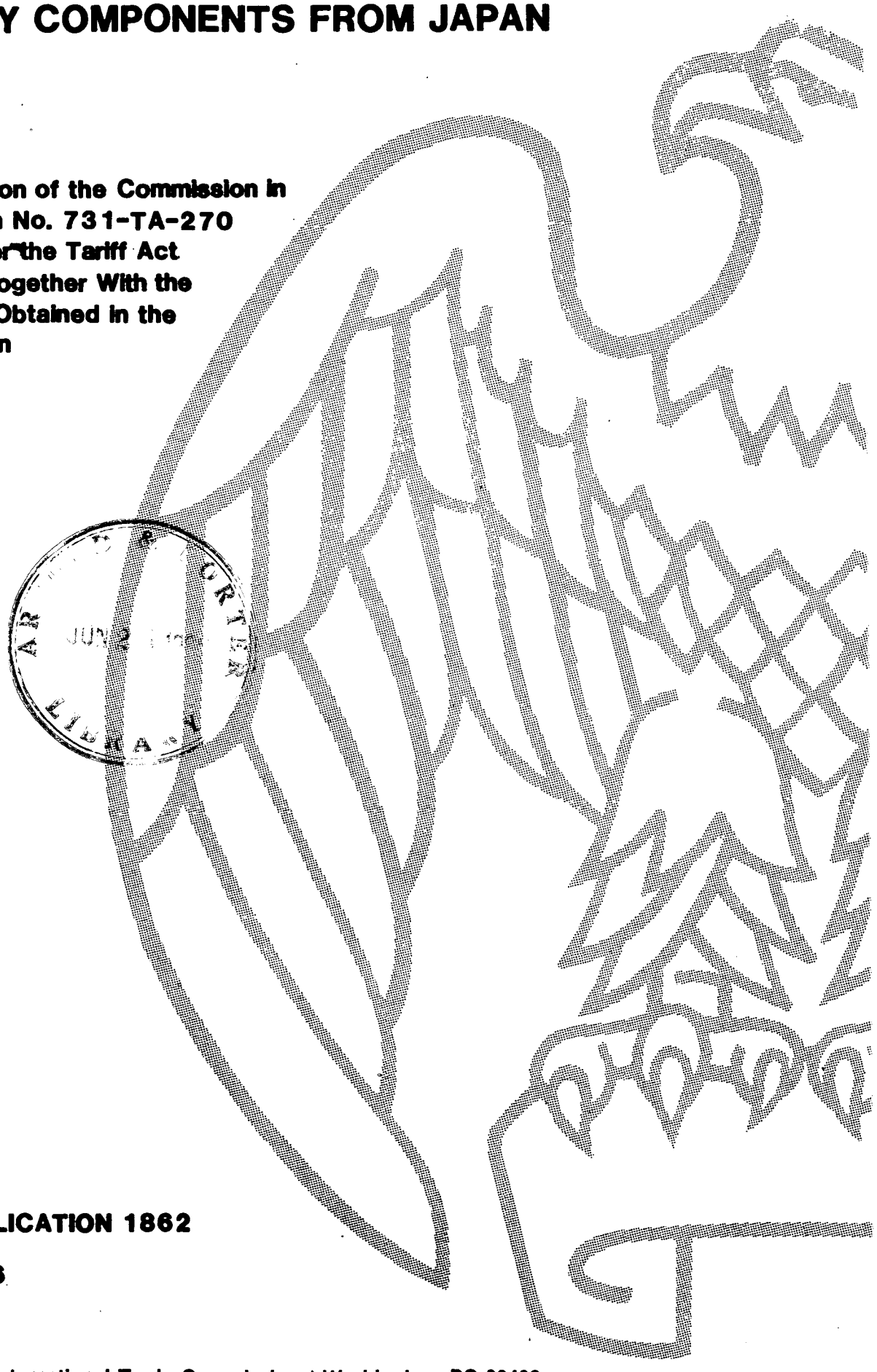
64K DYNAMIC RANDOM ACCESS MEMORY COMPONENTS FROM JAPAN

Determination of the Commission in Investigation No. 731-TA-270 (Final) Under the Tariff Act of 1930, Together With the Information Obtained in the Investigation



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CONTENTS

CONTENTS

Figures

CONTENTS

Tables

CONTENTS

Tables—Continued

CONTENTS

Tables—Continued

CONTENTS

Tables—Continued

CONTENTS

Tables—Continued

Note.—Data which would disclose confidential operations of individual concerns may not be published and therefore have been deleted from this report. Deletions are indicated by asterisks.

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC

Investigation No. 731-TA-270 (Final)

64K DYNAMIC RANDOM ACCESS MEMORY COMPONENTS (64K DRAM's) FROM JAPAN

Determination

On the basis of the record 1/ developed in the subject investigation, the Commission determines, 2/ pursuant to section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)), that an industry in the United States is materially injured by reason of imports from Japan of 64K dynamic random access memory components (64K DRAM's) of the N-channel metal oxide semiconductor type, provided for in item 687.74 of the Tariff Schedules of the United States, which have been found by the Department of Commerce to be sold in the United States at less than fair value (LTFV).

Background

The Commission instituted this investigation effective December 11, 1985, following a preliminary determination by the Department of Commerce that imports of 64K DRAM's from Japan were being sold at LTFV within the meaning of section 731 of the Act (19 U.S.C. § 1673). Notice of the institution of the Commission's investigation and of a public hearing 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 January 30, 1986 (51 FR 3860). The hearing was held in Washington, DC, on April 30, 1986, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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

2/ Vice Chairman Liebeler and Commissioner Brunsdale dissenting.

VIEWS OF CHAIRWOMAN PAULA STERN, COMMISSIONER ALFRED E. ECKES, COMMISSIONER SEELEY G. LODWICK, AND COMMISSIONER DAVID B. ROHR

We determine that an industry in the United States is materially injured by reason of imports of 64K dynamic random access memory components (64K DRAM's) from Japan which the Department of Commerce (Commerce) has determined are being sold at less than fair value (LTFV). Our determination is based primarily on the poor financial condition of the domestic industry, the adverse impact of imports on domestic prices during the period under investigation, and the particular sensitivity of this industry to decreased profitability because of high research and development expenses and the need for extensive capital investment.

Like product and the domestic industry

As a prerequisite to the Commission's material injury analysis, it must first define the relevant domestic industry. The term "industry" is defined in section 771(4)(A) of the Tariff Act of 1930 as "the domestic producers of a like product, or those producers whose collective output of the like product constitutes a major proportion of the total domestic production of that product . . . ." In turn, "like product" is defined 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." 1/ Consequently, the definition of the like product legally defines the scope of the relevant domestic industry under consideration by the Commission.

The "article subject to an investigation" is defined by the scope of the investigation initiated by Commerce. In this case, Commerce has defined the products under investigation as "all 64K dynamic random access memory

1/ 19 U.S.C. § 1677(10).

components of the N-channel metal oxide semiconductor type (64K DRAMs) from Japan." 2/

A DRAM is a monolithic integrated memory circuit containing thousands of memory storage cells (bits), each of which is comprised of a transistor and capacitor. Information is stored in each DRAM cell by charging selected capacitors. The storage cells in a DRAM are arranged in a rectangular array of columns and row. This geometry, together with circuit design, allows each cell to be accessed independently (random access). The electrical charge stored on the cells must be regenerated after being accessed, and periodically because of leakage. The required regeneration of the charge on the capacitors makes the device "dynamic." 3/ DRAM's vary in the speed at which the storage cells can be addressed (access time), and in density (the number of capacitors, expressed as multiples of 1,024 capacitors, kilobits, or K).

The production of DRAM's can be divided into several basic manufacturing operations. The production of the dice, the individual circuits, on the silicon wafer, called wafer fabrication, is one of the most difficult and costly of these operations. 4/ It involves significant investment of capital, both in basic research and in developing the highly sophisticated manufacturing technology. Following fabrication, each die on the wafer is electrically tested. Defective dice are marked for discards. This stage, known as wafer sorting, is generally performed at the same manufacturing

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2/ 51 Fed. Reg. 15943 (April 29, 1986). The TSUS item under which these imports are reported, 687.7441, includes only cased or assembled 64K DRAM's. Imports of uncased DRAM's, which are reported under statistical annotation 687.7405, are not subject to this investigation.

3/ The need to regenerate the stored charges distinguishes DRAM's from other random access memory semiconductors, called static RAM's (SRAM's), which do not require refresh charges, but are more costly to produce. Report of the Commission [hereinafter Report] at A-4.

4/ Wafer fabrication involves repeated photolithographic steps and the controlled introduction of impurities (dopants) into the silicon crystal wafer.

establishment where wafer fabrication takes place. The process of wire bonding and final sealing of the individual die in a case is called assembly, and may take place in the same manufacturing establishment as wafer fabrication, or elsewhere. After assembly, each unit is tested and marked for identification prior to shipment.

The issues involved in our determination of like product and domestic industry have been addressed by the Commission in both the preliminary investigation in this case, and in two other preliminary investigations involving related semiconductor products. 5/ On the basis of the record developed in this investigation, we determine that the like product in this investigation is all DRAM's. Based on our analysis of the nature of production-related activities in the United States by companies involved in DRAM manufacture, we conclude that the U.S. operations of all the companies which conduct some part of their manufacturing operations in the United States, whether wafer fabrication or assembly, comprise the domestic industry.

Like product -- The first issue which arises in determining the appropriate like product in this investigation is whether DRAM's of different densities are a single like product. 6/ The Commission traditionally has

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5/ 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Preliminary), USITC Pub. No. 1735 (August 1985)[hereinafter 64K DRAM's Preliminary]; Erasable Programmable Read Only Memories from Japan, Inv. No. 731-TA-288 (Preliminary), USITC Pub. No. 1778 (November 1985) [hereinafter EPROM's]; Dynamic Random Access Memory Semiconductors of 256 Kilobits and Above from Japan, Inv. No. 731-TA-300 (Preliminary), USITC Pub. No. 1803 (January 1986)[hereinafter 256K and Above DRAM's].

6/ This issue has been previously addressed by the Commission. In the 256K and Above DRAM's determination, the Commission preliminarily determined that DRAM's of different densities are one like product. 256K and Above DRAM's, supra note 5, at 9-13. See note 13, infra. In the 64K DRAM's Preliminary investigation, the Commission, in concluding that the like product was 64K DRAM's, simply did not address the possibility that other densities may be "like" the imported 64K DRAM's. Similarly, in EPROM's, while the Commission recognized that the density question existed, no party made any arguments against the conclusion argued by petitioners in that investigation, and preliminarily reached by the Commission, that EPROM's of all densities are a single like product. EPROM's, supra note 5, at 8 n.16.

considered factors relating to the characteristics and uses of the articles subject to investigation, including physical appearance, interchangeability between products, channels of distribution, customer perceptions of the articles, and common manufacturing facilities and production employees, in determining what domestic product is like the imported product subject to investigation. 7/ No single factor is determinative, and minor variations have been found to be an insufficient basis for a separate like product analysis. 8/ In addition, we are mindful of the admonition of the Senate in the legislative history of the Trade Agreements Act of 1979:

> The requirement that a product be "like" the imported article 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 investigation. 9/

The information on the record in this investigation supports the conclusion that different densities of DRAM's are "like" within the meaning of the statute. DRAM technology has advanced since the introduction of the 1K DRAM in 1970. Each new generation has represented a quadrupling of memory capacity, and has been introduced within three to four years following the

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7/ See, e.g., 256K and Above DRAM's, supra note 5, at 6 n.6; EPROM's, supra note 5, at 6 n.11; Color Television Receivers from the Republic of Korea and Taiwan, Invs. Nos. 731-TA-134 and 135 (Final), USITC Pub. No. 1514 at 3-6 (1984)[hereinafter Color Television Receivers from the Republic of Korea and Taiwan]; Certain Radio Paging and Alerting Receiving Devices from Japan, Inv. No. 731-TA-102 (Final), USITC Pub. No. 1410 at 8-9 (1983)[hereinafter Certain Radio Paging and Alerting Receiving Devices from Japan].

8/ E.g. Certain Radio Paging and Alerting Receiving Devices from Japan, supra note 7, at 6-9 (1983)(different models of tone only pagers not separate like product, although tone only pagers separate like product from display pagers); Certain Amplifier Assemblies and Parts Thereof from Japan, Inv. No. 731-TA-48 (Final), USITC Pub. No. 1266 at 4-5 (1982)(addition of linearizer to amplifier insufficient to affect essential characteristics and uses of amplifier).

9/ S. Rep. No. 249, 96th Cong., 1st Sess. 90-91 (1979).

previous generation. While it is true that the design and process technology for DRAM's evolved over time, the essential characteristic for which DRAM's are purchased and used, their memory function, remains the same. Moreover, each succeeding generation of DRAM's has performed its function in fundamentally the same manner, by storing information as electrical charges, which can be randomly accessed, and must be regenerated periodically. 10/

It is true that different densities of DRAM's are not necessarily interchangeable, and cannot in all instances be substituted for one another. While four 64K DRAM's theoretically provide the same memory storage capacity as one 256K DRAM, they are not, as a practical matter, piggy-backed and used in an application designed to accommodate one 256K DRAM. As DRAM capacity increases, some end-use products are redesigned to accommodate the higher density chips, which save space on circuit boards and lower manufacturing costs. In addition, new applications are continually being developed which incorporate newly designed higher density DRAM's.

Thus, over time, the use of lower density chips generally declines, although they may still be manufactured for previously designed applications. This results in what has been called a generational shift in both DRAM capacity and end-use designs, reflected in a linkage in the pricing of

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10/ See Report at A-4. Respondents' argument with respect to the physical appearance of DRAM's under microscopic examination would extend to render the different DRAM's produced by different manufacturers separate like products, as manufacturers frequently develop their own layouts for the circuitry of DRAM's of the same density. Moreover, a single manufacturer may have different specific designs for a single density of DRAM, depending on particular customer requirements or a desire to fill a particular niche in the market.

successive generations of DRAM's. 11/ In addition, DRAM's of different densities share common distribution systems, and are sold to the same categories of customers. With respect to manufacturing facilities, DRAM's of different densities can be and frequently are manufactured in common facilities using the same equipment.

Moreover, in making our like product determination, we have taken note of the continual technological development which characterizes the entire field of semiconductor production. Purchasers of DRAM's are essentially buying memory capacity. Although as the technology develops new production techniques are introduced and facilities are revamped, this does not necessarily make newer generation DRAM's unlike previous generation DRAM's. 12/ On the basis of the foregoing, we conclude that the domestic product like the imported 64K DRAM's is all DRAM's. 13/

The second issue which arises in determining the appropriate like product in this investigation is whether unassembled wafers and dice are like

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11/ The parties agree that there is a general crossover in use from a lower density to a higher density DRAM. This generally occurs when the price of the higher density DRAM is five times the price of the previous generation DRAM. New generation DRAM's have contained four times as many bits as the previous generation. The ratio is five-to-one because of the savings to end use manufacturers as a result of the need for less space on circuit boards, and lowered manufacturing costs, with the use of higher density DRAM's.

12/ This definition of like product includes DRAM's of 256K and above, which are the subject of a pending final antidumping investigation, as well as DRAM's of less than 64K. We have concluded that there is no inherent legal or logical problem with the Commission investigating the effect of two different sets of imports, as defined by Commerce, on the same like product and domestic industry.

13/ Commissioner Eckes notes that in the preliminary investigation on 256K and above DRAM's, he restricted his determination to DRAM's of densities up to and including 1 megabit. 256K and Above DRAM's, supra note 5, at 13 n.30. As there are no imports of DRAM's above 1 megabit -- indeed they are not yet being produced except in experimental prototype -- he reasons that there can be no injury or threat of injury to the domestic DRAM industry by reason of such imports. However, this determination does not affect his definition of the like product (all DRAM's) or the domestic industry (the U.S. producers of all DRAM wafers and dice and/or assembled DRAM's) in this investigation.

assembled DRAM's. 14/ The imported article subject to this investigation is assembled, or cased, 64K DRAM's. Several of the companies in support of the petition produce DRAM wafers and dice in the United States, but send them offshore for assembly. In order to decide whether these companies are part of the domestic industry, it is necessary to determine whether they produce a like product. 15/

In previous investigations, the Commission has considered the necessity for further processing, cost, the degree of substitutability or interchangeability of the products, and the essential functions of the finished product in addressing the question of whether "semifinished" products

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14/ The Commission has addressed this issue previously. Vice Chairman Liebeler raised the question of whether wafers and dice and assembled DRAM's are one like product in the 64K DRAM's Preliminary investigation, supra note 5, at 22 n.1 (additional views of Vice Chairman Liebeler). However, the question had not previously been raised in that investigation, and no determination as to that issue was made. In EPROM's the Commission preliminarily concluded that EPROM wafers and dice and finished EPROM's are one like product, supra note 5, at 8 n.16. Similarly, in 256K and Above DRAM's, the Commission preliminarily concluded that DRAM wafers, dice, and the assembled DRAM's, are a single like product. 256K and Above DRAM's, supra note 5, at 9 n.18.

15/ Commissioner Rohr disagrees that it is necessary, in this investigation, to determine whether cased and uncased DRAM's are a single like product and so does not join in this portion of the opinion. He believes that the particular factual context of this investigation does not raise the issue and that it is premature for the Commission to address it. The imported articles subject to this investigation are assembled 64K DRAM's only. The "like product" should, accordingly, be similarly defined as assembled DRAM's. The issue raised by the majority as to the proper consideration of companies which do not complete all steps necessary to produce a DRAM in the United States should be viewed not as a "like product" question, but rather as a "domestic industry" question. Consequently, the issue, as discussed infra at note 21, is whether the domestic activities of the producers are sufficent to include them in the domestic industry.

are "like" the "finished" product. 16/ In addition, the Commission has considered whether the wafers and dice embody or impart an essential characteristic to the finished semiconductor. 17/

While it is true that DRAM wafers and dice are different in appearance from and are not interchangeable with assembled DRAM's, we conclude that these differences are not dispositive of the question of whether they are like. The essential characteristics of an assembled DRAM are the capacity to store information as electrical charges, the capacity for random access of the stored information, and the need for periodic regeneration of the charges. These characteristics distinguish a DRAM from any other memory semiconductor. Moreover, these essential characteristics are imparted to the product during the wafer fabrication process and are physically present in the DRAM dice. Once wafer fabrication commences, the resulting wafer and dice are dedicated to a single use, in an assembled DRAM. That a DRAM die must be inserted into a package in order to be usable by a purchaser does not, in our view, make DRAM wafers and dice separate like products from assembled DRAM's. Moreover, DRAM wafers and dice are not generally considered articles of commerce; sales to end users are almost entirely of finished DRAM's. There is virtually no independent commercial market for DRAM wafers and dice. Based on our analysis

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16/ See Cellular Mobile Telephones and Subassemblies Thereof from Japan, Inv. No. 731-TA-207 (Final), USITC Pub. No. 1786 at 6-8 (1985)[hereinafter Cellular Mobile Telephones and Subassemblies Thereof from Japan]; Oil Country Tubular Goods from Argentina, Brazil, Korea, Mexico, and Spain, Invs. Nos. 731-TA-191-195 and 701-TA-215-217 (Preliminary), USITC Pub. No. 1555 at 6-7 (1984) ("green" tubes are like finished product because interchangeable); Certain Steel Valves and Certain Parts Thereof from Japan, Inv. No. 731-TA-145 (Preliminary), USITC Pub. No. 1446 at 6 n.10 (1983) (parts of valves same like product as finished product to which dedicated); Fireplace Mesh Panels from Taiwan, Inv. No. 701-TA-185 (Preliminary), USITC Pub. No. 1284 (1982)(fireplace mesh on rolls not like mesh panels).

