise, and is ***.

⁵⁹ Table III-1, CR at III-3, PR at III-2. Even when its fabrication facility was operating, Mitsubishi was never a large domestic producer of uncased DRAMs, accounting for *** percent of domestic production in 1995, *** percent in 1996, and *** percent in 1997. Table III-4, CR at III-12, PR at III-7.

⁶⁰ Table III-2, CR at III-9, PR at III-5.

⁶¹ Table VI-2, CR at VI-6, PR at VI-3.

⁶² Table III-1, CR at III-3, PR at III-2.

⁶³ Mitsubishi Postconference Brief at 15-16. Micron contends that Mitsubishi’s unwillingness to invest in upgrading its U.S. fab is an indicator of injury to the domestic industry by reason of the subject imports. Conf. Tr. at 99-100.

⁶⁴ Table III-2 n.6, CR at III-9, PR at III-5.

⁶⁵ Chairman Bragg notes that she would have reached the same determination in this investigation if she had not excluded Mitsubishi from the domestic industry.

⁶⁶ *See generally* Table III-2, CR at III-9, PR at III-5; CR at III-5- III-8, PR at III-3-III-4.

information regarding the purposes for which domestic producers purchased subject imports and the nature of the corporate or contractual relationships between domestic and Taiwan producers.

III. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF SUBJECT IMPORTS

In the preliminary phase of an antidumping duty investigation, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured by reason of the allegedly dumped imports under investigation.⁶⁷ In making this determination, the Commission must consider the volume of the allegedly dumped 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.⁶⁸ The statute defines “material injury” as “harm which is not inconsequential, immaterial, or unimportant.”⁶⁹ In assessing whether the domestic industry is materially injured by reason of dumped imports, we consider all relevant economic factors that bear on the state of the industry in the United States.⁷⁰ 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.”⁷¹

For the reasons discussed below, we determine that there is a reasonable indication that the domestic DRAM industry is materially injured by reason of allegedly dumped imports from Taiwan.

A. Conditions of Competition

A number of conditions of competition are pertinent to our analysis in this investigation. First, the DRAM market is characterized by rapid technological advancement 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), and interface speed (the speed with which a DRAM can be accessed by other elements of a computer). Since the Commission’s previous investigation in 1993, the industry standard for density has moved from the 4 megabit DRAM to the 16 megabit DRAM and is now changing to the 64 megabit DRAM, with numerous producers worldwide having already made commercial test shipments of 256 megabit DRAMs.⁷² DRAM manufacturers are constantly working to reduce die sizes by reducing the dimensions of the individual elements of circuitry on the die, thereby increasing the die yield (the number of usable dice obtained from a single wafer) and reducing production costs. Such die shrinks have taken the industry from 0.30 to 0.35 micron technology in recent years to 0.21 to 0.25 microns today, with 0.18 micron technology planned for the near future at some fabs.⁷³ With respect to interface technology, the industry has advanced in recent years from fast page mode (FPM) to extended data out (EDO) to synchronous DRAM (SDRAM) technology, and is currently developing even faster interface technologies such as Rambus DRAM.⁷⁴ The industry’s need to innovate is driven, in part, by continually rising demand for more and faster memory.

⁶⁷ 19 U.S.C. § 1673b(a).

⁶⁸ 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 . . . and explain in full its relevance to the determination.” 19 U.S.C. § 1677(7)(B).

⁶⁹ 19 U.S.C. § 1677(7)(A).

⁷⁰ 19 U.S.C. § 1677(7)(C)(iii).

⁷¹ 19 U.S.C. § 1677(7)(C)(iii).

⁷² CR at I-6, PR at I-4; Conf. Tr. at 15-16; TSIA Postconference Brief at 8, 15, A-9, and Exhibit 1 at 5; Micron Postconference Brief at 8, 33-34, 45, 46, and Exhibit 21; Petition, Exhibit 1 at 10-11, 47.

⁷³ CR at I-9-I-10, PR at I-6-I-7; Conf. Tr. at 15, 31-32; TSIA Postconference Brief at 3-4, 17, 21, and Exhibit 1 at 5; Micron Postconference Brief at 27, 29, 43, Exhibit 21.

⁷⁴ CR at I-6, PR at I-4; Conf. Tr. at 15-16; TSIA Brief, Exhibit 3 at 1-2, Exhibit 13.

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.⁷⁵ Moreover, the pace of advances in chip density and die shrinks in the DRAM industry may be accelerating.⁷⁶

Collectively, these technological developments are referred to in the industry as a “learning curve” or product life cycle. Each time a producer moves to a new density, die shrink or interface technology, production costs initially rise and yields initially decline. As each product moves through its life cycle, production costs decline and yields rise as experience is gained and production volume increases. Price trends generally correlate with this product life cycle, starting high at the beginning of the product life cycle and then declining rapidly until a product is replaced by the next generation of technology.⁷⁷ The period of investigation coincides roughly with the life cycle of the 16 megabit DRAM, with production switching from 4 to 16 megabit DRAMs early in the period, and from 16 to 64 megabit DRAMs at the end of the period.⁷⁸

During the period of investigation, apparent consumption, in terms of bits, increased by 276.2 percent between 1995 and 1997, and by an additional 108.9 percent between interim 1997 and interim 1998.⁷⁹ To meet rising demand, both in the United States and worldwide, world capacity to produce DRAMs has increased significantly over the period of investigation.⁸⁰ The opening of a new fab or introduction of a new die shrink results in a large immediate increase in production capacity. Because growth in demand for DRAMs has been linear, however, supply and demand in the DRAM market tend to be chronically out of equilibrium.⁸¹ For example, early in the period of investigation worldwide demand for DRAMs exceeded supply, but with subsequent capacity increases during the later part of the period of investigation, growth in world DRAM production capacity has exceeded growth in demand, resulting in significant worldwide price declines.⁸²

The DRAM market also is to some extent segregated into two “tiers” of producers and customers. “Tier one” producers are U.S., European, Japanese, Korean and some Taiwan firms, with recognized brand names and leading edge technology, that have been qualified to sell DRAMs to “tier one” OEM (original equipment manufacturer) customers (*e.g.*, major brand name computer manufacturers like IBM, Dell and Hewlett-Packard). Many sales to such customers are on a contract basis. “Tier two” producers are Taiwan producers that produce and sell less well known brand name DRAMs. “Tier two” purchasers include module

⁷⁵ Conf. Tr. at 16-17; Petition at 20.

⁷⁶ TSIA Postconference Brief at 4.

⁷⁷ CR at I-9, I-14, PR at I-6-I-7, I-10; Conf. Tr. at 16-17, 24, 36; Mitsubishi Postconference Brief at 4; Petition, Exhibit 1.

⁷⁸ CR at I-6, PR at I-4; Micron Postconference Brief at 33-34, 46; TSIA Postconference Brief, Exhibit 1 at 4. As noted *infra* at 18-19 and n.72, commercial development of the 256 megabit DRAM is already well underway.

⁷⁹ Apparent consumption rose from 4,134,916 billion bits in 1995 to 7,567,131 billion bits in 1996 and 15,556,320 billion bits in 1997, and was 22,039,577 billion bits in just the first nine months of 1998. Table IV-4, CR at IV-5, PR at IV-4.

⁸⁰ Capacity increases are achieved through die shrinks and yield improvements as well as through construction of new fabs. While Taiwan and some third country producers have achieved capacity increases largely by building new fabs, technology leaders like petitioner have principally achieved significant capacity increases through die shrinks and other process improvements. Conf. Tr. at 38; CR at VII-3, PR at VII-2. In any final phase investigation, we will seek further information on the extent to which increases in domestic, Taiwan, and nonsubject production capacity are attributable to each of these phenomena.

⁸¹ Conf. Tr. at 62; TSIA Postconference Brief at 3-4.