17/ EPROM's, supra note 5, at 8-9; 256K and Above DRAM's, supra note 5, at 8.

of the factors outlined above, we conclude that there is a single like product in this investigation, comprising DRAM wafers, dice, and assembled DRAM's.

Domestic industry -- Having determined that there is one like product in this investigation, we must determine the identity of the companies which are "domestic producers of the like product." A number of firms produce DRAM wafers and dice in the United States. Some of these dice are then assembled overseas, while others are assembled in the United States. In addition, some companies import wafers and dice from Japan, which are then assembled into DRAM's in the United States. We determine that the U.S. operations of each of these companies comprise the domestic industry. 18/

18/ Advanced Micro Devices, Inc. (AMD), AT&T Technology Systems (AT&T), IBM Corp. (IBM), Intel Corp. (Intel), petitioner Micron Technology, Inc. (Micron), Mostek Corp. (Mostek), Motorola, Inc. (Motorola), National Semiconductor Corp. (National), and Texas Instruments Inc. (TI), manufactured DRAM wafers and dice in the United States during the period under investigation. Some of the DRAM wafers and dice are then shipped overseas for assembly by affiliated companies. Fujitsu Microelectronics, Inc. (FMI), Hitachi Semiconductor (America), Inc. (HISUS), and Mitsubishi Semiconductor America, Inc. (MSAI) import DRAM wafers and dice from Japan, which are then assembled in the United States. Toshiba Semiconductor (U.S.A.), Inc. (TSU), assembled 16K DRAM's in the United States during the period under investigation. NEC Electronics, Inc. (NEC) has wafer fabrication as well as assembly operations in the United States. Report at A-6-A-8. In accord with previous Commission decisions on this issue, captive producers are a part of the domestic industry under consideration. See e.g., Melamine in Crystal Form from Austria and Italy Invs. Nos. 731-TA-13 and 14 (Final), USITC Pub. No. 1065 (1980) at 11 (additional views of Commissioner Stern on the scope of the domestic industry); Melamine from Brazil, Inv. No. 731-TA-107 (Preliminary), USITC Pub. No. 1303 (1982) at 4 n.5. However, we have also considered, in analyzing injury and causation, the different forces which may affect captive producers' production and purchasing decisions.

The Commission's analysis of domestic industry is a factual determination and is made on a case-by-case basis. 19/ The activities in the United States of the companies which manufacture wafers and dice may include research and development of all aspects of DRAM technology, from wafer fabrication through assembly and final testing technology. In addition, wafer fabrication and wafer sorting are done in U.S. facilities. These operations require sophisticated technology and extremely high capital investment levels. To the extent that companies may assemble overseas, we have determined that the nature of the activities conducted in the United States is sufficient to warrant their consideration as part of the domestic industry. Similarly, those companies which import wafers and/or dice from Japan for assembly in the United States perform significant operations in the assembly process which warrant their inclusion in the domestic industry. 20/ 21/

19/ In prior investigations, the Commission has examined the overall nature of production-related activities in the United States, including the extent and source of a firm's capital investment, the technical expertise involved in production activity in the United States, the value added to the product in the United States, employment levels, the quantity and type of parts sourced in the United States, and any other costs and activities in the United States directly leading to production of the like product. See Cellular Mobile Telephones and Subassemblies Thereof from Japan, supra note 15; EPROM's, supra note 5, at 10 n.26; Color Television Receivers from the Republic of Korea and Taiwan, supra note 7, at 8; Certain Radio Paging and Alerting Receiving Devices from Japan, supra note 7, at 8.

20/ The domestic content share of the assembled DRAM's sold by the various companies varied significantly. As noted, assembly of some of the DRAM's produced by the domestic industry takes place overseas. The Customs Service considers the country of final assembly as the country of origin of DRAM's, and therefore such DRAM's are imports for Customs purposes. We have concluded that Customs' determination of substantial transformation is not binding on us for purposes of determining like product or whether a domestic industry exists. See EPROM's, supra note 5, at 12 n.31.

21/ Commissioner Rohr takes the position that the issue in this investigation is whether companies engaged in, on the one hand, only "wafer fabrication," or, on the other hand, only "assembly" in the United States, should be considered "domestic producers of the like product," assembled DRAM's. In neither case are all production steps necessary to produce the like product conducted in the United States. Both wafer fabrication and

footnote continued next page

One further question arises. Some of the companies within the domestic industry as defined above import DRAM's within the scope of the investigation, or are related to exporters or importers. 22/ Thus, we must consider whether those companies should be excluded from consideration of the domestic industry under the related parties provision of the statute, 19 U.S.C. § 1677(4)(B). That provision calls for the Commission to exercise its discretion in determining whether "appropriate circumstances" exist for the exclusion of related parties from the industry. The primary purpose for the provision is to avoid the distortion in the aggregate data concerning the domestic industry which might result from not excluding related parties whose operations are shielded from the effect of imports.

In this investigation, the trends concerning the condition of the industry are the same whether the related companies are included or excluded. It has been argued that the U.S. subsidiaries of Japanese companies are shielded from the effects of LTFV imports. However, we note that DRAM's manufactured by the related parties are sold at the same price levels as the imported products. Consequently, the related parties are subject to the same diminution of profits on their U.S. operations as other companies in the domestic industry. To the extent that injury to the domestic industry is the result of inability to finance research and development and capital expenditures for continuing DRAM development, the U.S. subsidiaries of

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21/ footnote continued from previous page
assembly are essential to the production of the like product. The relative value added by the two stages varies indirectly over time, but both are generally significant. Although wafer fabrication is more capital intensive and arguably more important for technological development, assembly also involves significant amounts of both investment and labor. Commissioner Rohr believes it is appropriate to include producers at both stages of production in the domestic industry. Thus he concurs with the result reached by the majority, although not with its reasoning.

22/ Report at A-6-A-9.

Japanese companies, which do not conduct substantial research and development in the United States, may not suffer injury to the same extent as other members of the domestic industry. Nonetheless, we conclude that excluding these companies would not be appropriate.

Condition of the domestic industry

In assessing the condition of the domestic industry, the Commission considers, among other factors, consumption, production, capacity, capacity utilization, inventories, employment, wages, sales, and profitability. 23/ No single factor is determinative, and in each investigation, the Commission must consider the particular nature of the industry which it is examining in making its determination.

The DRAM industry is a developing, growing industry, characterized by increasing capacity and production. Moreover, the demand for DRAM's, as reflected in apparent consumption, has increased during the period under investigation. Therefore, our analysis of injury to this industry must look at those factors which most clearly reflect its continued viability in this highly competitive field, as well as the more traditional factors to which we are accustomed.

U.S. production of cased DRAM's more than doubled from 1983 to 1984, from 42.2 million units to 106.3 million units. 24/ The data concerning capacity indicate that total capacity to produce DRAM's has increased throughout the period under investigation. 25/ These increases in capacity and production reflect the industry's optimism regarding increased demand and growth during 1983 and 1984. However, total apparent U.S. consumption did not continue to

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23/ 19 U.S.C. § 1677(7)(C)(iii).
24/ Report at A-18.
25/ Id. at A-16.

increase in 1985 as had been anticipated. Total apparent U.S. consumption of all cased DRAM's increased by 28 percent from 1983 to 1984, from 329.8 million units to 421.9 million units. 26/ However, in 1985, total apparent U.S. consumption of all cased DRAM's fell by 14 percent, to 361.5 million units. 27/ Significantly, the domestic industry's share of total apparent consumption of all DRAM's declined during the period under investigation. 28/

Other factors also indicate that the industry was experiencing difficulties in 1985. Although capacity utilization was high early in the period from 1982-84, it fell sharply in 1985. 29/ The number of production and related workers employed in the production of DRAM's increased by 53 percent from 1983 to 1984, but then declined sharply in 1985, to almost the 1983 level. 30/ Similarly, hours worked increased from 1983 to 1984, then declined in 1985, as did wages and total compensation paid to production and related workers producing DRAM's. 31/ In addition, one company closed down one of its fabrication areas for the production of DRAM's, and five other companies withdrew from DRAM production entirely. 32/

The Commission received financial information on overall DRAM operations from nine firms, six of which perform wafer fabrication in the United States, and three of which conduct assembly and/or testing and marking operations in the United States. Aggregate net sales of DRAM's increased by 41 percent, from $447.2 million in 1983, to $630.6 million in 1984, then dropped by 51

26/ Id. at A-11.
27/ Id.
28/ Id. at A-42. The domestic industry's share of apparent U.S. open-market consumption was less than its share of total apparent consumption throughout the period, and declined more in 1985. Id. at A-43.
29/ Id. at A-16.
30/ Id. at A-29.
31/ Id.
32/ Id. at A-6-A-8.

percent to $311.1 million in 1985. In 1983, the reporting firms sustained an aggregate operating loss of $60.7 million, equivalent to 13.6 percent of net sales. In 1984, the responding producers' aggregate operating loss declined to $10.7 million, or 1.7 percent of net sales. In 1985, however, the reporting firms sustained a staggering aggregate operating loss of $335.5 million, which exceeded sales by 8 percent. 33/

Based on our overall assessment of the condition of the domestic industry, we conclude that the domestic industry producing DRAM's is experiencing material injury. 34/ 35/

Causation

When making a determination as to whether there is material injury by reason of LTFV imports, the statute provides that:

> the Commission shall consider, among other factors:
> (i) the volume of imports of the merchandise which is the subject of the investigation,
> (ii) the effect of imports of that merchandise on prices in the United States for like products, and
> (iii) the impact of imports of such merchandise on domestic producers of like products. 36/

U.S. imports of cased 64K DRAM's from Japan increased from 82.3 million in 1983 to 115.6 million in 1984, before falling in 1985 to 76.3 million. 37/

33/ Id. at A-30-A-31.

34/ Chairwoman Stern believes that the causal context is critical to a reliable material injury determination. Therefore, she does not believe it necessary or desirable to make a determination on the question of material injury separate from the consideration of causation. She joins her colleagues by concluding that the domestic industry is experiencing economic problems. For a fuller discussion of this issue, see Additional Views of Chairwoman Stern in Cellular Mobile Telephones and Subassemblies Thereof from Japan, supra note 15, at 18.

35/ Commissioner Eckes believes that the Commission is to make a finding regarding the question of material injury in each investigation. See Additional Views of Commissioner Eckes in Cellular Mobile Telephones and Subassemblies Thereof from Japan, supra note 15, at 20.

36/ 19 U.S.C. § 1677(7)(B).

37/ Report at A-40.

The share of total apparent U.S. consumption of all DRAM's accounted for by shipments of imports of cased 64K DRAM's from Japan increased from 1983 to 1984, from 19.2 percent to 23.4 percent, before declining in 1985 to 20.9 percent. 38/ The share of apparent U.S. open-market consumption of all DRAM's accounted for by imports of cased 64K DRAM's was at approximately the same levels, and followed the same trends, although the decline from 1984 to 1985 was somewhat less. 39/

The Commission collected pricing information from domestic producers and importers for 64K DRAM's with respect to each of the three major channels of distribution. 40/ Although there are some variations with respect to sales to particular purchasers, on the whole the data demonstrate a dramatic collapse in both domestic and import prices during 1985. December 1985 price levels are only a fraction of what they were in late 1984. 41/

One of the most crucial aspects of this investigation involves the role of imports of 64K DRAM's from Japan in this price collapse. Respondents argued that the October 1984 announcement of a price cut by petitioner Micron

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38/ Id. at A-43.

39/ Id. In addition, we note that consumption of 64K DRAM's declined during 1985, and the U.S. industry's share of that consumption fell at the same time.

40/ The three major channels of distribution are (1) sales to end users, i.e., original equipment manufacturers and circuit board stuffers, on a contract basis, (2) sales to distributors, and (3) sales to spot market purchasers (which may include OEM's, circuit board stuffers, and distributors). Id. at A-44. The Commission collected pricing information for four different categories of end-use products from original equipment manufacturers: (1) office automation equipment; (2) telecommunications equipment; (3) industrial automation equipment; and (4) consumer electronic products, including personal computers. Id. at A-44-A-45.

41/ Id. at A-51, A-53-A-55, A-58, A-60-A-61, A-171 For instance, the price of imported 64K DRAM's (150 ns) sold to office automation OEM's, which accounted for over half of the reported prices for imports from Japan, dropped from a price index of 100 in September 1984 to 21 in December 1985. Similar price indices constructed for sales of imports of 64K DRAM's (150 ns) to distributors show prices dropping from an index level of 100 in September 1984 to lows ranging from 13 to 20 in fourth quarter 1985. Id. at A-49.

initiated the subsequent price cuts. Micron, and parties in support of the petition, argue that in view of Micron's relatively small market share this initial price cut cannot be deemed the cause of the entire pricing scenario during 1985. The market for DRAM's is extremely price sensitive. The products of the various domestic and import producers are highly interchangeable, and consequently, with the exception of qualification requirements of some OEM's, purchasing decisions are made largely on the basis of price. In this highly competitive market, offers for sale at lower prices quickly become known to other producers, and generally result in matching low price offers. On the basis of the information in the record, we conclude that aggressive Japanese pricing contributed significantly to the drop in prices.

Information supporting this conclusion includes the following: (1) Imports of 64K DRAM's from Japan accounted for a substantial share -- approximately 20 percent -- of total apparent consumption of DRAM's during the entire period under investigation. 42/ The ratio of imports of 64K DRAM's to total apparent consumption of all cased DRAM's rose from 1983 to 1984. It fell in 1985, but at the same time, 64K DRAM consumption as a share of total apparent DRAM consumption declined. 43/ The share of consumption of 64K DRAM's accounted for by imports of 64K DRAM's from Japan increased from 1984 to 1985. 44/ (2) Our analysis of the pricing information indicates that in the area of sales to office automation equipment OEM's, which is the largest segment of the market, imports of 64K DRAM's (150 ns) from Japan undersold the domestic product in fifteen of nineteen monthly comparisons. 45/ The highest

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42/ Id. at A-43.
43/ Id. at A-11, A-43.
44/ Id. at A-42.
45/ Id. at A-63.

margins of underselling occurred during April-June of 1985, a period when the price trend analysis shows steep declines in the prices of 64K DRAM's imported from Japan. 46/ (3) Japanese capacity to produce DRAM's has increased dramatically during the period under investigation. 47/ The United States is the largest market in the world for DRAM's. Consequently, there is an incentive for importers of 64K DRAM's from Japan to price aggressively to maintain, or if possible increase, market share, especially in a declining market. (4) Both the lost sales and lost revenue information gathered in this investigation support the conclusion that imports of 64K DRAM's from Japan were priced aggressively during 1985. 48/ Consequently, we determine that the LTFV imports from Japan had an adverse impact on pricing of 64K DRAM's during 1985.

There is no doubt that the 64K DRAM market experienced a dramatic price collapse during 1985. Domestic producers have been able to maintain a significant share of the U.S. market because of a willingness to sell at prices far below what had been anticipated based on the declining cost structures typical in this industry. 49/ The profitability of the U.S. producers therefore declined dramatically during this period, resulting in

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46/ Id. at A-47, A-51, A-63. In addition, we note that in examining the under- and overselling by imports of 64K DRAM's from Japan for all categories of purchasers, an interesting pattern emerges. During the fourth quarter of 1984 and the first quarter of 1985, imports of 64K DRAM's from Japan evidenced over-selling in most of the comparisons. During this same period, the price of DRAM's in the United States was approaching the U.S. producer's expected costs of production, based on their experience in 1984. However, during the second quarter of 1985, as prices fell to levels below the average U.S. cost of production, the incidence of underselling by imports of 64K DRAM's from Japan increased.

47/ Id. at A-13-A-15.

48/ Id. at A-72-A-82.

49/ Our analysis of the cost of production information provided by the domestic industry indicates that several of the domestic producers were selling at prices below their costs of production.

staggering losses during 1985, and the subsequent withdrawal of a number of major companies from DRAM production. We note that the DRAM industry, like other semiconductor producers, is extremely sensitive to declines in profitability. 50/ DRAM production is highly capital intensive. Moreover, producers must continually invest large sums in research to develop "next generation" DRAM's, to keep pace with demand for memory capacity on the part of end users. Consequently, declines in profitability are an extremely significant indicator of material injury to the industry.

The information before the Commission indicates that the LTFV imports have contributed to the dramatic downward price spiral. The declines in pricing during 1985 resulted in substantial losses for the domestic industry. Thus, we conclude that LTFV imports of 64K DRAM's from Japan are a cause of material injury to the domestic industry producing DRAM's.

50/ Parties in support of the imposition of antidumping duties argue that the imports of 64K DRAM's from Japan threaten material injury to the domestic producers of other semiconductor products, such as logic circuits or memory circuits other than DRAM's. As we noted in EPROM's, there may be some economic validity to this argument. EPROM's, supra note 5, at 23 n.76. However, the production of other types of memory circuits or logic circuits is not a part of the domestic industry producing DRAM's under any definition of that industry. We have not relied on any injury or a threat of injury to any industry (or industries) producing products other than DRAM's in making our affirmative determination.