⁸² Conf. Tr. at 11-13, 64; Micron Postconference Brief at 28-31; TSIA Postconference Brief at 4-6; Mitsubishi Postconference Brief at 4.

makers, PC clone makers, and resellers that do not require qualified name-brand DRAMs and generally purchase in the spot market.⁸³

In addition, nonsubject imports, principally from Korea and Japan, were present in the U.S. market in significant quantities. During the period of investigation, the U.S. market share held by nonsubject imports in terms of volume ranged from *** percent.⁸⁴ A number of Korean and Japanese DRAM producers have production facilities in several countries, including joint ventures or technology partnerships with Taiwan producers.⁸⁵ These companies may have the option of sourcing DRAMs for any particular customer or market from manufacturing facilities in several countries.⁸⁶

Finally, we note that the domestic industry captively consumes approximately 10 percent of its production of the domestic like product in the manufacture of downstream products.⁸⁷ Accordingly, we have considered whether the captive production provision requires us to focus our analysis primarily on the merchant market when assessing market share and the factors affecting the financial performance of the domestic industry.^{88 89 90} In the context of the domestic DRAM industry, we find that the statutory requirement of significant captive consumption is not satisfied. Accordingly, the captive production provision does not apply in this investigation.⁹¹

⁸³ Conf. Tr. at 22-23, 54-56; CR at I-11-I-14, II-6, PR at I-8-I-10, II-4. Respondents alleged that DRAMs from tier two Taiwan manufacturers do not compete in the U.S. market with domestically manufactured DRAMs, but instead compete with nonsubject imports from Korea. Conf. Tr. at 72. In any final phase investigation, we intend to look at the degree to which product from Taiwan competes in the U.S. market with domestic product as well as with nonsubject imports.

⁸⁴ Table IV-4, CR at IV-5, PR at IV-4.

⁸⁵ CR at III-4-III-8, PR at III-2-III-4.

⁸⁶ CR at II-4, PR at II-2; Conf. Tr. at 54-59, 73-75, 92, 106; TSIA Postconference Brief at 12-14, 24; Mitsubishi Postconference Brief at 13, 16; Petition at 8, 11; Alliance Postconference Brief at 2-4.

⁸⁷ CR at III-16, PR at III-5.

⁸⁸ The captive production provision, 19 U.S.C. § 1677(7)(C)(iv), provides:

(iv) CAPTIVE PRODUCTION -- 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 --

(I) the domestic like product produced that is internally transferred for processing into that downstream article does not enter the merchant market for the domestic like product,

(II) the domestic like product is the predominant material input in the production of that downstream article, and

(III) the production of the domestic like product sold in the merchant market is not generally used in the production of that downstream article,

then the Commission, in determining market share and the factors affecting financial performance set forth in clause (iii), shall focus primarily on the merchant market for the domestic like product.

⁸⁹ The parties all contend that the captive production provision does not apply in this investigation. Micron Postconference Brief at 12-14; TSIA Postconference Brief at A-4-A-6.

⁹⁰ Chairman Bragg takes no position on the applicability of the captive production provision in this investigation. She notes that in this investigation she has focused her analysis on conditions in the market as a whole.

⁹¹ In finding that the captive production provision does not apply here, Commissioner Hillman has not reached the question of whether the level of captive production is "significant." Irrespective of the level of captive production, the

(continued...)

B. Volume of Subject Imports

Section 771(7)(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.”⁹²

As an initial matter, for purposes of this preliminary determination, we have focused on bits for purposes of assessing the volume of imports, because total bits are a uniform measure of the quantity of DRAMs. 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.⁹³ Accordingly, we do not view the increase in subject imports in the DRAM 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.