VIEWS OF VICE CHAIRMAN LIEBELER

Inv. No. 731-TA-270 (Final)

64K Dynamic Random Access Memory Components

I determine that an industry in the United States is not materially injured, or threatened with material injury, by reason of imports of 64K dynamic random access memory components (64K DRAM's) from Japan which the Department of Commerce has determined are being sold at less than fair value.[1]

Like product and domestic industry

In the preliminary determination in this investigation, and in subsequent investigations, questions arose on the proper way to treat unencapsulated versus encapsulated chips. First, are they "like products" within the meaning of the statute? Second, if unencapsulated chips are not like encapsulated ones,

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[1] Material retardation is not an issue because the industry is well established.

should the domestic industry include producers of unencapsulated chips?[2] A related question is whether the different density DRAM's are "like products," and if so, whether the product should be analyzed in terms of dynamic random access memory units. For example, are four 64K DRAM's approximately equal to one 256K DRAM?

The proper way to treat unencapsulated chips is to include them within the definition of the domestic industry rather than to include them within the like product definition.[3] The Conference Report on the Trade and Tariff Act of 1984 describes the statutory framework and Commission practice as follows:

> The term "industry" for purposes of CVD and AD investigations means the domestic producers of a "like product", and the term "like products" has been defined and interpreted to include only those products which are identical or most similar in their characteristics to the

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[2] See 64K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-270 (Preliminary), USITC Pub. 1735, at 21-22 (1985)(Additional Views of Vice Chairman Liebeler); Erasable Programmable Read Only Memories (EPROM's) From Japan, Inv. No. 731-TA-288 (Preliminary), USITC Pub. 1778 (1985); 256K Dynamic Random Access Memory Components from Japan, Inv. No. 731-TA-300 (Preliminary), USITC Pub. 1803 (1986).

[3] I note that in this case, because unencapsulated chips are not subject to investigation, the mode of analysis has no affect on the outcome.

> imported article. Accordingly, producers or products being incorporated into a processed or manufactured article (i.e., intermediate goods or component parts) are generally not included in the scope of the domestic industry that the ITC analyzes for the purposes of determining injury.[4]

Both the statute and Commission precedent indicate that the like product is defined in terms of characteristics and uses. Sometimes this is easier to determine than others. In the present case encapsulated DRAM's are clearly most similar to the imports under investigation than any other domestic product. While it may be possible to stretch the meaning of characteristics and uses to allow the consideration of unencapsulated DRAM's, it is unnecessary to do so.

Rather, I focus on the term "generally" in the above quotation. Thus, while intermediate products are generally not included in the scope of the domestic industry, there are exceptions. Candidates for such an exception include those in which an upstream (intermediate) product has little alternative use. Unencapsulated DRAM's meet this test as they have practically no alternative use other than as the raw

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[4] H.R. Rep. 1156, 98th Cong., 1st Sess. 188 (1984) (emphasis added).

product for encapsulation. Thus I determine that the producers of unencapsulated DRAM's are part of the industry producing the like product.[5]

DRAM's are produced and consumed in many different densities. The different density chips are all made using

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[5] In the legislative history to the Trade Reform Act of 1974, the Senate Finance Committee stated:

> The Antidumping Act refers to "an industry in the United States." There are no qualifications as to the kind of industry or the number of industries that might be adversely affected by the less-than-fair-value imports under consideration. Although the Commission's investigations have usually been concerned with an industry consisting of the domestic-producer facilities engaged in the production of comparable articles (i.e., articles like the imported articles), a number of investigations have been concerned with domestic facilities engaged in the production of articles which, although unlike the imports, are nevertheless competitive therewith in domestic markets. In any case, the industry is a national industry involving all domestic facilities engaged in the production of the domestic articles involved.

S. Rep. 1298, 93d Cong., 2d Sess. 179-80 (emphasis added). This comports with Commission precedent. The Commission includes the facilities of those producing intermediate products, either as part of the industry ("kind") or as a different industry ("number") where those facilities have no good alternative use.

Respondents have urged that there is a standing question if the domestic industry is comprised of only the assemblers of the final product because such producers either actively oppose the petition or do not support it. Pre-Hearing Brief on behalf of Oki Elec. Ind.

(Footnote continued on next page)

the same raw material and the same technology. In addition they all serve the same memory function. I concur with the majority in finding that DRAM's of different densities are like products.[6]

Material Injury by Reason of Imports

In order for a domestic industry to prevail in a final investigation, the Commission must determine that the dumped or subsidized imports cause or threaten to cause material injury to the domestic industry producing the like product. First, the Commission must determine whether the domestic industry producing the like product is materially injured or is threatened with material injury. Second, the Commission must determine whether any injury or threat thereof is by reason of the dumped or

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(Footnote continued from previous page)
Co., at 2 (Apr. 25, 1986). Because I have included the fabricators as part of the domestic industry, and the domestic fabricators strongly support the petition, this argument fails.

[6] I reach this conclusion only with respect to DRAM's up to and including 1 megabit. See 256K DRAM's, supra note 2 (Additional Views of Vice Chairman Liebeler and Commissioner Eckes). With respect to the issue of related parties, I concur with the majority that it would be inappropriate to apply that provision in this investigation.

subsidized imports. Only if the Commission answers both questions in the affirmative, will it make an affirmative determination in the investigation.

Before analyzing the data, however, the first question in whether the statute is clear or whether one must resort to the legislative history in order to interpret the relevant sections of the antidumping law. The accepted rule of statutory construction is that a statute, clear and unambiguous on its face, need not and cannot be interpreted using secondary sources. Only statutes that are of doubtful meaning are subject to such statutory interpretation.[7]

The statutory language used for both parts of the two-part analysis is ambiguous. "Material injury" is defined as "harm which is not inconsequential, immaterial, or unimportant."[8] This definition leaves unclear what is meant by harm. As for the causation test, "by reason of" lends itself to no easy interpretation, and has been

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[7] Sands, Sutherland Statutory Construction, sec. 45.02 (4th Ed.)

[8] 19 U.S.C. sec. 1977(7)(A)(1980).

the subject of much debate by past and present commissioners. Clearly, well-informed persons may differ as to the interpretation of the causation and material injury sections of title VII. Therefore, the legislative history becomes helpful in interpreting title VII.

The ambiguity arises in part because it is clear that the presence in the United States of additional foreign supply will always make the domestic industry worse off. Any time a foreign producer exports products to the United States, the increase in supply, ceteris paribus, must result in a lower price of the product than would otherwise prevail. If a downward effect on price, accompanied by a Department of Commerce dumping or subsidy finding and a Commission finding that financial indicators were down were all that were required for an affirmative determination, there would be no need to inquire further into causation.

But the legislative history shows that the mere presence of LTFV imports is not sufficient to establish causation. In the legislative history to the Trade Agreements Acts of 1979, Congress stated:

> [T]he ITC will consider information which indicates that harm is caused by factors other than the less-than-fair-value imports.[9]

The Finance Committee emphasized the need for an exhaustive causation analysis, stating, "the Commission must satisfy itself that, in light of all the information presented, there is a sufficient causal link between the less-than-fair-value imports and the requisite injury."[10]

The Senate Finance Committee acknowledged that the causation analysis would not be easy: "The determination of the ITC with respect to causation, is under current law, and will be, under section 735, complex and difficult, and is matter for the judgment of the ITC."[11] Since the domestic industry is no doubt worse off by the presence of any imports (whether LTFV or fairly traded) and Congress has directed that this is not enough upon which to base an affirmative determination, the Commission must delve further to find what condition Congress has attempted to remedy.

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[9] Report on the Trade Agreements Act of 1979, S. Rep. No. 249, 96th Cong. 1st Sess. 75 (1979).

[10] Id.

[11] Id.

In the legislative history to the 1974 Act, the Senate Finance Committee stated:

> This Act is not a 'protectionist' statute designed to bar or restrict U.S. imports; rather, it is a statute designed to free U.S. imports from unfair price discrimination practices. * * * The Antidumping Act is designed to discourage and prevent foreign suppliers from using unfair price discrimination practices to the detriment of a United States industry.[12]

Thus, the focus of the analysis must be on what constitutes unfair price discrimination and what harm results therefrom:

> [T]he Antidumping Act does not proscribe transactions which involve selling an imported product at a price which is not lower than that needed to make the product competitive in the U.S. market, even though the price of the imported product is lower than its home market price.[13]

This "difficult and complex" judgment by the Commission is aided greatly by the use of economic and financial analysis. One of the most important assumptions

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[12] Trade Reform Act of 1974, S. Rep. 1298, 93rd Cong. 2d Sess. 179.

[13] Id.

of traditional microeconomic theory is that firms attempt to maximize profits.[14] Congress was obviously familiar with the economist's tools: "[I]mporters as prudent businessmen dealing fairly would be interested in maximizing profits by selling at prices as high as the U.S. market would bear."[15]

An assertion of unfair price discrimination should be accompanied by a factual record that can support such a conclusion. In accord with economic theory and the legislative history, foreign firms should be presumed to behave rationally. Therefore, if the factual setting in which the unfair imports occur does not support any gain to be had by unfair price discrimination, it is reasonable to conclude that any injury or threat of injury to the domestic industry is not "by reason of" such imports.

In many cases unfair price discrimination by a competitor would be irrational. In general, it is not

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14 See, e.g., P. Samuelson & W. Nordhaus, Economics 42-45 (12th ed. 1985); W. Nicholson, Intermediate Microeconomics and Its Application 7 (3d ed. 1983).

15 Trade Reform Act of 1974, S. Rep. 1298, 93rd Cong. 2d Sess. 179.

rational to charge a price below that necessary to sell one's product. In certain circumstances, a firm may try to capture a sufficient market share to be able to raise its price in the future. To move from a position where the firm has no market power to a position where the firm has such power, the firm may lower its price below that which is necessary to meet competition. It is this condition which Congress must have meant when it charged us "to discourage and prevent foreign suppliers from using unfair price discrimination practices to the detriment of a United States industry."[16]

In Certain Red Raspberries from Canada, I set forth a framework for examining what factual setting would merit an affirmative finding under the law interpreted in light of the cited legislative history.[17]

> The stronger the evidence of the following . . . the more likely that an affirmative determination will be made: (1) large and increasing market share, (2) high dumping margins, (3) homogeneous

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16 Trade Reform Act of 1974, S. Rep. 1298, 93rd Cong. 2d Sess. 179.

17 Inv. No. 731-TA-196 (Final), USITC Pub. 1680, at 11-19 (1985) (Additional Views of Vice Chairman Liebeler).

products, (4) declining prices and (5) barriers to entry to other foreign producers (low elasticity of supply of other imports).[18]

The statute requires the Commission to examine the volume of imports, the effect of imports on prices, and the general impact of imports on domestic producers.[19] The legislative history provides some guidance for applying these criteria. The factors incorporate both the statutory criteria and the guidance provided by the legislative history. Each of these factors is evaluated in turn. But first I will discuss the condition of the domestic industry.

Condition of the Industry[20]

Given my findings on like product and domestic industry, it is necessary to examine the condition of the industry in terms of the performance of the domestic producers of unencapsulated and encapsulated DRAM's of all densities. There are still at least two ways the market could be defined. First,

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18 Id. at 16.

19 19 U.S.C. 1677(7)(B)-(C) (1980 & cum. supp. 1985).

20 I concur with Commissioner Brunsdale's discussion of the semiconductor product cycle. See Views of Commissioner Brunsdale which follow.

chips could be counted on a unit basis (hereinafter "unit method") so that a 64K DRAM is equivalent to a 256K DRAM. Alternatively, the DRAM's could be measured in terms of memory capacity, with one 256K DRAM equal to four 64K DRAM's (hereinafter "K equivalent method"). I find that the key factor shared by all DRAM's is their memory function and the larger density DRAM's substitute closely, but not perfectly, for lower density DRAM's. The K equivalent method is therefore the most appropriate method to analyze the industry.

The DRAM industry in the United States presents a mixed picture with respect to its performance in the recent past. The production of uncased DRAM's in terms of K equivalents has decreased.[21] Under the K equivalent method, there was a large increase in production of cased DRAM's over the entire period.[22]

The income-and-loss data with respect to domestic DRAM's production indicates that the DRAM's industry has

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21 Report at Table 4.

22 Report at Table 5. Very little of this involves double counting because uncased DRAM's made in the U.S. are generally sent abroad for encapsulation and most domestic encapsulation relates to imports.

been very unsuccessful over the past 3 years.[23] The gross profit margin and operating income as a percentage of net sales both dropped significantly between 1984 and 1985. These figures are misleading because they include costs which, from an economic standpoint, are more properly allocable over the entire product cycle[24] and over additional products.[25] Employment was down between 1984 and 1985, but average hourly compensation was up considerably.[26] In a new advancing industry, it is especially necessary to look at the trend in research and development expenditures and capital expenditures.[27]

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23 Report at Table 16. This table includes financial data for production occurring outside of the United States, but represents the best information available.

24 See Pre-hearing Brief of Oki, supra note 5, at 2-3. For a more detailed analysis, see Views of Commissioner Brunsdale which follow (discussion of allocating costs in dynamic industry).

25 Petitioners have referred to DRAM's as a technology-driver, meaning that the knowledge gained in DRAM production spills over to other circuit production. See, e.g., Pre-hearing brief of Texas Instruments, at 34-37 (Apr. 26, 1986).

26 Report at Table 14. This is consistent with the causation discussion below. An industry that is making technological advances requires less total labor, but the workers must be more highly skilled.

27 See Certain Amplifier Assemblies and Parts Thereof

(Footnote continued on next page)

Figures for both of these categories are up. Despite these reservations, the best information available on the financial performance of the domestic industry indicates that it is experiencing difficulty.

Causation analysis

Examining import penetration data is relevant because unfair price discrimination has as its goal, and cannot take place in the absence of, market power. In terms of K-equivalents, import penetration has decreased from 29.3 percent in 1983, to 23.6 percent in 1984, and then to 13.5 percent in 1985.[28] These numbers indicate imports of 64K DRAM's have played an increasingly smaller role in the recent past, especially in 1985, the so-called "bust" year for the DRAM's industry. Decreasing imports of 64K DRAM's and the 1985 performance of the 64K segment of the domestic DRAM's industry are explained by the evolution of

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from Japan, Inv. No. 731-TA-48 (final), USITC Pub. 1266 (1982); Cellular Mobile Telephones and Subassemblies Thereof from Japan, Inv. No. 731-TA-207 (final), USITC Pub. 1786 (1985)(Views of Vice Chairman Liebeler).

[28] Report at A-43. Since the price ratio of 256K to 64K DRAM's is approximately 5:1, it may be more appropriate to normalize according to this ratio. Such a calculation would accelerate the downward trend.

higher density chips. Thus, imports of 64K DRAM's do not represent a large and growing market share and the first indicator is not at all suggestive of unfair price discrimination conditions.

The second factor is a high margin of dumping or subsidy. The higher the margin, ceteris paribus, the more likely it is that the product is being sold below the competitive price[29] and the more likely it is that the domestic producers will be adversely affected. In this case, the weighted-average dumping margin was 20.75 percent. The dumping margins do not weigh against a finding of unfair price discrimination.

The third factor is the homogeneity of the products. The more homogeneous the products, the greater will be the effect of any allegedly unfair practice on domestic producers. In general, domestically produced and foreign DRAM's are physically almost identical, although there have been some assertions concerning quality differences.

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[29] See text accompanying note 13, supra.

As to the fourth factor, prices were down significantly for all density DRAM's over the period of investigation.[30] This result is not surprising, however. This industry is both highly competitive and characterized by rapid technological advance. There was extensive testimony indicating that the learning curve phenomenon was clearly at work in this industry. Under such conditions, declining prices are expected.[31] Much of the demand for 64K DRAM's was replaced by higher density DRAM's as they evolved. Demand for DRAM's in general decreased as a result of the large decrease in demand for computer products.[32] These factors combined to produce heavy downward pressure on DRAM prices in general, and 64K DRAM prices in particular. Thus, unlike the normal case of a "stable" industry, such as steel, no strong conclusions can be drawn from the declining prices in this case.[33]

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30 Staff Report at A-43-72; Supplemental Posthearing Brief of Motorola, Inc. Responding to Statement of Dr. Kenneth Elzinga, at 1 (May 12, 1986).

31 Testimony of Dr. Kenneth Elzinga on behalf of Respondents, submitted at Hearing (Apr. 30, 1986). See also Views of Commissioner Brunsdale (Appendix), which follow.

32 Report at A-43-44. Micron was the first to anticipate the price decrease required to maintain production of DRAM's, its technology driver. Id.

33 See Cellular Mobile Telephones and Subassemblies Thereof from Japan, Inv. No. 731-TA-207 (Final), USITC Pub. 1786 (1985) (Views of Vice Chairman Liebeler)(discussion of technologically advanced industries); Views of Commissioner Brunsdale which follow.

The fifth factor is barriers to entry (foreign supply elasticity). If there are barriers to entry (or low foreign elasticity of supply) it is more likely that a producer can gain market power. A large percentage of cased DRAM's consist of U.S. produced uncased DRAM's assembled overseas. These imports are not subject to investigation. Neither are imports of cased DRAM's fabricated in Japan and assembled outside of Japan.[34] Thus, there appear to be many countries capable of assembling DRAM's. As for fabrication, currently Japan is the major foreign producer of unencapsulated DRAM's. Other countries appear ready to jump in but it could take time for them to qualify themselves to do business with the major original equipment manufacturers.[35] The evidence with respect to fabrication is somewhat conducive to price discrimination behavior. However, it appears that since the final duty will apply to encapsulated DRAM's, there are many countries which will be able to substitute for Japan.

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[34] Report at Table 28.

[35] Korea has apparently started exporting DRAM's to the United States. Pre-hearing brief of Oki, supra note 5, at 57.

These factors must be balanced in each case to reach a sound determination. As noted earlier, however, market share plays a key role in determining whether unfair price discrimination could be occurring. In this case, the market penetration figures indicate that what we are observing is not related to unfair price discrimination. The goal of unfair price discrimination is to take away market share. However, because of the rapid technological development in the DRAM industry, domestic and foreign firms are abandoning rather than seeking to capture the 64K segment of the DRAM industry. The market share figures bear this out. Both Japanese and domestic market share have declined for 64K DRAM's as a percentage of all DRAM's. In a traditional industry, the downward trend in prices might indicate that the domestic producers were holding onto market share by matching price cuts in the hope of surviving a price war. In this industry, however, the downward trend in prices is to be expected. Moreover, as time passes, 64K DRAM's will become increasingly obsolete for many uses. At some point prices may stabilize, but they may be even lower than they are now.[36] Finally, the evidence with respect to foreign

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[36] Recent data indicates that this price stabilization may occurring now.

supply elasticity is not particularly helpful in this case. Fabrication facilities may not be readily available, but assembly facilities do exist in countries other than Japan and indeed represent a large proportion of imports of encapsulated DRAM's. Thus, the factors when viewed together are inconsistent with a finding of unfair price discrimination.