The quantity of subject imports, measured in bits, increased markedly during the period of investigation, rising from *** billion in 1995 to 431,124 billion in 1996 and 936,708 billion in 1997, an overall increase of nearly *** percent. Subject imports were 1,404,395 billion bits in interim 1998, compared with 582,824 billion bits in interim 1997, a difference of 141 percent.⁹⁴ The magnitude of this rise in subject import volume is tempered somewhat, however, by the fact that apparent consumption, in terms of bits, also grew rapidly over the period of investigation, increasing by 276.2 percent between 1995 and 1997, and by over 100 percent between interim 1997 and interim 1998.⁹⁵

In terms of value, subject imports followed a somewhat different trend, rising from \$*** in 1995 to \$387.1 million in 1996, then declining to \$378.7 million in 1997. Subject imports by value were \$290.0 million in interim 1998, compared with \$240.2 million in interim 1997.⁹⁶ Analyzing the volume of the subject imports in value terms is somewhat misleading, however, because of the large price declines that occurred over the period of investigation, which we discuss at length below in the context of price effects.

Subject imports’ U.S. market share by quantity also rose over the period, increasing from *** percent in 1995 to *** percent in 1996 and to 5.0 percent in 1997. The market share of subject imports, by quantity, was 5.4 percent in interim 1998, compared with 4.5 percent in interim 1997.⁹⁷ In value terms, the market share of subject imports rose from *** percent in 1995 to *** percent in 1996 and 4.5 percent in 1997, and was 6.1 percent in interim 1998, compared with 3.8 percent in interim 1997.⁹⁸ During the same period, the domestic industry’s market share in terms of bits remained virtually the same, rising slightly from *** percent in 1995 to *** percent in 1996 and *** percent in 1997. The domestic industry’s market share was ***

⁹¹ (...continued)

DRAMs sold in the merchant market are generally used in the production of the same downstream products (*e.g.*, computers and consumer electronics) for which they are internally consumed, and the requirements of 19 U.S.C. § 1677(7)(C)(iv)(3) are therefore not met. *See* CR at I-7 and n.19, II-5, and III-16, PR at I-5, II-3, and III-5.

⁹² 19 U.S.C. § 1677(7)(C)(i).

⁹³ CR at I-6, PR at I-4; Micron Postconference Brief at 33-34, 46; TSIA Postconference Brief, Exhibit 1 at 4.

⁹⁴ Table IV-2, CR at IV-3, PR at IV-2.

⁹⁵ Table IV-4, CR at IV-5, PR at IV-4.

⁹⁶ Table IV-2, CR at IV-3, PR at IV-2.

⁹⁷ Table IV-4, CR at IV-5, PR at IV-4.

⁹⁸ Table IV-4, CR at IV-5, PR at IV-4.

percent in interim 1998, compared with *** percent in interim 1997.⁹⁹ Thus, while subject imports have gained market share, their gain has been at the expense of nonsubject imports.

Based on the rising volume by quantity of subject imports, for purposes of our preliminary determination we find the increase in the volume of the subject imports in absolute terms to be significant.¹⁰⁰

C. Price Effects of Subject Imports

Section 771(7)(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.¹⁰¹

As discussed above, the market for DRAMs is characterized by a number of conditions of competition that we would expect to contribute to price-based competition and declining prices. Such conditions include world overcapacity for the production of DRAMs, the rough correspondence between the period of investigation and the product life cycle for 16 megabit DRAMs, and the availability of multiple domestic, subject and nonsubject sources of DRAM supply.

Consistent with our understanding of these supply conditions, domestic prices for all three DRAM products for which we obtained usable monthly data¹⁰² fell precipitously over the period of investigation, despite rising demand and shipments. The declining price trend was interrupted only by a small increase in mid-1997 and a slight increase in prices for 16 megabit DRAMs in the last two months of interim 1998.¹⁰³ Accordingly, we consider to what extent the subject imports played a significant role in the price declines that have occurred in this market.

Comparisons obtained for the three products for which we obtained usable data, while mixed, show a preponderance of underselling. For product 1, a 16 megabit EDO DRAM, the subject imports undersold the domestic like product in 17 out of 23 possible comparisons, with the margin and frequency of underselling rising in the second half of the period of investigation.¹⁰⁴ For product 2, a 16 megabit SDRAM, the subject imports undersold the domestic like product in only 4 of 14 comparisons and oversold in the other 10

⁹⁹ Table IV-4, CR at IV-5, PR at IV-4 (Mitsubishi excluded from domestic market share data).

¹⁰⁰ Commissioner Askey does not join in this conclusion. For purposes of this preliminary phase investigation, she finds that neither the volume nor the increase in volume of the subject imports is significant, whether considered on an absolute or relative basis. In this regard, she notes that, although the volume of the subject imports appears to have increased substantially during the period, the volume increases correspond with substantial increases in apparent consumption. Moreover, the volume increases of the subject imports clearly have come at the expense of nonsubject imports, not the domestic industry, given that the domestic industry's share of the market has remained stable throughout the period. Finally, Commissioner Askey notes that any reliance on the significance of the percentage increase in the volume of the subject imports can be overstated since the volume of the subject imports was minimal at the beginning of the period. Commissioner Askey intends to examine this matter closely in any final phase investigation, however.

¹⁰¹ 19 U.S.C. § 1677(7)(C)(ii).

¹⁰² There were no reported imports of product 3, one variety of 16 megabit DRAM. CR at V-4, PR at V-3.

¹⁰³ Tables V-4-V-6, CR at V-9-V-12, PR at V-5-V-6.

¹⁰⁴ Table V-4, CR at V-9, PR at V-5; Figure G-1, CR at G-3, PR at G-3.

comparisons. Both the margins and frequency of underselling were lower in interim 1998 than in 1997.¹⁰⁵ For product 4, a 4 megabit EDO DRAM, the subject imports undersold the domestic like product in 35 of 42 comparisons by fairly substantial, though variable, margins. All of the instances of overselling were in the first year of the period of investigation.¹⁰⁶ Based on the overall frequency of underselling, as well as the rising frequency and/or margins of underselling in the latter part of the period of investigation for two of the three products examined, we find underselling by the subject imports to be significant for purposes of our preliminary determination.

Our finding with respect to the significance of underselling is based, in part, on our conclusion that the domestic like product and the subject imports are at least moderately substitutable. The record in this preliminary phase investigation indicates that, once qualified by a particular supplier, DRAMs of a particular density and interface technology all compete largely or solely on the basis of price regardless of country of origin.¹⁰⁷

Nevertheless, there are a number of price-related factors which we will further consider in any final phase of the investigation. First, questions have been raised regarding whether the largest category of DRAM purchasers, OEM computer manufacturers, view so-called “tier two” or “own brand” Taiwan DRAMs as substitutable with “tier one” or recognized name brand DRAMs from the United States or third countries. For purposes of our preliminary determination regarding substitutability, we have relied, in part, on the fact that those producers which respondents categorize as tier one accounted for *** percent of Taiwan DRAM production in 1997 (measured in wafer starts).¹⁰⁸ We will reexamine substitutability among the various products in any final phase of the investigation.¹⁰⁹

The record is also limited with respect to the degree of competition between DRAMs of different densities and interface technologies. While in theory one could produce a module with a sufficient number of DRAMs of a smaller density to equal the memory capacity of a module made with only a few higher density DRAMs, there are limits to the amount of space that a memory module can take up in a computer or other electronic equipment.¹¹⁰ Moreover, a DRAM with an older interface technology (such as EDO) will not perform optimally in an application designed for DRAMs with a newer interface technology (such as SDRAM), and a commodity DRAM may not perform optimally in an application designed for a specialty DRAM.¹¹¹ Thus, as a practical matter, DRAMs generally appear to be substitutable only from one density generation to the next (*i.e.*, 4 megabit DRAMs can substitute for 16 megabit DRAMs and 16 for 64, but not 4 for 64).¹¹² The existence and operation of such limits is important, because subject import sales during the period of investigation were somewhat concentrated in lower density products, while the domestic industry’s sales were concentrated in higher density products.¹¹³ We have relied, for purposes of our preliminary assessment of substitutability, on the fact that there were sales of subject imports and the domestic like

¹⁰⁵ Table V-5, CR at V-10, PR at V-6; Figure G-2, CR at G-3, PR at G-3.