Conclusion

Therefore, I conclude that an industry in the United States is not materially injured or threatened with material injury by reason of dumped imports of 64K DRAM's from Japan.

VIEWS OF COMMISSIONER BRUNSDALE

Based on the record in this investigation, I determine that no domestic industry in the United States is materially injured, or threatened with material injury, by reason of less-than-fair-value (dumped) imports of 64K dynamic random access memory components ("64K DRAMs") from Japan that have been the subject of an affirmative antidumping determination by the Department of Commerce. Material retardation of the establishment of an industry in the United States is not an issue in this case and will not be discussed.

In order for a domestic industry to prevail in a final investigation, the Commission must determine that the dumped imports cause or threaten to cause material injury to the domestic industry producing the like product. First, the Commission must determine whether the domestic industry producing the like product is injured or is threatened with material injury. Second, the Commission must determine whether any injury or threat thereof is by reason of the dumped imports. Only if the Commission answers both questions in the affirmative will it make an affirmative determination.

Like Product and the Domestic Industry

I determine that the like product in this case is all assembled DRAMs. I further determine that the domestic industry encompasses all producers that are involved in making assembled DRAMs. That is, the domestic industry includes the firms that make assembled DRAMs from fabricated wafers as well as the firms that are engaged in wafer fabrication (i.e., that produce unassembled DRAMs). While my determinations on these issues differ from those of my esteemed colleagues in the majority, I agree with the position of Commissioner Rohr.[1]

Condition of the Industry and Material Injury

Properly assessing the condition of the industry and possible material injury presents extraordinary analytical and conceptual challenges in this case. Unlike most industries investigated by the Commission, the industry producing DRAMs is characterized by rapid innovation, condensed product cycles, and dramatically declining production costs over the cycle. It is thus logical that the evidence before the Commission in this case be viewed from a

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[1] See his notes 15 and 21 in Views of Chairwoman Paula Stern, Commissioner Alfred E. Eckes, Commissioner Seeley G. Lodwick, and Commissioner David B. Rohr. I also concur with the majority's position on the issue of related parties.

perspective appropriate to the particular nature of the product and domestic industry, and different from that used in more conventional cases.

As discussed in the appendix below, semiconductor industry product cycles have five distinct stages, although the duration and magnitude of each stage appear to vary from product to product. The like product in the current case is comprised of several items at differing stages of their product lifes. Since each stage has clear implications for anticipated profit and price trends, we must take the progress of each item through its cycle into account in assessing the condition of the industry.

Financial Indicators. Current production of the like product consists primarily of three distinct items: 16K DRAMs, 64K DRAMs and 256K DRAMs. A few 1K DRAMs and 4K DRAMs are also produced, largely for specialized uses.[2] The smallest unit, 1K DRAM, was first introduced in 1970, while 4K and 16K DRAMs followed several years later. The 64K DRAM, by contrast, was not introduced until 1980 and

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[2] Report of The Commission [hereinafter Report] at A-3-A-7.

the 256K DRAM until 1982.[3] The introduction dates are important for generally identifying the period over which the product cycle has occurred in each case.

Domestic firms reported major financial losses on DRAM operations in 1985,[4] and those in favor of the petition claim that these losses indicate that the domestic industry is materially injured. This contention would indeed seem valid on its face if the petitioners represented a traditional manufacturing industry not characterized by evident product cycles. The existence of product cycles, however, sharply alters how the financial data should be regarded. The petitioners identify the midpoint of the 64K DRAM product cycle as approximately 1984 or 1985; but they also state that by early 1985 the product was already "mature".[5] Further, they acknowledge that 64K DRAM production through 1985 and even today has substantial positive spillover effects for other, future products in the product line.[6] In the context of the general product cycle outlined in the appendix, this suggests that as of

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3 Id. at A-3.

4 Id. at A-31, table 16.

5 Testimony of Tom Johnson, counsel for Motorola, Transcript (tr.) at 73-4.

6 Testimony of Larry Grant, V.P. and General Counsel, Micron, tr. at 140-41.

early 1985 the 64K DRAM entered the fourth stage, during which product-line learning effects again lead to depressed accounting profits not properly indicative of the product's overall performance. The 256K DRAM was clearly in an early phase, however, and the 16K DRAM, for which financial data are also available to the Commission, was apparently in the final stage of serving specialized demand.

Thus, financial data for each of the three years covered in the investigation contain revenues and costs associated with three generations of DRAMs, each at a different stage of its product life. There are two distinct, though not mutually exclusive, approaches the Commission might take to resolve the analytical puzzles this situation entails.

First, we might ask what accounting performance would be considered "normal" or "adequate" for each of the three DRAM products at its respective stage of life. Then, the sum of "adequate" annual product profits for the three would be compared with overall reported industry profits to determine whether the industry were materially injured. In fact, the petitioners have recommended a method resembling this approach.[7] The general approach presents particular difficulties in judging what "normal"

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[7] For instance, see "Post Hearing Brief of Petitioner Micron Technology, Inc.," at 6.

or "anticipated" profits would have been for each item in any given year (particularly during 1985 when the dumping is alleged to have occurred)[8] since there is considerable variation among the durations and amplitudes of individual product cycles, all of them consistent with the general pattern described in the appendix. The most that might be said is that sizable losses for 256K DRAM production in the first year of mass sales in 1985, and modest profits for 16K DRAMs during the final stage are hardly surprising, given what we know about the product cycle. The substantial apparent losses reported for 256K DRAMs that year are typical of the first and second stages of a product cycle and do not alone constitute evidence of material injury.

The second of the two approaches is to view product performance over the full cycle--or, perhaps, based on "best available information", over as much of the cycle as possible. Persuasive arguments in favor of this approach were submitted by respondents.[9] The approach is especially appealing for evaluating the contribution of 64K DRAMs to industry performance because, by all accounts, the three years of the Commission investigation,

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[8] Petition at 12ff.

[9] "Pre-hearing Brief on Behalf of OKI Electric Industry Company, Ltd., Hitachi, Ltd., Mitsubishi Electric Corporation, Toshiba Corporation, NEC Corporation, and Fujitsu Ltd.," at 36.

1983-85, cover the most important years of the product cycle.[10] Firms that make a commitment to a product in effect make a package deal to endure every stage of that product's life. Since a cycle involves inevitable ups and downs, much like a roller coaster ride, it would be incorrect to say the industry was injured by a decline that was part of the package. Whether the package turns out to be a good deal or not requires consideration of the ups and the downs.

In the case of 64K DRAMs, respondents alleged that, "compared to past generations of DRAMs (i.e., the 1K, 4K and 16K), the 64K device was, over its full life cycle, a stellar performer" (emphasis added).[11] While little specific evidence of this was adduced, respondents did claim that Micron's 64K DRAM was an exceptionally profitable product through 1984.[12] Micron, in turn, argued that this conclusion was reached without incorporating data from most of 1985, the year in which the company and the industry were injured. Other responses to the respondent's proposed methodology, by firms in support of the petition, concentrated on reasons why the Commission ought not, as a matter of law, past practice, or

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10 For example, see Id.

11 Id. at 38.

12 Id. at 41.

reasonable application in this case, rely on such an approach.[13] Micron's concern that 1985 data be properly reflected is well taken. For the 64K DRAM segment of the industry as a whole, financial data for the 1983-85 period show a gross profit of about $165 million and a gross profit margin of about 17.9 percent.[14] It is thus difficult to conclude that the financial history of 64K DRAM production supports a finding of material injury.

Price Trends. Data before the Commission on price trends of the like product are incomplete, limited to only 64K DRAMs and to the period from September 1984 to April 1986.[15] Nonetheless, petitioners repeatedly asserted that the decline in prices during 1985 was "unprecedented".[16] This is clearly untrue. For instance, the available data show that in 1985 the average 64K DRAM price to final

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13 Tr. at 77.

14 Report at A-33-A-35. Profits are aggregated without discounting. Any positive rate of discount would increase the present value of gross profits over the three years.

15 Report at A-43-A-75 and at appendices C, D, and E.

16 For instance, see tr. at 73-4.

OEMs fell to between 41 and 45 percent of its average 1984 price.[17] This drop is almost the same as the drop that occurred in another semiconductor product cycle twenty years earlier: In 1966 the average price of digital monolithic and hybrid integrated circuits was only 42 percent of its 1965 price.[18] Several other roughly comparable examples exist.[19]

The sharp decline in prices of DRAMs during 1985 coincided with the entry of that product into the fourth stage of the product cycle. In 1985, substitutes for 64K DRAMs, in the form of 256K DRAMs, began to become generally available at increasingly competitive prices per unit of memory.[20] This led to a reduction in demand at the OEM level that was exacerbated by unforeseen declines in demand at the retail level for final computer products incorporating the DRAMs.[21] For instance, between the last three quarters of 1985 and the comparable 1984 period, the quantity of

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17 Report at c-2-c-3, tables C-1 and C-2.

18 Douglas W. Webbink, The Semiconductor Industry: A Survey of Structure, Conduct, and Performance, Staff Report to the FTC, January 1977 at 75, table IV-2.

19 See for instance Id. and Report on the U.S. Semiconductor Industry, U.S. Dept. of Commerce, September 1979 at 47, table 3.6.

20 Report at A-11, table 1.

21 Testimony of Dr. Kenneth G. Elzinga on Behalf of Respondents (posthearing submission) at 2-3.

personal computers purchased fell 21 percent.[22] Given the general decline in computer prices over this period, it may be inferred that demand declined by at least 21 percent. Whether this decline in demand is attributed to consumer satiation or to a deferral of purchases in anticipation of technical improvements and lower prices is immaterial to the question of material injury treated here. The 1985 decline in prices is partly accounted for by the product cycle, and to that extent is not indicative of injury. However, the rest of the price decline resulted from errors regarding final consumer demand for downstream products. This second effect is indicative of injury.

Capacity Utilization. Capacity utilization in DRAM operations decreased slightly in 1984[23] and very sharply in 1985.[24] The sharp 1985 decline was largely attributable to the unforseen drop in demand for computers (in which DRAMs are a component) and is

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22 Id.

23 Report at A-16, table 3. Capacity utilization of 7 firms with U.S. assembly operations, however, rose from about 85 percent in 1983 to about 95 percent the following year.

24 Id.

reflected in declining DRAM production.[25] In addition, producers increased their capacity on all DRAM operations in 1984 and (to a somewhat lesser degree) in 1985.[26] This also resulted in part from planning for a level of demand that did not in fact materialize.

Two other factors must be taken into account in understanding the sharp decline in capacity utilization in 1985. First, the composition of domestic production shifted significantly in favor of 256K DRAMs and away from 64K DRAMs that year.[27] This made it possible to produce more bits of memory per unit of capacity.

Second, Motorola stated that some capacity, "while technically capable of producing 64K DRAMs, was in fact used to make other MOS products".[28] Motorola also said: "Even if domestic producers technically had sufficient capacity to supply the entire U.S. market, they would have been able to do so only by reducing their sales of other, more profitable, products (such as micro-processors) and by reducing their production for foreign

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25 Id.

26 Id.

27 Id. at A-18, tables 4 and 5.

28 "Supplemental Posthearing Brief of Motorola, Inc. Responding to Statement of Dr. Kenneth Elzinga," May 12, 1986 at 2.

markets...."[29] Hence, there is doubt that "unutilized capacity" in this industry is idle, since it may in fact be employed in attractive alternative uses.

I find that the decline in capacity utilization in 1985 is consistent with the injury suffered by the industry due to the unanticipated decline in demand for the final product.

Material Injury. On the basis of the foregoing facts and analysis, it is clearly difficult to determine whether the industry is materially injured. The data, while indicative of some injury, effectively conceal its true magnitude. However, assuming material injury, I proceed to consider the issue of causation.

Causation

In determining whether there is material injury to the domestic industry "by reason of" the imports subject to the investigation, the Commission must consider, among other factors, the volume of imports, the effect of the subsidized or dumped imports on prices for the like product in the United States, and the impact of such

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[29] Id.

imports on the relevant domestic industry.[30] My decision that the subject imports were not a cause of material injury rests mainly on the finding that import penetration declined significantly over the period of investigation, 1983-85. Moreover, while the the condition of the industry appears to have deteriorated this is explained by normal cyclical (product cycle) factors in the semiconductor industry, exacerbated by the world-wide decline in demand for DRAMs that occurred at the same time that industry capacity was expanding.

The import penetration of 64K DRAMs from Japan declined substantially in the period, falling from 29.3 percent in 1983 to 23.6 percent in 1984 and 13.5 percent in 1985.[31] These figures are based on bits of memory and not numbers of units of DRAMs. Since the like product is all DRAMs, total U.S. consumption should be stated in terms of all types of DRAMs; and since the essential feature of each type of DRAM is its memory capacity, it is more appropriate to aggregate based on number of bits of memory than on number of units.

A small import penetration has an insignificant effect on the

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30 19 U.S.C. sec. 1677(7)(C) (1982).

31 Staff Report at A-43.

32 These ratios overstate the effect of the dumped imports since

(Footnote continued on next page)

condition of an industry with the characteristics of this one. Generally speaking, a small penetration ratio for an imported product means that the imports will have little effect on the price of the domestic product. A small ratio cannot have a disproportionately large effect on price unless two conditions are present -- that is, unless both the domestic demand for the product and the domestic supply of the product are highly insensitive to price changes.[33] In this case, both elasticities are expected to be moderately high. Demand elasticity for 64K DRAMs is high because the product has other close substitutes, particularly the new generation 256K DRAMs. Supply elasticity of 64K DRAMs is high

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(Footnote continued from previous page)
only about half of all 64K DRAM imports from Japan were found by the Department of Commerce to be dumped. The record indicates that the quantity of dumped imports for the four major Japanese suppliers of assembled 64K DRAMs was generally less than one-half of all of their shipments to the U.S. The percentages were as follows: Hitachi -- 43.71 percent, Mitsubishi -- 43.93 percent, NEC -- 47.61 percent, and Oki -- 57.14 percent.

33 The sensitivity of demand or of supply to price is measured by the concept of elasticity. For example, elasticity of demand measures the responsiveness of quantity demanded to price changes. It is expressed as the percentage change in quantity demanded divided by the percentage change in price. Inelastic demand means that the quantity demanded changes by a smaller percentage than does price. The elasticity of supply measures the responsiveness of supply to price changes in the same manner. P. Samuelson and W. Nordhaus, Economics at 380-84 (12th ed., 1985).

because firms have excess capacity[34] and are also able to switch their capacity from other semiconductor products to 64K DRAMs.[35]

As noted above, there was a sharp and unexpected world-wide downturn in the demand for all semiconductor products in 1985 following an overwhelming growth in 1984.[36] This fact alone would explain the sharp decline in prices of DRAMs in 1985. But there was also an expansion in domestic capacity in 1985 that further aggravated downward pressures on prices.[37] These developments go far toward explaining the adverse conditions that beset domestic producers in 1985.

Furthermore, in this industry there is a recurring pattern of cyclical ups and downs. In particular, the experience of 1985 bears a remarkable resemblance to events of a decade before. According to the research firm Integrated Circuit Engineering Corp. (ICE):

> The root of the 1975 plunge can be traced back to the 1972-1974 integrated circuit boom. At that time, the dramatic growth of the calculator, automotive, and

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34 Report at A-16.

35 Supplemental Posthearing Brief of Motorola, Inc. at 2.

36 Supplemental Posthearing Brief of Motorola at 1, Testimony of Dr. Kenneth G. Elzinga on behalf of Hitachi, et. al. at 2 (subsequently referenced as Elzinga Testimony), and STATUS 1986, A Report on the Integrated Circuit Industry (Integrated Circuit Engineering Corp.) at 1 (subsequently referenced as STATUS 1986).

37 Report at A-16.

> memory markets, to name a few, and the increased penetration of integrated circuits in the international markets resulted in a tremendous surge in their demand. This demand reversed the nature of the semiconductor components market, perhaps for the first time in its history. The traditional buyer's market changed into a seller's market. Most manufacturers frantically tried to cope with the problem of undercapacity, and plans for expansion were feverishly implemented. Nevertheless, delivery times increased beyond any rational limit. As a consequent overreaction, buyers throughout the electronic end-use market doubled or tripled an order, and/or gave the same order to multiple sources. As a result, the book-to-bill ratio was fictitiously inflated, in many cased doubled. This circumstance was not clearly detected by most suppliers. In addition, the inaccurate predictions of a short-lived, mild recession in 1975 added to the misleading economic indicators. This kept most integrated circuit companies unaware of the drama that was to come, until almost the fourth quarter of 1974.
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> During the fourth quarter of 1974, cancellations began to snowball and overcorrections took place. There were massive layoffs, drastic cuts in labor force, and in production schedules as well. On the other hand, there was a rapid growth of inventories and price cutting, especially in CMOS, microprocessors and memories. This chaos lingered throughout 1975.

ICE concludes: "Just add ten years to all the dates listed above and you can see that the industry has been down this path before."[38]

I therefore find that, given this history, the domestic industry's experience in 1985 was not unusual or abnormal and that

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38 STATUS 1986 at 13 and 14.

whatever effect dumped imports of 64K DRAMs may have had, it was insignificant.

Finally, there is minimal reason for concern about threat of material injury in this case. Given the declining share of dumped 64K DRAM imports from Japan and the facts that this product is entering the final stage of its product cycle and is being superceded by new generation DRAMS, I find no support for the argument that imports constitute a threat of material injury.

Appendix

This appendix describes the product cycle features involved in the DRAM industry. I find it useful to analyze this industry's performance by considering the following five stages of a typical semiconductor product cycle.

1. The Initial and Second Stages.

The initial stage is characterized by heavy research and development costs, high prices, and often accounting losses. The second stage features the so-called proprietary (firm-specific), product-specific "learning curve" effect, whereby each firm's average production costs decline as production experience accumulates.[39] During this stage, firms have an incentive to

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[39] The learning curve refers to the relationship between unit cost and cumulated output. For recently introduced products argument underlying the learning curve posits that there is an inverse relationship between unit cost and cumulated output. For a discussion of the learning curve see M. Spence, "The Learning Curve and Competition," Bell Journal of Economics, Vol. 12, No. 1 (Spring 1981), at 49-70.

seemingly "overproduce", that is, produce at a level where currently reported marginal cost (i.e., the accounting cost of the incremental unit) actually exceeds the current price, thus depressing accounting profits. The reason for this is that some current profits are willingly foregone as an investment in more efficient, and thus more profitable, future production.