¹⁰⁶ Table V-6, CR at V-10-V-11, PR at V-6; Figure G-3, CR at G-4, PR at G-3.

¹⁰⁷ CR at II-5-II-6, PR at II-3-II-4.

¹⁰⁸ CR at II-6, PR at II-4; TSIA Postconference Brief at A-7.

¹⁰⁹ In particular, we will seek information on the amount of time, on average, needed to qualify a new DRAM product with a major OEM computer manufacturer; the extent to which so-called “tier two” Taiwan DRAM manufacturers have attempted to qualify for such sales; and whether such attempts, if any, have been successful. We will also seek information on the extent to which OEM qualification requirements for DRAM manufacturers affect sales to OEMs by independent module assemblers that purchase DRAMs on the spot market and the extent of such sales.

¹¹⁰ CR at I-11 n.31, PR at I-7.

¹¹¹ CR at I-11, PR at I-7-I-8.

¹¹² CR at I-10 n.30, PR at I-7.

¹¹³ Table II-1, CR at II-2, PR at II-1.

product in every density category during the period of investigation. In any final phase investigation we will attempt to determine whether product differentiation (in terms of density, interface technology, and specialty DRAM products) limits price competition to any significant degree in the domestic DRAM market.¹¹⁴

Finally, because of the significant market presence of nonsubject imports, we have considered the limited information available on nonsubject import prices. We note that the record in this preliminary phase of the investigation shows that unit values for subject imports declined more rapidly than those for nonsubject imports over the period of investigation and were lower in most full or partial years examined.¹¹⁵ We are aware, however, that unit value data may not be the most reliable basis for comparing subject and nonsubject import prices due to differences in product mix. Accordingly, in any final phase investigation, we will seek unit value data segregated by density and type of DRAM.¹¹⁶

Overall, based on the moderate substitutability of the domestic like product and the subject imports; overlapping product mix of domestic and subject suppliers; evidence of significant underselling by the subject imports; and evidence that subject import prices have fallen lower and more rapidly than either domestic like product prices or nonsubject import prices; we find, for purposes of this preliminary determination, that the subject imports have depressed domestic DRAM prices to a significant degree.¹¹⁷

D. Impact of Subject Imports^{118 119}

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,

¹¹⁴ In any final phase investigation, we intend to seek further information on the nature of the DRAM product life cycle, its effect on prices, and the relationship between prices for different generations of DRAMs.

¹¹⁵ Table IV-2, CR at IV-3, PR at IV-2.

¹¹⁶ Commissioners Askey and Hillman intend to seek information relating to the impact of nonsubject imports on domestic prices in any final phase of this investigation. This information would include, but not be limited to, average unit values on a product category basis for nonsubject imports by country, particularly for Japan and Korea.

¹¹⁷ Commission rules 207.11(b)(2)(v) and (3) require the listing of all lost sales and lost revenue allegations in the petition, or a certification that the facts underlying these loss allegations were not reasonably available to petitioner. As we have previously stated, where a petitioner is a domestic producer of the product at issue, lost sales allegations covering the period up until the filing of the petition must be contained in the petition. Elastic Rubber Tape from India, Inv. Nos. 701-TA-383 and 731-TA-805 (Preliminary), USITC Pub. 3133 at 11-12 n.73 (Oct. 1998). In this investigation, petitioner included neither the information nor the certification required by our rules, and instead submitted all its lost sales and lost revenues allegations for the period prior to the filing of the petition in its producer questionnaire response. Accordingly, for purposes of this preliminary determination, we have not considered the lost sales and lost revenues allegations that were omitted from the petition.