2. The Third Stage.

The payoff for this investment is reasonably anticipated to occur rapidly because the ability to preserve proprietary technological advantages over time is quite limited. Thus, with a lag, the firm's accumulated production experience becomes the industry's experience, and all producers benefit from it jointly and simultaneously. When this inevitable technological sharing occurs, the incentive to "overproduce" becomes much attenuated for the same reason that public goods tend to be "underconsumed". Thus, in the third stage, individual firms collect their returns on earlier learning curve investments, and further such investments are discouraged by either the decreasing marginal benefit of additional production experience or by a declining ability to privately appropriate further technological progress. In this phase, accounting profits overstate real economic performance since some of the previously foregone profits are now properly allocable as costs.

3. The Fourth Stage.

In the fourth stage (which might overlap with the third stage), the heyday of the cycle is past, and firms retain some production because of so-called scope economies which might take the form of a product-line learning curve.[40] During this stage, further cumulation of production experience has spillover effects that promote development of the next generation product or even a variety of more advanced but somewhat dissimilar semiconductor products. The fourth stage might once again be dominated by "overproduction" leading to reported accounting losses, compensated in later years by increased production efficiency in other products.

4. The Final Stage.

Finally, the fifth stage consists of residual, long-term production for specialized uses and replacement demand. By this final stage, the product has been replaced by more advanced

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40 Scope economies refer to multiple-product firms where, in addition to traditional scale economies for an individual product, there is also the possibility of cost savings resulting from the simultaneous production of several different products in a single enterprise. The argument is there may exist economies that result from the scope of the firm's operations. See, for example, W. Baumol, J. Panzar, and R. Willig, Contestable Markets and The Theory of Industry Structure, at 71.

generations for many purposes. Reported profitability generally resumes during this stage as continued production ceases to generate beneficial spillover effects.

In sum, I find that the analysis of product cycles in an industry such as DRAMs incorporates two different concepts. That is, product cycles should be defined in terms of both progress in technical aspects of production and intertemporal demand shifts influenced by the eventual availability of close substitutes in the form of later product generations.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

Following a preliminary determination by the U.S. Department of Commerce that imports of 64K dynamic random access memory components (64K DRAM's) 1/ from Japan are being, or are likely to be, sold in the United States at less than fair value (LTFV), the U.S. International Trade Commission, effective December 11, 1985, instituted investigation No. 731-TA-270 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. § 1673d(b)) to determine whether an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise. Notice of the institution of the Commission's final investigation, and of the public hearing 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, and by publishing the notice in the Federal Register on January 30, 1986 (51 F.R. 3860). 2/ The hearing was held in Washington, DC, on April 30, 1986.

Commerce's LTFV determination, which was scheduled to be made on February 17, 1986, was extended until April 23, 1986. The applicable statute directs that the Commission make its final injury determination within 45 days after the final determination by Commerce, or in this case, by June 6, 1986.

Background

On June 24, 1985, an antidumping petition was filed with the U.S. International Trade Commission and the U.S. Department of Commerce by Micron Technology, Inc., Boise, ID, on behalf of merchant manufacturers of 64K DRAM's. The petition alleged that an industry in the United States was materially injured or was threatened with material injury by reason of imports from Japan of 64K DRAM's of the N-channel metal oxide semiconductor type, which were alleged to be sold in the United States at LTFV. In response to that petition, the Commission instituted investigation No. 731-TA-270 (Preliminary) under section 733 of the Tariff Act of 1930 (19 U.S.C. § 1673b(a)) and, on August 8, 1985, unanimously determined that there was a reasonable indication of material injury, or threat thereof, by reason of the allegedly LTFV imports. 3/

1/ DRAM's, including those having a memory capacity of 64K of the N-channel metal oxide semiconductor type, are provided for in item 687.74 of the Tariff Schedules of the United States.

2/ Copies of the cited Federal Register notices and the list of witnesses appearing at the hearing are presented in app. A.

3/ Vice Chairman Liebeler determined that there was a reasonable indication that an industry in the United States was threatened with material injury by reason of the subject imports. Commissioners Eckes and Lodwick determined that there was a reasonable indication that an industry in the United States was materially injured by reason of the subject imports.

Previous and Related Commission Investigations

On March 14, 1986, following a preliminary determination by Commerce that imports from Japan of DRAM's having a memory capacity of 256 kilobits (256K) and above of both the N-channel and complementary metal oxide semiconductor type, whether in the form of processed wafers, unmounted die, mounted die, or assembled devices, are being, or are likely to be, sold in the United States at LTFV, the Commission instituted investigation No. 731-TA-300 (Final) to determine whether an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports of such merchandise. According to Commerce's preliminary determination, the weighted-average margin during the period of investigation, January 1, 1985, through June 30, 1985, ranged from 19.80 percent to 108.72 percent. The overall weighted-average margin was 39.68 percent. The Commission is scheduled to make its final injury determination within 45 days after Commerce's final determination, which was extended from May 27, 1986, to August 1, 1986, or by September 15, 1986.

On March 10, 1986, the Commission instituted investigation No. 337-TA-242 to determine whether there is a violation of subsection (a) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337a) in the importation into the United States of certain DRAM's, components thereof, and products containing the same, or in their sale, by reason of alleged direct, contributory, and induced infringement of certain claims of 10 U.S. patents, the effect or tendency of which is to destroy or substantially injure an industry that is efficiently and economically operated in the United States. The complaint, which was filed on behalf of Texas Instruments Inc., Dallas, TX, named as respondents both Japanese and Korean manufacturers and Japanese, Korean, and U.S. importers of DRAM's.

In addition to the investigations concerning DRAM's, on March 17, 1986, the Commission instituted final antidumping investigation No. 731-TA-288 on imports from Japan of a related semiconductor product, erasable programmable read only memories (EPROM's). On March 17, 1986, Commerce published in the Federal Register its preliminary determination that imports of EPROM's from Japan, are being, or are likely to be, sold in the United States at LTFV. According to Commerce's determination, the weighted-average margins during the period of investigation, April 1, 1985, through September 30, 1985, ranged from 21.7 percent to 188.0 percent. Commerce's final LTFV determination, which was scheduled to be made on May 27, 1986, was extended until July 30, 1986. The Commission is scheduled to make its final injury determination within 45 days after Commerce's final determination, or by September 15, 1986.

The Commission also conducted investigations in 1978-79 and in 1984-85, as discussed below, which included DRAM's among the subject products.

On December 7, 1978, pursuant to a request by the Subcommittee on International Trade of the Senate Committee on Finance and the Subcommittee on International Finance of the Senate Committee on Banking, Housing, and Urban Affairs, the Commission instituted investigation No. 332-102 under section 332 of the Tariff Act of 1930 to examine the competitive factors influencing world

trade in integrated circuits. A report on this investigation was transmitted to the Senate Committees on October 31, 1979. The Commission released a public report on the investigation on November 16, 1979. 1/ The report focused on factors affecting the international competitive position of U.S. producers of integrated circuits and presented production and trade data on integrated circuits for 1974-78. The study identified the principal economic factors that affect the growth of the U.S. industry, analyzed the influence of governments on the industry, and compared the U.S. industry with the industry in Japan during 1974-78.

On October 19, 1984, at the direction of the President, the U.S. Trade Representative (USTR) requested that the Commission prepare advice concerning the probable economic effects of providing duty-free treatment for U.S. imports of certain high-technology products (including DRAM's). On October 26, 1984, in response to the request from the USTR, the Commission instituted investigation No. 332-199; subsequently, upon enactment of the Trade and Tariff Act of 1984, which authorized the President to enter into trade agreements on such articles, the Commission instituted investigation No. TA-131(b)-9, effective October 30, 1984. A classified report and other classified information were transmitted to the USTR on December 14, 1984. After receiving authorization from the USTR, the Commission released a public version of the report in June 1985. 2/

The Product

Description and uses

A DRAM is a monolithic integrated circuit containing memory storage cells (bits), each of which is composed of a miniature transistor and capacitor. DRAM's have been designed with increasing densities since the 1K (1,024 bits) was first introduced in 1970. Following the introduction of the 4K (4,096 bits) and the 16K DRAM (16,384 bits) during the 1970's, the 64K DRAM (65,536 bits) was offered for sale in 1980. The 256K DRAM (261,344 bits) was offered for sale in limited quantities in 1982 and a 1 megabit (1M) DRAM (1,045,376 bits), is expected to be offered beginning in 1986. Progress has also been reported on the development of a 4M device (4,181,504 bits).

1/ Competitive Factors Influencing World Trade in Integrated Circuits: Report to the Subcommittee on International Trade of the Committee on Finance and the Subcommittee on International Finance of the Committee on Banking, Housing, and Urban Affairs of the United States Senate on Investigation No. 332-102 Under Section 332 of the Tariff Act of 1930, as Amended, USITC Publication 1013, November 1979.

2/ Probable Economic Effect of Providing Duty-Free Treatment for U.S. Imports of Certain High-Technology Products: Report to the President on Investigation No. TA-131(b)-9 Under Section 131(b) of the Trade Act of 1974, USITC Publication 1705, June 1985.

Information is stored in each DRAM cell as an electrical charge (voltage) impressed on the capacitor that is connected to one of the transistor elements. Storage requires two different levels of energy—one to represent the binary digit "0" and another to represent the digit "1." The storage cells in the DRAM's are arranged in a rectangular matrix of columns and rows, which allows each cell to be accessed independently (random access). When a column or row is selected and activated, the cell transistor acts as a solid-state switch that connects the capacitor to the column or data line. The simultaneous selection of a row and column determines the specific cell address. The speed at which the cell can be addressed is called access time (expressed in nanoseconds (ns), or one-billionths of a second). DRAM's sold in the U.S. market are largely designed with an access time of either 150 ns or 200 ns.

The information stored on cell capacitors must be regenerated after each address (read sequence), since the charge is attenuated by the sharing of the cell capacitance with the capacitance of the data line. The charge is also attenuated by leakage across the cell capacitor plates. Because of the leakage, the energy on the cell capacitors is constantly sampled and maintained at a predetermined charge level by "threshold" amplifiers. A threshold amplifier is required to maintain the charge level on the cell capacitors connected to each data line. The required regeneration of the charge on cell capacitors makes the device "dynamic." Other random access memory devices called static RAM's (SRAM's) do not require the sampling and refresh charges, but SRAM's are more costly to produce because tight cell densities cannot be achieved.

DRAM's are produced in large numbers on a single silicon wafer; each of the uncased DRAM's is called a chip or a die. The process needed to produce the chips includes repeated photolithographic steps and the controlled introduction of impurity atoms (dopants) into the silicon crystal. After production and separation, the chips are wire bonded to lead frames and encapsulated (final sealed) for installation into printed circuit boards.

The production of DRAM's can be divided into four separate operations. The production of the chips on the wafer, called wafer fabrication, is one of the most difficult and costly operations. Following fabrication, each die on the wafer is electrically tested and defective dice are marked. This stage, known as wafer sorting, is generally conducted where wafer fabrication is performed. The process of wire bonding and encapsulation/final sealing (or installation into a plastic or ceramic case) is called assembly. Assembly operations have historically been more labor intensive than wafer fabrication and, for some producers, take place in developing countries. The final operations include testing and marking.

DRAM's imported into the United States from Japan are essentially interchangeable with those produced by U.S. firms. The devices are dual inline packages which are pin-to-pin compatible; pin spacings and encapsulation are standard. The largest uses for DRAM's are in computers, office machines, data processing equipment, and telecommunications equipment where digital information storage is needed.

U.S. tariff treatment

The U.S. Customs Service has determined that, for tariff purposes, the country of origin of imported DRAM's is the location of the final-sealing operations, which accomplish a substantial transformation to a new article of commerce. Chips produced in the United States and final sealed abroad do not bear the marking "Made in USA," but rather bear the marking of the country in which they were final sealed. Under customs regulations in effect in the European Community and Japan, the country of origin for devices imported therein is determined by the location of the wafer fabrication.

Imports of DRAM's are classified in TSUS item 687.74. This tariff item provides for monolithic integrated circuits, including metal oxide semiconductor (MOS) memory devices. Uncased or unassembled DRAM's are reported under statistical annotation 687.7405, along with all uncased monolithic integrated circuits. Cased or assembled DRAM's with a density of 64K are reported under statistical annotation 687.7441 (over 40,000 but not 80,000 bits); cased or assembled DRAM's with a density of 256K (over 80,000 but not over 300,000 bits) are reported under statistical annotation 687.7443; and those with a density of over 300,000 bits are reported under annotation 687.7444.

Effective March 1, 1985, the most-favored-nation, or column 1, rate of duty on imports of DRAM's and certain other semiconductors was eliminated by Presidential Proclamation No. 5305 of February 21, 1985. Prior to that date, the column 1 rate of duty applied to imports of DRAM's was 4.2 percent ad valorem. The elimination of the duty was supported by the Semiconductor Industry Association (SIA), which represents a large share of U.S. semiconductor producers. 1/ The rate of duty on imports of DRAM's and certain other semiconductors into Japan was also eliminated on March 1, 1985. The U.S. rate of duty applied to imports from certain Communist countries enumerated in TSUS general headnote 3(d) (col. 2) is 35 percent ad valorem.

Nature and Extent of LTFV Sales

On April 29, 1986, Commerce published in the Federal Register its final LTFV determination concerning 64K DRAM's from Japan (51 F.R. 15943). The overall weighted-average margin was 20.75 percent. In its investigation, which covered the period January 1, 1985, through June 30, 1985, Commerce made fair value comparisons on almost all sales of the class or kind of merchandise to the United States by respondents during the period of investigation. Commerce presented questionnaires to NEC Corp., Hitachi Ltd., Oki Electric Industry Co. Ltd., and Mitsubishi Electric Corp. In its petition, Micron alleged that sales in the home market by all the respondents were at prices below the cost of producing the merchandise. Accordingly, Commerce calculated foreign-market value based on home-market prices where there were sufficient

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1/ Micron opposed the elimination of the duty, maintaining that the tariff elimination should be deferred until foreign countries remove their trade restrictions.

home-market sales at or above the cost of production, and used constructed value as the basis for calculating foreign-market value where there were no sales of such or similar merchandise in the home market or where there were insufficient sales above the cost of production. 1/

As shown in the following tabulation, Commerce determined that the weighted-average LTFV margins ranged from 11.87 percent to 35.34 percent (in percent):

Firm	Margin
NEC Corp	22.76
Hitachi Ltd	11.87
Oki Electric Industry Co. Ltd	35.34
Mitsubishi Electric Corp	13.43
All others	20.75

In accordance with section 733(d)(2) of the Tariff Act of 1930, Commerce directed the U.S. Customs Service to continue to suspend liquidation of all entries of 64K DRAM's from Japan entered, or withdrawn from warehouse, for consumption, on or after December 11, 1985, and to collect a cash deposit or require the posting of a bond equal to the estimated weighted-average amount by which the foreign-market value of the subject merchandise exceeds the U.S. price.

The Domestic Market

Producers

Producers of uncased DRAM's perform wafer fabrication (and wafer sorting) in the United States and assembly (and final unit testing) in the United States or in foreign countries, whereas producers of cased DRAM's perform wafer fabrication (and wafer sorting) either in the United States or offshore and conduct assembly operations in the United States. The Commission sent questionnaires to 20 firms believed to produce uncased or cased DRAM's in the United States since January 1983. Of these 20 firms, * * * reported that they did not produce either uncased or cased DRAM's during the period of investigation. Of the * * * known producers of DRAM's, 2/ * * * firms perform wafer fabrication in the United States, * * * of which generally perform some assembly operations in the United States, and * * * firms perform only assembly in the United States. Each of the firms and the nature of its operations relating to the production of DRAM's are discussed below.

1/ In response to NEC Corp.'s objection to Commerce's use of constructed value, Commerce stated that "Not only did the petition allege below-cost sales in the home market and provide substantial support for this allegation, but the Department's review, based on verified submissions of the respondents, has concluded that the petition was correct in its assertions."

2/ * * *, a small producer and importer of DRAM's, was not known to be a producer when the Commission sent its questionnaires.

Advanced Micro Devices, Inc. (AMD), Sunnyvale, CA, produced uncased DRAM's with * * * in its facilities in Austin, TX, and Sunnyvale, CA, until May 1985, when production was permanently stopped. The uncased DRAM's produced in these facilities were shipped to the Philippines for assembly. AMD also announced a 256K DRAM design and developed the product through the prototype stage, but did not produce 256K (or above) DRAM's. * * *.

AT&T Technology Systems (AT&T), Berkeley Heights, NJ, is wholly owned by American Telephone and Telegraph Co. AT&T initially produced * * *. * * *.

Fujitsu Microelectronics, Inc. (FMI), Santa Clara, CA, is wholly owned by Fujitsu, Ltd. in Japan. FMI encased * * * in the United States from uncased DRAM's produced in Japan by Fujitsu, Ltd. during the period of investigation. * * *. FMI also imported from Japan * * * produced by its parent company or its affiliates. * * *. FMI does not support the imposition of antidumping duties and asserted in its questionnaire response that "* * *." * * *.

Hitachi Semiconductor (America), Inc. (HISUS), Irving, TX, a wholly owned subsidiary of Hitachi, Ltd. in Japan, performs assembly operations in the production of * * * in the United States. * * *. HISUS imports * * * from Hitachi, Ltd. * * *. HISUS opposes the imposition of antidumping duties, stating in its response to the questionnaire that "* * *." * * *.

IBM Corp. (IBM), Armonk, NY, performs * * *. * * *.

Intel Corp. (Intel), Santa Clara, CA, produced * * * at its Hillsboro, OR facility during the period under investigation. After fabrication and sorting, the uncased DRAM's were generally shipped to Intel facilities in Malaysia for assembly and final unit testing. In October 1984 Intel began to cut back on its DRAM operations, and in October 1985 Intel announced its total withdrawal from the DRAM business and the closure of its fabrication facility devoted to DRAM's. Intel supports the petition in this investigation.

Micron Technology, Inc. (Micron), Boise, ID, is the petitioner in the investigation. Micron produces 64K and 256K DRAM's in a vertically integrated facility in Boise, ID. All operations are performed at the Boise facility, including wafer fabrication, wafer sorting, assembly, and testing. Micron subcontracted part of the assembly and testing operations of 64K DRAM's to nonaffiliated assemblers in the Philippines in * * * and in the Republic of Korea during * * *. In early 1985, the company discontinued the use of these assembly subcontractors. * * *.

Mitsubishi Semiconductor America, Inc. (MSAI), Durham, NC, is a wholly owned subsidiary of Mitsubishi Electric America, Inc. (MEA). MSAI began producing * * * in the United States in * * *. * * *. MSAI opposes the imposition of antidumping duties in this investigation.

Mostek Corp. (Mostek), Carrollton, TX, a former subsidiary of United Technologies Corp., produced uncased DRAM's with densities of * * * at facilities in Carrollton, TX and Colorado Springs, CO. Assembly and testing operations were mainly performed at two Mostek facilities in Malaysia and at a

Mostek facility in the Republic of Ireland; however, Mostek also assembled a small portion of its * * * in the United States. Mostek developed and produced a 256K DRAM through the sampling stage and was reportedly entering volume production of 256K DRAM's when the firm was shut down by its parent company in October 1985 and its assets subsequently sold to Thompson (France).

Motorola, Inc. (Motorola), Schaumburg, IL, produced * * * in facilities in Austin, TX and Chandler, AZ. * * *. Motorola has withdrawn from the DRAM market, but continues to assess reentry in the future. Motorola supports the imposition of antidumping duties in this investigation.

National Semiconductor Corp. (National), Santa Clara, CA, produced * * * in a facility in West Jordan, UT during the period under investigation. These DRAM's were generally assembled by wholly owned subsidiaries of National in Thailand and Singapore. * * *. National reportedly announced the design and developed the prototype of a 256K DRAM but never entered production of the product. In April 1985, National ceased production of * * *. In its questionnaire response, the company stated that "* * *." * * *.

NEC Electronics Inc. (NEC), Mountain View, CA, is wholly owned by NEC Corp. in Japan. NEC first started assembling * * * in its Mountain View facility from uncased DRAM's produced by its parent company, and in January 1983 began producing * * * at its new facility in Roseville, CA from uncased DRAM's produced by its parent. * * *, and in 1985, started wafer fabrication of 256K DRAM's at that facility. NEC opposes the imposition of antidumping duties in this investigation, stating in its response to the Commission's questionnaire that "* * *."

Texas Instruments Inc. (TI), Dallas, TX, produces in the United States * * * which are assembled by TI's affiliate in Singapore. TI also produces * * * in its facility in Miho, Japan. * * *. TI supports the imposition of antidumping duties and stated in its questionnaire response that "* * *."

Toshiba Semiconductor (U.S.A.), Inc. (TSU), Sunnyvale, CA, owned by Toshiba Corp. in Japan, produced * * * in the United States in * * *. * * *. TSU also imports * * * produced by affiliates in Japan. * * *. TSU does not support the imposition of antidumping duties in this investigation.

* * * * * * *

U.S. importers from Japan

Information provided by the U.S. Customs Service does not separately identify importers of uncased or cased DRAM's. DRAM's are reported under TSUS statistical annotations which include other monolithic integrated circuits and MOS memory devices. The Commission sent questionnaires to 22 firms believed to import uncased or cased DRAM's from Japan. The Commission received questionnaire responses from * * * firms. 1/ Of the * * * known importers of

1/ The Commission did not receive questionnaire responses from * * *.

uncased or cased DRAM's, * * * firms imported from Japan cased 64K DRAM's. 1/ Each of the * * * firms, believed to together account for * * * percent of total imports from Japan of cased 64K DRAM's, is discussed below.

Cal-Circuit ABCO, Inc. (CALABCO), Woodland Hills, CA, imported from Japan * * * during the period of investigation. * * *.

FMI, as indicated in the producers' section of this report, imported from Japan * * * for final assembly in the United States during the period of investigation. FMI also imported from Japan * * * produced by affiliated companies. * * *.

Hitachi America, Ltd. (HAL), Tarrytown, NY, is wholly owned by Hitachi, Ltd. in Japan. HAL imported from Japan * * *. * * *.

HISUS, as indicated in the producers' section of this report, imports from Japan * * *. * * *.

Mitsubishi Electronics America, Inc. (MELA), Sunnyvale, CA, is wholly owned by MEA. MELA imports * * *.

MSAI, as indicated in the producers' section of this report, imports * * * from Japan for the assembly of cased DRAM's in the United States. * * *.

NEC imports * * * produced by its affiliates in Japan. * * *.

Nissei Sangyo America, Ltd., Rolling Meadows, IL, is a wholly owned subsidiary of Nissei Sangyo Co., Ltd., which is approximately * * * percent owned by Hitachi, Ltd. Nissei Sangyo imports * * *.

Oki Semiconductor Group of Oki America, Inc. (Oki), Sunnyvale, CA, is wholly owned by Oki Electric Co., Ltd. in Japan. Oki imports * * *.

Panasonic Industrial Co. (Panasonic), Secaucus, NJ, is a division of Matsushita Electric Corp. of America (MECA). MECA is wholly owned by Matsushita Electric Industrial Co., Ltd. (MEI) in Japan. Panasonic imports from Japan * * *.

TI imports * * *. * * *.

Toshiba America, Inc. (TAI), Tustin, CA, is a wholly owned subsidiary of Toshiba Corp. TAI imported * * * during the period of investigation. * * *.

TSU imports * * *. As indicated in the producers' section of this report, * * *.

1/ * * * reported that it was not an importer of * * *. In addition, the Commission received a questionnaire response from * * *.

* * * * * * *

Apparent U.S. consumption

Data on apparent U.S. consumption of cased DRAM's were compiled from information submitted in response to questionnaires of the U.S. International Trade Commission. The consumption data presented are composed of reported shipments of cased DRAM's, whether domestically produced or imported, in the U.S. market by each of the major known entities (producers and importers) supplying DRAM's to the market. * * * producers provided data on DRAM's produced at least in part in the United States, * * * of these firms also provided data on imports of DRAM's, while * * * firms provided additional data on imports. The consumption totals include producers' and importers' shipments of DRAM's, but exclude shipments from some small importers which were not surveyed by the Commission and exclude resales such as sales from inventory by customers and so-called "grey-market" sales. 1/

Data on consumption of uncased DRAM's are not presented because uncased DRAM's produced in the United States are generally exported to foreign affiliates or subcontractors for the assembly of cased DRAM's or are transferred to domestic affiliates for the assembly of cased DRAM's, and uncased DRAM's from Japan are generally imported for assembly in the United States.

Table 1 presents both total apparent U.S. consumption (including captive consumption) and apparent U.S. open-market (merchant market) consumption of cased DRAM's. 2/ These data are presented on the basis on K-equivalents (bits of memory) in table B-1.

As shown in table 1, total apparent U.S. consumption of all cased DRAM's increased by 28 percent from 1983 to 1984, * * *, largely because consumption of cased 64K DRAM's rose by 89 percent and consumption of cased 256K DRAM's increased dramatically, from 495,000 units in 1983 to almost 17 million units in 1984. Although total apparent U.S. consumption of all cased DRAM's fell by 14 percent from 1984 to 1985, consumption of all cased DRAM's in 1985 was almost 10 percent higher than consumption in 1983. The decline in consumption from 1984 to 1985 was largely because of the * * * and 25-percent declines in consumption of cased * * * and 64K DRAM's, respectively. Total apparent U.S. consumption of cased 256K DRAM's continued to rise from 1984 to 1985, more than quintupling, while consumption of cased 1M DRAM's was reported for the first time in 1985.

1/ Small importers not surveyed by the Commission's questionnaires include brokers who are importers of record, wholesalers, and some original-equipment manufacturers (OEM's). At least some of these importers may be active in the low-priced "grey market."

2/ Open-market consumption excludes intra- or intercompany transfers reported by firms responding to the Commission's questionnaires with the exception of those reported by * * *.

Table 1.—DRAM's, cased: Total apparent U.S. consumption and apparent U.S. open-market consumption, by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Total apparent U.S. consumption:			
Under 16K	***	***	***
16K	***	***	***
64K	177,030	334,441	249,723
256K	495	16,770	75,443
1M	0	0	***
Total	329,828	421,932	361,523
Apparent U.S. open-market consumption:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Total	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

* * * * * * *

Channels of distribution

Producers of DRAM's supply the merchant market (open market) through three channels of distribution: (1) sales to end users, i.e., OEM's and circuit board stuffers; (2) sales to distributors; and (3) spot-market sales. Sales to OEM's are made either factory direct or through a factory representative. Sales to "key accounts" generally are negotiated by high-level executives of the vendor firm. According to * * *, roughly * * * purchasers generate * * * percent of the DRAM industry's shipment volume. At least * * * of these purchasers could be termed key accounts. Key accounts include such purchasers as * * *. Sales of 64K DRAM's to end users accounted for an estimated * * * percent of total domestic shipments in 1985 and sales of DRAM's to distributors accounted for roughly * * * percent. 1/ Casual sales, i.e., spot-market sales, accounted for the balance. 2/

1/ For importers, sales of 64K DRAM's to end users accounted for an estimated * * * percent of total U.S. shipments and sales to distributors accounted for roughly * * * percent.

2/ U.S. producers and importers agree that "spot-market" sales increase as a share of total shipments in a down market.

Factory-direct sales to OEM's are long-term contract sales. Contract awards are based on bids made in response to an OEM's request for quotes (RFQ). Such contracts cover "anticipated" requirements and range in length from 3 months to 1 year and call for scheduled deliveries, usually monthly, during the contract period. 1/ Most factory-direct contract sales provide for price renegotiation on the downside of the demand cycle. 2/ Factory-direct sales to board stuffers also are based on competing bids. Board stuffers issue RFQ's more frequently than OEM's and award purchase orders to winning bidders on a project-by-project basis. Releases are made for shipment to scheduled production run rates. Prices are subject to renegotiation on a "meet competition" basis.

Sales to distributors provide broad market coverage and access to smaller accounts. Although authorized distributors have both stocking and reporting requirements, they also have price protection. The relatively short life cycle of a particular DRAM (because of the fast-paced technology) and the volatility of the market for DRAM's strongly affect price. Consequently, the industry practice is to offer price protection to authorized distributors. Such protection takes the form of meet competition allowances, or as it is also called, a "d.p.a" (distributor price authorization). This policy enables distributors to quote and sell competitively and supply from inventory purchased at higher prices.

The casual or spot market is the third channel of distribution. This market includes sales to board stuffers, brokers, small OEM's, and so-called walk-ins. These purchasers are making a one-time purchase for quick delivery. Terms are usually cash, but can be on credit. Spot-market purchasers may call directly to the factory, call a manufacturer's rep, call a distributor, or buy over the counter. This market is sometimes called the grey market, especially when referring to sales to brokers. Brokers take a position (take title) and look for a price that allows resale at a profit. TI characterizes the grey market as a "wheeler-dealer" channel of distribution. Other U.S. producers and importers term the grey market disruptive, particularly in a down market. Pressure on prices is created by grey-market supply coming into the market at sharply lower prices. Brokers, buying for OEM's, board stuffers, or distributors, source their grey-market supply from surplus inventory held by OEM's and distributors and from offshore oversupply. Purchasers state that Japanese DRAM producers sell to distributors and trading companies in Japan, then allow the trading company to be the intermediary to the grey market. 3/

1/ The third quarter of the year is the usual time for negotiating contracts with OEM's. The contract period generally begins in June of the ensuing year.

2/ Contract sales to * * * are made on a central purchase basis and are an exception to this pattern. Prices to * * * are rarely renegotiated during the contract period.

3/ In investigation No. 731-TA-270 (Preliminary), * * * described this pattern with respect to 64K DRAM's. According to * * *, Japanese producers such as * * * insulate their participation in the grey market by selling to trading companies that, in turn, sell to brokers and wholesalers that sell to minor OEM's, board stuffers, distributors, and others. * * * asserts that it does not operate in the grey market.

Major OEM accounts during the last downturn in the DRAM market did not purchase from grey-market vendors. They viewed the potential problems associated with the quality of the incoming product as extremely serious. Grey-market supply was known to include mislabeled, stolen, and even rejected products. Currently, according to industry sources, significant grey-market supply is offered complete with offshore producers' quality seals on the boxes. Consequently, major accounts are now purchasing part of their requirements from grey-market vendors.

Sales of DRAM's to OEM's involve a certification process whereby a particular producer's DRAM's are qualified as acceptable for use in that OEM's product(s). An OEM first looks at the producer's DRAM specifications, then selects several producers' products for certification. This process involves a design engineering dimension, components systems checks, environmental tests, a product reliability phase, and a life test. The time involved varies from as little as a few weeks to as long as 6 months. Because of late entry into the market, U.S. producers of 256K DRAM's have not yet qualified their product with many of the largest OEM purchasers of DRAM's, e.g., * * *. Only in recent months have they begun to qualify or to be qualified with many of the lesser-volume OEM's. Purchasers such as * * * note that late entry poses the problem of exclusion from consideration as a qualified source for 256K DRAM's. The certification process can cost an OEM as much as * * *. Consequently, an OEM that already has three or four alternative qualified vendors is often not interested in adding a late entrant to the list. This, in turn, limits the production volume a late-entry 256K DRAM producer can achieve and thus adversely affects cost reductions that stem from growth in production volume.

The Industry in Japan

Approximately 10 firms produce 64K DRAM's in Japan, and according to information supplied by Integrated Circuit Engineering Corp. (ICE), 8 of these firms produced 256K DRAM's in 1984-85. The largest Japanese producer of 64K DRAM's in 1983 (25 percent of Japanese shipments) was Hitachi, Ltd., which first introduced 256K DRAM's in sample quantities in early 1982 and in production quantities in early 1983. Nippon Electric Co., with 24 percent of Japanese 64K DRAM shipments in 1983, began 256K DRAM sampling in 1983 and production in 1984. Fujitsu, Ltd., with 17 percent of Japanese 64K DRAM shipments in 1983, began sampling and production of 256K DRAM's in 1983. Along with Mitsubishi Electric Co. (11 percent), Oki Electric Co. (6 percent), and Toshiba Corp. (11 percent), these firms accounted for 94 percent of 64K DRAM production in Japan in 1983. 1/ TI also produces 64K and 256K DRAM's in Japan, although wire bonding and final sealing are generally performed in Singapore. Toshiba Corp. and Oki Electric Co. introduced 256K DRAM's in sample quantities in 1982, but Toshiba introduced these devices in production quantities in 1983, a year earlier than Oki Electric Co. Matsushita Electric Co. offered 256K DRAM's in both sample and production quantities in 1984.

1/ The Japanese Semiconductor and IC Industry, Yano Research Institute, Ltd., April 1984, p. 41.

Official Japanese statistics do not separately provide for DRAM's. Data published on Japanese semiconductors are disaggregated only to the level of MOS memories, which also include read-only memories (ROM's) and SRAM's. Based on information published by the Yano Research Institute, DRAM's accounted for approximately 31 percent of MOS memory devices produced in Japan in 1983, with 64K DRAM's accounting for a large share of total DRAM production. Data on production of MOS memories in Japan during 1982-84 are shown in table 2.

Production of MOS memories in Japan increased by 137.8 percent between 1982 and 1983, and by 55.6 percent between 1983 and 1984. The ability of producers in Japan to increase production of MOS memory from 311 million units in 1982 to 1.15 billion units in 1984 indicates that a significant increase in production capacity occurred during the period. In a study of Japanese semiconductor producers, John J. Laszlo, Jr., of the investment advisory firm Hambrecht & Quist, stated the following:

> "Since 1982, the major Japanese semiconductor companies have added capacity at a faster rate than have the major U.S. semiconductor suppliers. The majority of the spending has been allocated to MOS memory production. . . Currently, there is excess capacity in Japan. Capital spending increased an estimated 100% in 1984 over 1983 and is expected to increase 25% or more in 1985, further aggravating the over-capacity situation. The severe imbalance between supply and demand should result in further sharp price declines in 1985, particularly for commodity devices . . . ." 1/

According to a report by ICE, investment by Japanese semiconductor firms doubled from $1.6 billion in 1983 to $3.2 billion in 1984, but declined by about 19 percent to an estimated $2.6 billion in 1985. 2/ ICE showed that total investment by Japanese firms during 1983-85 was valued at $7.4 billion, or almost 14 percent higher than investment made by U.S. merchant semiconductor firms during the period.

The investment in plants and equipment by Japanese firms was reportedly directed at bringing additional 6-inch diameter wafer fabrication facilities into operation. Japanese firms planned to make 18 of these 6-inch diameter wafer fabrication facilities operational between July-September 1984 and October-December 1986. ICE's report indicated that U.S. and European merchant firms planned to make 16 of these types of facilities operational during the period, 5 of which were to be located outside of the United States. All of the Japanese facilities are planned to be located in Japan.

1/ John J. Laszlo, The Japanese Semiconductor Industry: Aggressive Capital Expansion Could Deleteriously Impact Industry Profitability in 1985, January 1985, as quoted in the postconference brief of Dewey, Ballantine, Bushby, Palmer & Wood in the preliminary investigation concerning imports of 64K DRAM's, July 18, 1985, p. 22.

2/ Integrated Circuit Engineering, Status 1986, A Report on the Integrated Circuit Industry, p. 40.

Table 2.—MOS memories: Production in Japan, 1982-84

Item	1982	1983	1984
Quantity—1,000 units—	311,477	740,621	1,152,252
Value—million yen—	140,873	367,256	753,711
Unit value—yen per unit—	452	496	654

Source: Electronics Industries Association of Japan.

Consideration of Alleged Material Injury

Data on the DRAM industry contained in this section of the report were compiled from questionnaire responses submitted by 14 firms 1/ producing uncased or cased DRAM's in the United States. Separate data on production, shipments, and inventories for uncased and cased DRAM's are presented. Data on all shipments and inventories of cased DRAM's are further presented separately on the basis of the country of origin of the uncased DRAM, and data on production and capacity and employment are further presented for firms that conduct assembly operations in the United States.

Production, capacity, and capacity utilization

In its questionnaire, the Commission requested data both on capacity and production of all integrated circuits and all DRAM's. Producers were asked to report production data before any yield losses. * * * producers 2/ provided data on capacity and production on the basis of die equivalents; * * * producers, * * *, 3/ provided these data on the basis of 4-inch wafer start equivalents; and * * *, 4/ provided these data on the basis of 5-inch wafer start equivalents. Table 3 presents separately capacity and production data based on the reporting method used. For those firms reporting on the basis of die equivalents, capacity and production data are further presented separately for those firms that generally perform assembly operations in the United States.

* * * * * * *

Production of uncased and cased DRAM's

In its questionnaire, the Commission requested data on production of uncased and cased DRAM's. Production of uncased DRAM's includes those units produced to make cased DRAM's in the United States, those units shipped to foreign affiliates or subcontractors for the offshore assembly of cased

1/ Except as noted.
2/ These * * * firms are * * *.
3/ * * *.
4/ * * *.