¹¹⁸ As part of its consideration of the impact of imports, the statute specifies that the Commission is to consider “the magnitude of the margin of dumping.” 19 U.S.C. § 1677(7)(C)(iii)(V). The URAA Statement of Administrative Action (SAA) indicates that the amendment “does not alter the requirement in current law that none of the factors which the Commission considers is necessarily dispositive in the Commission’s material injury analysis.” SAA, H.R. Rep. 316, 103d Cong., 2d Sess., vol. I at 850. Section 771(35)(C) of the Act, 19 U.S.C. § 1677(35)(C), defines the “margin of dumping” to be used by the Commission in a final determination as the last margin or margins published by Commerce prior to the closing of the administrative record in the Commission’s investigations. In its notice of initiation, Commerce identified alleged dumping margins ranging from 48 to 69 percent. 63 Fed. Reg. 64040, 64041 (Nov. 18, 1998).

¹¹⁹ Chairman Bragg notes that she does not ordinarily consider the alleged margin of dumping to be of particular significance in evaluating the effects of subject imports on domestic producers. See Separate and Dissenting Views of Commissioner Lynn M. Bragg in Bicycles from China, Inv. No. 731-TA-731 (Final), USITC Pub. 2968 (June 1996).

¹²⁰ 19 U.S.C. § 1677(7)(C)(iii).

sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, and research and development.

In the face of growing demand, a number of indicators of the condition of the domestic industry exhibited rising trends over the period of investigation, including capacity,¹²¹ production,¹²² shipments,¹²³ and employment.¹²⁴ The ratio of domestic producers' inventories to total shipments remained small and relatively constant over the period of investigation.¹²⁵

In this context we note that the limited data available suggest that, except during ramp up periods, DRAM producers generally operate at high levels of capacity utilization to meet their fixed costs.¹²⁶ Consequently, in periods of falling prices producers appear to face the choice of operating at optimal capacity utilization and selling at whatever price they can get or not producing at all.¹²⁷ While some domestic producers may have taken the latter option,¹²⁸ most appear to have done the former, selling virtually their entire production at lower prices.

The significant price declines experienced during the period of investigation have had predictably negative effects on the financial condition of the domestic industry. Despite rising shipments, the domestic industry's net sales value and operating income declined continuously over the entire period.¹²⁹ As a result, the

¹²¹ Domestic capacity to produce uncased DRAMs rose irregularly from *** wafers in 1995 to *** wafers in 1996 and *** wafers in 1997, an increase of *** percent. Uncased DRAM capacity was *** wafers in interim 1998, compared with *** wafers in interim 1997. Capacity to produce cased DRAMs rose from *** units in 1995 to *** units in 1996 and *** units in 1997, an increase of *** percent. Capacity to produce cased DRAMs was *** units in interim 1998 compared with *** units in interim 1997. Table III-3, CR at III-11, PR at III-6 (data for Mitsubishi excluded).

¹²² Domestic uncased DRAM production rose from *** wafer starts in 1995 to *** wafer starts in 1996 and *** wafer starts in 1997, an overall increase of *** percent. Wafer starts were *** in interim 1998 compared with *** in interim 1997. Production of cased DRAMs rose from *** units in 1995 to *** units in 1996 and *** units in 1997, an increase of *** percent. Production of cased DRAMs was *** units in interim 1998, compared with *** units in interim 1997. Table III-3, CR at III-11, PR at III-6 (data for Mitsubishi excluded).

¹²³ Shipments of domestic DRAMs rose from *** billion bits in 1995 to *** billion bits in 1996 and *** billion bits in 1997, an increase of *** percent. Shipments of domestic DRAMs were *** billion bits in interim 1998, compared with *** billion bits in interim 1997. Table III-5, CR at III-13, PR at III-8 (data for Mitsubishi excluded).

¹²⁴ The average number of production and related workers employed in the production of uncased DRAMs rose from *** in 1995 to *** in 1996 and *** in 1997, and was *** in interim 1998 compared with *** in interim 1997. Table III-7, CR at III-15, PR at III-10 (data for Mitsubishi excluded).

¹²⁵ The ratio of inventories to total shipments (on the basis of bits) for uncased DRAMs fluctuated from *** percent in 1995 to *** percent in 1996 and *** percent in 1997, and was *** percent in interim 1998 compared with *** percent in interim 1997. The ratio of inventories to total shipments (on the basis of bits) for cased DRAMs fluctuated from *** percent in 1995 to *** percent in 1996 and *** percent in 1997, and was *** percent in interim 1998 compared with *** percent in interim 1997. Table III-6, CR at III-14, PR at III-9 (data for Mitsubishi excluded).