Table 3.—Integrated circuits and all DRAM's: U.S. production, average-for-period capacity, and capacity utilization, 1983-85

Item	1983	1984	1985
*** producers reporting on the basis of die equivalents:			
*** firms with U.S. assembly operations:			
Integrated circuits:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization percent	***	***	***
All DRAM's:			
Production----1,000 units	23,595	62,436	81,851
Average-for-period capacity 1,000 units	27,874	65,844	149,100
Capacity utilization percent	84.6	94.8	54.9
All *** firms:			
Integrated circuits:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization percent	***	***	***
All DRAM's:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization percent	***	***	***
*** producers reporting on the basis of 4-inch wafer start equivalents:			
Integrated circuits:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization-percent	***	***	***
All DRAM's:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization-percent	***	***	***
*** producer reporting on the basis of 5-inch wafer start equivalents:			
Integrated circuits:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization-percent	***	***	***
All DRAM's:			
Production----1,000 units	***	***	***
Average-for-period capacity 1,000 units	***	***	***
Capacity utilization-percent	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

DRAM's, and those units remaining in inventory. Producers were asked to report production of uncased DRAM's net of any losses that occur during wafer fabrication and sorting. * * * firms provided data on production of uncased DRAM's. 1/

As shown in table 4, total production of uncased DRAM's increased by 7 percent from 1983 to 1984, largely because production of uncased 64K DRAM's more than doubled. From 1984 to 1985, total production of uncased DRAM's fell by 36 percent, primarily because production of uncased 16K and 64K DRAM's dropped by 55 percent and 39 percent, respectively. Despite the decline in production of uncased 64K DRAM's, the 1985 level of production of such DRAM's was 32 percent higher than the 1983 level. Production of uncased 256K DRAM's began in 1983 and increased dramatically from 1983 to 1985. Production of uncased 1M DRAM's commenced in 1985, amounting to * * *, or less than * * * percent of total production of uncased DRAM's.

Production of cased DRAM's includes those units assembled in the United States, regardless of the country of origin of the uncased DRAM. Producers were asked to report cased production net of any losses that occur during assembly and final unit testing. * * * firms provided data on production of cased DRAM's, * * * of which produce the cased DRAM's from uncased DRAM's produced in the United States and * * * of which produce the cased DRAM's from uncased DRAM's imported from Japan. 2/ Table 5 presents production of cased DRAM's on the basis of the country of origin of the uncased DRAM.

Total production of cased DRAM's more than doubled from 1983 to 1984, largely because production of cased 64K DRAM's almost tripled and production of cased 256K DRAM's showed a * * * rise. From 1984 to 1985, total production of all cased DRAM's leveled off, primarily because * * * and production of cased 64K DRAM's dropped by 21 percent * * *.

Production of all cased DRAM's made from uncased DRAM's produced in the United States increased as a share of total production of all cased DRAM's from 1983 to 1985, accounting for 30 percent in 1983, 65 percent in 1984, and 76 percent in 1985. Total production of cased DRAM's made from U.S.-produced uncased DRAM's more than quintupled from 1983 to 1984 and continued to rise, by 16 percent, from 1984 to 1985. These increases were largely due to the significant rise in production of such cased 64K DRAM's from 1983 to 1984 and the * * * rise in production of such cased 256K DRAM's from 1983 to 1985.

Production of cased DRAM's made from uncased DRAM's produced in Japan rose by 27 percent from 1983 to 1984, * * *, because production of cased 64K DRAM's made from Japanese-produced uncased DRAM's increased by 62 percent. From 1984 to 1985, production of all cased DRAM's made from uncased DRAM's imported from Japan fell by 32 percent as a result of the * * *. There was * * * production of cased 256K DRAM's made from uncased DRAM's produced in Japan in 1983 and 1984, but in 1985 production of such cased 256K DRAM's accounted for * * * percent of total production of cased DRAM's made from Japanese-produced uncased DRAM's.

1/ These firms are * * *.

2/ The * * * firms that produce cased DRAM's from uncased DRAM's made in the United States are * * *, and the * * * firms that produce cased DRAM's from uncased DRAM's made in Japan are * * *.

Table 4.—DRAM's, uncased: U.S. production, by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Under 16K	***	***	***
16K	216,437	78,898	35,650
64K	126,865	273,679	167,253
256K	***	***	30,886
1M	0	0	***
Total	345,122	368,010	234,638

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 5.—DRAM's, cased: U.S. production, by densities and by country of origin of the uncased DRAM's, 1983-85

(In thousands of units)

Item	1983	1984	1985
Made from uncased DRAM's produced in the United States:			
Under 16K	***	***	***
16K	***	***	***
64K	11,576	63,588	58,542
256K	***	***	***
1M	***	***	***
Total	12,838	69,045	80,182
Made from uncased DRAM's produced in Japan:			
Under 16K	***	***	***
16K	***	***	***
64K	21,195	34,357	18,771
256K	***	***	***
1M	***	***	***
Total	29,351	37,291	25,522
Total:			
Under 16K	***	***	***
16K	9,266	3,111	***
64K	32,771	97,945	77,313
256K	***	***	28,290
1M	***	***	***
Grand total	42,189	106,336	105,704

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Producers' shipments

The Commission requested data on shipments of both uncased and cased DRAM's. * * * firms provided such data on uncased DRAM's. 1/ All uncased DRAM's are either transferred internally for U.S. assembly or are transferred to foreign affiliates or subcontractors for offshore assembly.

As shown in table 6, total shipments of all uncased DRAM's produced in the United States increased by 6 percent from 1983 to 1984, despite a 62-percent decline in total shipments of uncased 16K DRAM's, largely because total shipments of uncased 64K DRAM's more than doubled. Total shipments of all uncased DRAM's declined by 33 percent from 1984 to 1985 because total shipments of uncased 16K DRAM's continued to decline, by 57 percent, and such shipments of uncased 64K DRAM's also started to drop, by 34 percent. Total shipments of uncased 256K DRAM's increased * * * from 1984 to 1985 and shipments of uncased 1M DRAM's began in 1985.

Transfers to foreign affiliates or subcontractors for offshore assembly accounted for 94 percent of total shipments of uncased DRAM's in 1983. In 1984 these transfers dropped to 77 percent of total shipments of uncased DRAM's because foreign transfers of uncased 64K DRAM's decreased from 86 percent in 1983 to 72 percent in 1984 of total shipments of uncased 64K DRAM's. Transfers to foreign affiliates or subcontractors continued to decline as a share of total shipments of uncased DRAM's, accounting for 63 percent in 1985, because, of total shipments of uncased 64K DRAM's, transfers to foreign affiliates or subcontractors fell to 66 percent in 1985 and * * * percent of total shipments of uncased 256K and 1M DRAM's consisted of intracompany or intercompany transfers for U.S. assembly.

While total shipments of uncased DRAM's increased slightly from 1983 to 1984, transfers to foreign affiliates or subcontractors declined by 14 percent because * * *. From 1984 to 1985, transfers to foreign affiliates or subcontractors reflected the same pattern as total shipments of uncased DRAM's, falling by 45 percent, primarily as a result of the * * * and 40-percent declines in such transfers of uncased * * * and 64K DRAM's, respectively.

Data on shipments of cased DRAM's were submitted by * * * firms, * * * of which primarily perform only wafer fabrication in the United States, * * * of which generally assemble in the United States cased DRAM's made from U.S.-produced uncased DRAM's, and * * * firms of which assemble in the United States cased DRAM's made from uncased DRAM's produced in Japan. 2/ Shipments of all cased DRAM's produced at least in part in the United States are presented in table 7. Tables 8, 9, and 10 present, respectively, shipments of cased DRAM's made from U.S.-produced uncased DRAM's that are assembled in the

---

1/ These firms are * * *.

2/ The * * * firms that generally perform only wafer fabrication in the United States are * * *; the * * * firms that generally assemble in the United States cased DRAM's made from U.S.-produced uncased DRAM's are * * *; and the * * * firms that assemble in the United States cased DRAM's made from uncased DRAM's produced in Japan are * * *.

Table 6.—DRAM's, uncased: U.S. producers' shipments, by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Intra- and intercompany transfers:			
Under 16K	***	***	***
16K	***	***	***
64K	17,372	74,176	60,664
256K	***	***	28,856
1M	***	***	***
Total	19,301	83,969	90,039
Transfers to foreign affiliates or subcontractors:			
Under 16K	***	***	***
16K	***	***	***
64K	107,092	193,520	115,854
256K	***	***	2,829
1M	***	***	***
Total	321,789	277,330	153,412
Total shipments:			
Under 16K	***	***	***
16K	214,614	80,347	34,257
64K	124,464	267,696	176,518
256K	***	***	31,685
1M	***	***	***
Total	341,090	361,569	243,451

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 7.—DRAM's, cased: Shipments of cased DRAM's produced at least in part in the United States, 1/ by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Domestic shipments:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Total	***	***	***
Intracompany and intercompany transfers:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Total	***	***	***
Export shipments:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Total	***	***	***
Total shipments:			
Under 16K	***	***	***
16K	***	***	***
64K	103,038	230,590	184,973
256K	***	***	***
1M	***	***	***
Total	253,230	308,785	240,792

1/ Includes totals of shipments of cased DRAM's presented in tables 8, 9, and 10.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 8.—DRAM's, cased: Shipments of cased DRAM's made from uncased DRAM's produced and assembled in the United States, by densities, 1983-85

* * * * * * *

Table 9.—DRAM's, cased: Shipments of cased DRAM's made from uncased DRAM's produced in the United States and assembled in a third country, by densities, 1983-85

* * * * * * *

Table 10.—DRAM's, cased: Shipments of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States, by densities, 1983-85

* * * * * * *

United States, cased DRAM's made from U.S.-produced uncased DRAM's that are assembled offshore, and cased DRAM's made from uncased DRAM's that are produced in Japan and assembled in the United States. The unit values of domestic shipments of these cased DRAM's are presented in tables B-2, B-3, and B-4.

As shown in table 7, total shipments of all cased DRAM's produced at least in part in the United States increased by 22 percent from 1983 to 1984, largely because total shipments of cased 64K DRAM's more than doubled and total shipments of cased 256K DRAM's rose * * *. From 1984 to 1985, total shipments of all cased DRAM's fell by 22 percent because total shipments of cased 64K DRAM's dropped by 20 percent and total shipments of cased DRAM's with densities of 16K and under 16K fell by * * * percent and * * * percent, respectively.

Domestic shipments of all cased DRAM's produced in part in the United States rose * * * from 1983 to 1984, because domestic shipments of such cased 64K and 256K DRAM's together rose * * * while domestic shipments of such cased 16K DRAM's declined * * *. From 1984 to 1985, domestic shipments of all cased DRAM's produced at least in part in the United States dropped by * * * percent, * * *.

Intracompany or intercompany transfers of cased DRAM's produced in part in the United States increased by * * * percent from 1983 to 1984, * * *. From 1984 to 1985, intracompany or intercompany transfers of cased DRAM's continued to increase, * * *.

Export shipments of all cased DRAM's produced in part in the United States followed a pattern similar to that of total shipments of such cased DRAM's, rising by * * * percent from 1983 to 1984 and falling by * * * percent from 1984 to 1985. * * *.

Total shipments of cased DRAM's made from uncased DRAM's produced and assembled in the United States accounted for * * * percent of total shipments of all cased DRAM's produced at least in part in the United States in 1983. The share of total shipments of cased DRAM's accounted for by shipments of

such U.S.-produced and assembled DRAM's rose to * * * percent in 1984 and to * * * percent in 1985. Total shipments of cased DRAM's made from uncased DRAM's produced and assembled in the United States * * * from 1983 to 1984 and continued to rise, by * * * percent, from 1984 to 1985, * * *.

Domestic shipments of cased DRAM's made from uncased DRAM's produced and assembled in the United States increased * * * from 1983 to 1984 and continued to increase, by * * * percent, from 1984 to 1985, primarily as a result of * * *. In 1983, domestic shipments of such cased DRAM's accounted for * * * percent of total shipments of such cased DRAM's. The ratio of domestic shipments to total shipments of such cased DRAM's rose to * * * percent in 1984 and to * * * percent in 1985.

Intracompany or intercompany transfers of cased DRAM's produced entirely in the United States, accounting for * * * percent of total shipments of such cased DRAM's in 1983 and * * * percent of these total shipments in 1985, * * *. Intracompany or intercompany transfers of such cased 64K DRAM's * * * from 1983 to 1984, but dropped by * * * percent from 1984 to 1985. Intracompany or intercompany transfers of such cased 256K DRAM's increased * * * from 1983 to 1985, from * * * in 1983 to * * * in 1985. * * *.

Exports of cased DRAM's made from uncased DRAM's produced and assembled in the United States increased * * * from 1983 to 1984 and continued to increase, by * * * percent, from 1984 to 1985, primarily as a result of * * *. Exports of such cased DRAM's increased * * * as a share of total shipments of such cased DRAM's, from * * * percent in 1983 to * * * percent in 1984 and to * * * percent in 1985.

Total shipments of cased DRAM's made from uncased DRAM's produced in the United States and assembled in third countries held * * * share of total shipments of all cased DRAM's produced at least in part in the United States, accounting for * * * percent in 1983, * * * percent in 1984, and * * * percent in 1985. Total shipments of such cased DRAM's made from U.S.-produced uncased DRAM's that are assembled offshore showed a * * * decline from 1983 to 1985, falling by * * * percent from 1983 to 1984 and by * * * percent from 1984 to 1985. From 1983 to 1984, total shipments of such cased 64K DRAM's * * *, while * * *. From 1984 to 1985, total shipments of such cased 16K DRAM's * * *, and total shipments of such cased 64K DRAM's * * *.

Domestic shipments followed the pattern of total shipments of cased DRAM's produced from U.S.-made uncased DRAM's that are assembled in a third country, falling by * * * percent from 1983 to 1984 and by * * * percent from 1984 to 1985. Domestic shipments of such cased 16K DRAM's * * *, while domestic shipments of such cased 64K DRAM's * * *. Though domestic shipments of such cased 256K DRAM's * * *.

Intracompany or intercompany transfers of such cased DRAM's accounted for * * * percent of total shipments of such cased DRAM's in 1983, * * * percent in 1984, and * * * percent in 1985. Intracompany or intercompany transfers of such cased DRAM's fell by * * * percent from 1983 to 1984, * * *. Intracompany or intercompany transfers of DRAM's produced from U.S.-made uncased DRAM's that are assembled offshore rose by * * * percent from 1984 to 1985, primarily because * * *.

Exports of such cased DRAM's increased as a share of total shipments of these cased DRAM's, from * * * percent in 1983 to * * * percent in 1984 to * * * percent in 1985. Exports of these cased DRAM's rose by * * * percent from 1983 to 1984, mainly because * * *. * * *.

Total shipments of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States accounted for * * * percent of total shipments of all cased DRAM's produced in part in the United States from 1983 to 1985. Total shipments of such cased DRAM's followed the pattern of such shipments of all cased DRAM's produced in part in the United States from 1983 to 1985, rising by * * * percent from 1983 to 1984 and dropping by * * * percent from 1984 to 1985. Total shipments of such cased 64K DRAM's * * *. * * *.

Domestic shipments of these cased DRAM's also rose from 1983 to 1984, by * * * percent, and fell from 1984 to 1985, by * * * percent. While domestic shipments of such cased 64K DRAM's followed a similar pattern, rising by * * * percent from 1983 to 1984 and falling by * * * percent from 1984 to 1985, domestic shipments of such cased 16K DRAM's showed * * *. * * *.

Intracompany or intercompany transfers of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States rose * * * from 1983 to 1985, by * * * percent from 1983 to 1984 and by * * * percent from 1984 to 1985. Intracompany or intercompany transfers of such cased 64K DRAM's accounted for * * * percent of transfers of all such cased DRAM's in 1984 and accounted for * * * in 1983 and 1985.

Exports of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States accounted for a * * * share of total shipments of such cased DRAM's in 1983 and 1984. In 1985, there were * * * export shipments of such cased DRAM's.

Producers' foreign affiliates' drop shipments

Data on producers' export shipments do not include drop shipments, which are shipments to third-country markets made directly by producers' foreign affiliates that assemble U.S.-produced uncased DRAM's. * * * firms reported data on drop shipments, which are presented in table 11. 1/ As shown, total drop shipments of cased DRAM's * * *. * * *.

Table 11.—DRAM's, cased: Producers' foreign affiliates' drop shipments, by densities, 1983-85

*	*	*	*	*	*	*

1/ These firms are * * *.

Producers' end-of-period inventories

In its questionnaire, the Commission requested data on inventories of uncased and cased DRAM's. * * * firms provided data on inventories of uncased DRAM's, which are presented in table 12. 1/ * * * firms provided data on inventories of cased DRAM's. Of the firms reporting data on inventories of cased DRAM's, * * * firms held inventories of cased DRAM's made from uncased DRAM's produced and assembled in the United States, * * * firms held inventories of cased DRAM's produced in the United States and assembled in a third country, and * * * firms held inventories of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States. 2/ Table 13 presents separately these data.

Producers' end-of-period inventories of uncased DRAM's increased steadily from 1982 to 1984 and then declined by 52 percent from 1984 to 1985. End-of-period inventories of uncased 16K and 64K DRAM's together accounted for between * * * and * * * percent of all end-of-period inventories of uncased DRAM's from 1982 to 1984. This share of end-of-period inventories of uncased DRAM's * * *. End-of-period inventories of uncased 64K DRAM's * * * but declined by 81 percent from 1984 to 1985.

Producers' total end-of-period inventories of cased DRAM's more than doubled from 1982 to 1983 but then fell by 28 percent from 1983 to 1984 and by 14 percent from 1984 to 1985. From 1982 to 1984, end-of-period inventories of cased 16K and 64K DRAM's together accounted for over 90 percent of total inventories of cased DRAM's, whereas in 1985, end-of-period inventories of cased 64K and 256K DRAM's together accounted for more than 85 percent of total end-of-period inventories of cased DRAM's.

End-of-period inventories of cased DRAM's made from uncased DRAM's produced in the United States and assembled in a third country accounted for 78 percent of total inventories of cased DRAM's in 1982, for 84 percent in 1983, for 75 percent in 1984, and for 59 percent in 1985. End-of-period inventories of such cased 64K DRAM's increased steadily from 1982 to 1985, * * * from 1982 to 1983, almost doubling from 1983 to 1984, and rising by 14 percent from 1984 to 1985.

1/ These firms are * * *.

2/ The * * * firms that reported inventories of cased DRAM's made from uncased DRAM's produced and assembled in the United States are * * *. The * * * firms that reported cased DRAM's made from uncased DRAM's produced in the United States and assembled in a third country are * * *. The * * * firms that reported inventories of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States are * * *.