¹²⁶ Reported domestic capacity utilization for uncased DRAMs was *** percent in 1995, *** percent in 1996, and *** percent in 1997. Uncased DRAM capacity utilization was *** percent in interim 1998 compared with *** percent in interim 1997. Cased DRAM capacity utilization ranged from a high of *** percent in 1995 to a low of *** percent in 1997. Table III-3, CR at III-11, PR at III-6 (data for Mitsubishi excluded).

¹²⁷ Conf. Tr. at 28.

¹²⁸ CR at III-5 (Hitachi), III-6 (Matsushita), III-7 (Toshiba, Oki), III-8 (TwinStar/TI), PR at III-3-III-4.

¹²⁹ Net sales declined from \$*** in 1995 to \$*** in 1996 and \$*** in 1997, an overall decline of *** percent. Net sales were \$*** in interim 1998, compared with \$*** in interim 1997. Operating income declined from \$*** in 1995 to \$*** in 1996 and to negative \$*** in 1997. The industry had an operating loss of \$*** in interim 1997 and an

(continued...)

industry's operating income margin plunged from a robust *** percent in 1995 to *** percent in 1996 and negative *** percent in 1997. The industry's operating income (loss) margin was negative *** percent in interim 1998 compared with negative *** percent in interim 1997.¹³⁰

Given the need for constant innovation and replacement of equipment, the ability to fund capital spending and research and development are important indicators of the condition of the domestic DRAM industry. During the period of investigation, the domestic industry's capital expenditures rose from \$*** in 1995 to \$*** in 1996, then fell to \$*** in 1997, for an overall increase of *** percent. Capital expenditures were \$*** in interim 1998, compared with \$*** in interim 1997.¹³¹ R&D expenses rose from \$*** in 1995 to \$*** in 1996 and \$*** in 1997, and were relatively unchanged between the interim periods, falling slightly from \$*** in interim 1997 to \$*** in interim 1998.¹³² These results suggest that, at least to date, the domestic industry has been able to maintain the needed pace of technological innovation. Because it can take several years to bring a new production facility on line or upgrade the process technology in an existing fab, however, the facilities that began commercial production during the period of investigation were largely planned and funded before the period.¹³³ Accordingly, in any final phase investigation, we will examine whether the industry's most recent financial losses are hindering its current efforts to upgrade its production facilities or develop the next generation of DRAMs.¹³⁴

Based on our finding that the subject imports have depressed domestic DRAM prices, and because those price declines have contributed to large financial losses for the domestic industry in a growing market, we find, for purposes of this preliminary determination, that the subject imports are having an adverse impact on the domestic industry.

CONCLUSION

For the foregoing reasons, we find a reasonable indication that the domestic industry producing DRAMs is materially injured by reason of the subject imports.

¹²⁹ (...continued)

operating loss of \$*** in interim 1998. Table VI-1, CR at VI-2, PR at VI-2 (data for Mitsubishi excluded), *see* Memorandum INV-V-096 (Dec. 2, 1998).

¹³⁰ Table VI-1, CR at VI-2, PR at VI-2 (data for Mitsubishi excluded), *see* Memorandum INV-V-096 (Dec. 2, 1998).

¹³¹ Table VI-3, CR at VI-7, PR at VI-3 (data for Mitsubishi excluded).

¹³² Table VI-3, CR at VI-7, PR at VI-3.

¹³³ CR at III-4 (Dominion, Fujitsu), III-5 (Hyundai), III-7 (Samsung), and III-8 (White Oak), PR at III-2-III-4.

¹³⁴ In any final phase investigation, we will also seek further information regarding the reasons for, and significance of, various entrances and exists from the industry during the period as well as the evident worldwide trend toward consolidation in the DRAM industry.