Table 12.—DRAM's, uncased: Producers' end-of-period inventories, by densities, 1982-85

(In thousands of units)

Item	1982	1983	1984	1985
Under 16K	***	***	***	***
16K	2,775	***	3,149	4,542
64K	***	6,088	11,785	2,228
256K	***	***	***	***
1M	***	***	***	***
Total	6,504	11,005	17,430	8,324

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

* * * * * * *

* * * * * * *

Table 13.—DRAM's, cased: Producers' end-of-period inventories, by densities, 1982-85

(In thousands of units)

Item	1982	1983	1984	1985
Made from uncased DRAM's produced and assembled in the United States:				
Under 16K	***	***	***	***
16K	***	***	***	***
64K	***	***	***	***
256K	***	***	***	***
1M	***	***	***	***
Total	***	***	***	***
Made from U.S.-produced uncased DRAM's and assembled in a third country:				
Under 16K	***	***	***	***
16K	10,485	26,021	9,755	2,291
64K	***	4,665	9,235	10,531
256K	***	***	***	***
1M	***	***	***	***
Total	13,233	31,943	20,410	14,022
Made from Japanese-produced uncased DRAM's and assembled in the United States:				
Under 16K	***	***	***	***
16K	***	***	***	***
64K	***	***	***	***
256K	***	***	***	***
1M	***	***	***	***
Total	***	***	***	***
Total:				
Under 16K	***	***	***	***
16K	***	***	11,055	2,315
64K	4,001	9,078	14,567	13,345
256K	***	***	***	***
1M	***	***	***	***
Total	17,019	38,161	27,373	23,670

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Employment and wages

In its questionnaire, the Commission requested data on employment and wages for production and related workers producing all products, all DRAM's, and 64K DRAM's. * * * firms provided usable data on employment and wages. Of the * * * firms, * * * produce cased DRAM's, performing assembly operations in the United States, whereas * * * firms, for the most part, produce only uncased DRAM's in the United States, performing assembly operations offshore. Table 14 presents these data for all firms responding and table 15 presents these data for those firms that generally conduct U.S. assembly operations. 1/

The number of production and related workers in U.S. establishments producing either uncased or cased DRAM's increased by 53 percent from 1983 to 1984 but declined by 24 percent from 1984 to 1985. Despite this decline, the number of production workers in 1985 remained 16 percent higher than the number in 1983. The number of workers engaged in the production of 64K DRAM's also increased from 1983 to 1984, by 58 percent, but declined by 36 percent from 1984 to 1985. The 1985 level of workers engaged in 64K DRAM production was only 1 percent higher than the level of workers engaged in 64K DRAM production in 1983. For those firms with U.S. assembly operations, * * *. * * *.

* * * reported reductions in the number of workers producing DRAM's in 1984. As shown in the following tabulation, * * * firms reported permanent or indefinite reductions in the number of workers engaged in producing DRAM's in 1985:

Firm	Reduction in the number of workers
* * *	***
* * *	***
* * *	***
Total	7,478

Hours worked by production and related workers in U.S. establishments producing uncased or cased DRAM's increased by 54 percent from 1983 to 1984 but decreased by 24 percent from 1984 to 1985. Hours worked by production and related workers producing only 64K DRAM's at such establishments followed the same pattern, rising by 60 percent from 1983 to 1984 and falling by 35 percent from 1984 to 1985. The 1985 levels of hours worked by workers producing all DRAM's and 64K DRAM's were 17 percent and 4 percent, respectively, higher than the levels of hours worked in 1983. For those firms producing cased DRAM's, * * *. Hours worked by workers engaged in the production of 64K DRAM's at such U.S. establishments * * *.

1/ Table 14 includes data for * * *. Table 15 excludes data for * * *.

Table 14.—Average number of production and related workers employed in all U.S. establishments producing uncased or cased DRAM's, 1/ hours worked by such workers, wages and total compensation paid, and average hourly compensation paid, 1983-85

Item	1983	1984	1985
Average number of production and related workers producing—			
All products	24,203	29,534	27,018
All DRAM's	8,590	13,171	9,946
64K DRAM's	5,521	8,741	5,598
Hours worked by production and related workers producing—			
All products—1,000 hours	50,226	62,548	56,017
All DRAM's—do	18,211	28,074	21,267
64K DRAM's—do	11,729	18,836	12,159
Wages paid to production and related workers producing—			
All products—1,000 dollars	519,136	671,137	668,451
All DRAM's—do	165,070	278,544	239,861
64K DRAM's—do	106,029	179,565	121,447
Total compensation paid 2/ to production and related workers producing—			
All products—1,000 dollars	648,531	822,126	816,927
All DRAM's—do	199,209	333,824	290,599
64K DRAM's—do	130,479	214,955	146,820
Average hourly compensation paid to production and related workers producing—			
All products—per hour	$12.91	$13.14	$14.58
All DRAM's—do	10.94	11.89	13.66
64K DRAM's—do	11.12	11.41	12.08

1/ Includes data for * * *. * * *.
2/ * * *.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 15.—Average number of production and related workers employed in U.S. establishments with assembly operations producing cased DRAM's, 1/ hours worked by such workers, wages and total compensation paid, and average hourly compensation paid, 1983–85

* * * * * * *

Both wages paid and total compensation paid to workers producing all DRAM's at all U.S. establishments increased by almost 70 percent from 1983 to 1984 and declined by less than 15 percent from 1984 to 1985. In 1985, wages and total compensation paid to such workers were roughly 45 percent higher than wages and total compensation paid in 1983. Wages and total compensation paid to workers producing only 64K DRAM's also increased from 1983 to 1984, by 69 percent and 65 percent, respectively, but declined at the faster rate (relative to the decline for wages and total compensation paid to workers producing all DRAM's) of 32 percent in 1985. For those firms that perform assembly operations in the United States, * * *. * * *.

Average hourly compensation paid to production and related workers producing DRAM's at all U.S. establishments increased steadily from 1983 to 1985, rising by 9 percent from 1983 to 1984 and by 15 percent from 1984 to 1985. For those firms that conduct assembly operations in the United States, * * *. Average hourly compensation paid to workers engaged in the production of 64K DRAM's at all U.S. establishments increased by 3 percent from 1983 to 1984 and by 6 percent from 1984 to 1985; * * *.

Financial experience of U.S. producers

Overall DRAM operations.—Income-and-loss data on the overall DRAM operations of nine U.S. producers are presented in table 16. Of the nine producers, six firms (five U.S.-owned and one Japanese-owned) perform wafer fabrication of DRAM's in the United States (i.e., produce uncased DRAM's) and three firms (all Japanese-owned) conduct only assembly and/or testing and marking operations in the United States.

Aggregate net sales of all DRAM's increased by 41 percent from $447.2 million in 1983 to $630.6 million in 1984, and then dropped by 51 percent to $311.1 million in 1985. * * *.

Intracompany or intercompany transfers accounted for 13 percent of total net sales in 1984 and 14 percent in 1983 and 1985. Such transfers for U.S.-owned firms ranged between * * * percent of total transfer sales in 1983 and * * * percent in 1984–85. Transfers for Japanese-owned firms, which accounted for * * * percent of total transfer sales during 1983–85, were * * *.

For overall DRAM operations in 1983 the reporting firms sustained an aggregate operating loss of $60.7 million, equivalent to 13.6 percent of net sales. In 1984 the responding producers' aggregate operating loss declined to $10.7 million, or 1.7 percent of net sales, but in 1985, as the price and demand for DRAM's fell sharply, the reporting firms sustained a record aggregate operating loss of $335.5 million, which exceeded sales by 8 percent. Net income or loss before income taxes followed a trend similar to that of operating income or loss.

Table 16.--Income-and-loss experience of U.S. producers on their operations relating to the sale of all DRAM's, at least some portion of which was produced in their U.S. establishments, by firms, 1983-85

Period and ownership	Trade sales	Intra- or inter-company sales	Total net sales	Cost of good sold	Gross profit (loss)	Research and development expenses	General, selling, and administrative expenses	Operating income or (loss)	Interest expense	Net other income (expense)	Net income or (loss) before income taxes	Depreciation and amortization	Cash flow from operations	Ratio to net sales: Gross profit (loss)	Ratio to net sales: Operating income (loss)	Ratio to net sales: Pre-tax net income (loss)
	1,000 dollars													Percent		
1983:																
U.S.-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Japanese-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Total-----	382,553	64,664	447,217	369,570	77,647	45,114	93,281	(60,748)	6,462	2,326	(64,884)	30,252	(34,632)	17.4	(13.6)	(14.5)
1984:																
U.S.-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Japanese-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Total-----	567,170	83,458	630,628	456,731	173,897	60,604	124,023	(10,730)	7,362	4,385	(13,707)	49,406	35,699	27.6	(1.7)	(2.2)
1985:																
U.S.-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Japanese-owned firms:																
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
* * *--------	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Subtotal--	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Total-----	268,809	42,282	311,091	480,064	(168,973)	66,351	100,225	(335,549)	15,046	(10,968)	(361,563)	103,176	(258,387)	(54.3)	(107.9)	(116.2)

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

* * * * * * *

The responding firms reported a negative cash flow from operations of $34.6 million in 1983 and $258.4 million in 1985, but a positive cash flow from operations of $35.7 million in 1984.

* * * * * * *

Mostek, a large producer that ceased DRAM operations in 1985, 1/ reported * * *. * * *.

* * * * * * *

AT&T, a large captive producer, * * *. * * *.

* * * * * * *

Operations on specific densities of DRAM's.--Aggregate gross profit-and-loss data of U.S. producers on their sale of specific densities of cased DRAM's are presented in table 17. Such data for 64K DRAM's are shown separately in table 18 on the basis of firm ownership.

16K DRAM's.--Aggregate net sales of 16K DRAM's * * *. * * *.

64K DRAM's.--Aggregate net sales of 64K DRAM's more than doubled from $227.1 million in 1983 to $496.4 million in 1984, and then dropped by 59 percent to $202.1 million in 1985. During the same period, U.S.-owned firms reported * * *, while Japanese-owned firms reported * * *. Aggregate gross profits increased in absolute terms by three and one-half times from $46.9 million in 1983 to $164.8 million in 1984, partly due to increased sales and partly due to a decrease in the cost of goods sold. Gross profit margins increased from 20.7 percent in 1983 to 33.2 percent in 1984. During the same period, gross profit margins for U.S.-owned firms * * *. In 1985, producers reported aggregate gross losses of $46.5 million, equivalent to 23.0 percent of net sales. They attributed this loss to the drastic decline in selling price, as well as to the low volume of sales. * * *.

256K DRAM's.--Aggregate net sales of 256K DRAM's * * *. * * *.

1/ Mostek's parent company (United Technologies) decided to shut down its operations in late 1985 because * * *.

Table 17.—Gross profit-and-loss experience of 8 U.S. producers on their operations relating to the sale of DRAM's, at least some portion of which was produced in their U.S. establishments, by specified densities, accounting years 1983-85

* * * * * * *

Table 18.—Gross profit-and-loss experience of U.S. producers on their operations relating to the sale of 64K DRAM's, at least some portion of which was produced in their U.S. establishments, by firms, accounting years 1983-85

Year and ownership	Net sales	Foreign product costs	Domestic product costs	Total cost of goods sold	Gross profit or (loss)	Gross profit or (loss) margin
	1,000 dollars					Percent
1983:						
U.S.-owned firms:						
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned firms:						
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total———	227,103	59,991	120,189	180,180	46,923	20.7
1984:						
U.S.-owned firms:						
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned firms:						
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
* * *———	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total———	496,415	85,591	246,053	331,644	164,771	33.2

Continued

Table 18.—Gross profit-and-loss experience of U.S. producers on their operations relating to the sale of 64K DRAM's, at least some portion of which was produced in their U.S. establishments, by firms, accounting years 1983-85—Continued

Year and ownership	Net sales	Foreign product costs	Domestic product costs	Total cost of goods sold	Gross profit or (loss)	Gross profit or (loss) margin
	1,000 dollars					Percent
1985:						
U.S.-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned Firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total——	202,076	39,886	208,695	248,581	(46,505)	(23.0)

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Comjmission.

Overall establishment operations.—Overall establishment data of 10 firms are presented in table 19. Establishment sales increased by 48 percent from $1.2 billion in 1983 to $1.7 billion in 1984, and then declined by 39 percent to about $1.0 billion in 1985. The trends in margins for overall establishment gross profits, operating income, and pretax net income are similar to those for all DRAM operations during 1983-85, but they show much lower loss margins and higher income margins. Producers reported operating losses of $9.0 million, or 0.8 percent of net sales, in 1983 and $518.0 million, or 50.1 percent of net sales, in 1985, compared with an aggregate operating income of $36.0 million during 1984.

Research and development.—Seven firms supplied research and development expenses related to the production of different densities of DRAM's. These data are presented in the following tabulation.

Research and development expenses:	Pre-1983 1/	1983	1984	1985
Under 16K——	***	***	***	***
16K——	***	***	***	***
64K——	***	***	***	***
256K——	***	***	***	***
1M——	***	***	***	***
Over 1M——	***	***	***	***
Total——	54,346	93,508	163,092	182,845

1/ * * *.

Table 19.—Income-and-loss experience of 10 U.S. producers 1/ on the overall operations of their establishments within which DRAM's are produced, accounting years 1983-85

Item	1983	1984	1985
Net sales—million dollars	1,151	1,700	1,034
Cost of goods sold—do	798	1,136	1,107
Gross profit or (loss)—do	353	564	(73)
General, selling, and administrative expenses—million dollars	362	528	445
Operating income or (loss)—do	(9)	36	(518)
Interest expense—do	13	13	31
Other income or (expense), net—do	10	12	7
Net income or (loss) before taxes—do	(12)	35	(542)
Depreciation and amortization expense included above 2/ million dollars	65	105	168
Cash-flow from operations 3/ million dollars	53	140	(374)
As a share of net sales:			
Cost of goods sold—percent	69.3	66.8	107.1
Gross profit or (loss)—do	30.7	33.2	(7.1)
General, selling, and administrative expenses percent	31.5	31.1	43.0
Operating income or (loss) percent	(0.8)	2.1	(50.1)
Net income or (loss) before income taxes—percent	(1.0)	2.1	(52.4)
Number of firms reporting operating losses	5	4	9
Number of firms reporting net losses	6	5	8

1/ These firms are * * *. * * *.

2/ * * *.

3/ Cash flow is defined as pretax net income or loss plus depreciation and amortization expense.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Research and development expenses for all DRAM's increased during each period, from $54.3 million in pre-1983 to $182.8 million in 1985. The majority of such expenses were incurred for * * * through 1984. In 1985, * * * percent of total research and development expenses were for 256K DRAM's. * * *.

Capital expenditures.—Capital expenditures for all DRAM's produced at least in part in U.S. establishments, as supplied by nine firms, are presented by firm ownership in table 20. Such capital expenditures rose by 160 percent from $216.7 million in 1983 to $563.7 million in 1984, and then dropped by 26 percent to $414.7 million in 1985. The majority of capital expenditures for all DRAM's were * * *, although * * *. Capital expenditures on overall establishment operations, as provided by 12 firms, showed a similar trend, increasing by 65 percent from 1983 to 1984 and then declining by 15 percent from 1984 to 1985.

Investment in property, plant, and equipment.—Nine firms provided data concerning their investment in productive facilities for all DRAM's, and 13 firms supplied such data used for their establishment operations. As shown in table 20, their aggregate investment for all DRAM's, valued at cost, increased from $631.0 million in 1983 to $1.2 billion in 1985. The majority of such investments were * * *, although * * *. The book value of such investments followed a trend similar to that of their original cost. Aggregate investment for their establishment operations, valued at cost, rose from $2.1 billion in 1983 to $3.2 billion in 1985.

Specified costs of production

In its questionnaire, the Commission requested data on costs relating to the production of each density of DRAM—from under 16K to over 1M—in an effort both to identify and separate the costs associated with the basic production processes and to examine the effects of the learning curve through at least a portion of a DRAM's life cycle. Production costs were divided between those associated with wafer fabrication and sorting and those associated with assembly and final unit testing. Among the costs identified with each of these two basic production stages were raw materials, direct labor, indirect labor, depreciation and amortization, and other factory costs. 1/ Firms were asked to report these costs of production and the corresponding quantities of usable cased DRAM's produced.

The Commission received a variety of responses from the 10 firms that reported both costs and quantities of DRAM's produced. Some firms reported costs of goods sold, others reported costs of assembly even though these were not incurred in the United States, and still others included (and did not separately identify) the cost of uncased DRAM's in the cost of raw materials of assembly and testing. The reported unit costs of wafer fabrication and sorting and of assembly and testing for each density of DRAM produced by the 10 firms are presented in tables 21 to 23.

1/ The questionnaire also included research and development costs; however, most firms responding indicated that these costs were normally not considered as costs of production.

Table 20.—All DRAM's: Capital expenditures and investment in property, plant, and equipment, by firms, 1983–85

(In thousands of dollars)

Year and ownership	Capital expenditures		Investment in property, plant, and equipment			
			All DRAM's		Establishment	
	All DRAM's	Establishment	Original cost	Book value	Original cost	Book value
1983:						
U.S.-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total——	216,709	590,853	631,015	465,546	2,075,652	1,568,428
1984:						
U.S.-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total——	563,719	973,223	1,120,606	881,944	2,821,908	2,176,445
1985:						
U.S.-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Japanese-owned firms:						
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
* * *——	***	***	***	***	***	***
Subtotal—	***	***	***	***	***	***
Total——	414,724	824,456	1,244,730	963,179	3,208,392	2,392,838

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 21.—Specified costs of production of 16K DRAM's, by companies, accounting years 1983-85 and interim periods ended Dec. 31, 1984, and Dec. 31, 1985

* * * * * * *

Table 22.—Specified costs of production of 64K DRAM's, by companies, accounting years 1983-85 and interim periods ended Dec. 31, 1984, and Dec. 31, 1985

* * * * * * *

Table 23.—Specified costs of production of 256K DRAM's, by companies, accounting years 1983-85 and interim periods ended Dec. 31, 1984 and Dec. 31, 1985

* * * * * * *

Consideration of Alleged Threat of Material Injury

Among the relevant economic factors that may contribute to the threat of material injury to the domestic industry are the ability of producers in Japan to increase the level of exports of DRAM's to the United States and the likelihood that they will do so, any substantial increases in inventories of imports of Japanese DRAM's in the United States, and any rapid increase in penetration of the U.S. market by the imports.

The available data concerning the production and capacity of Japanese producers of DRAM's are presented in the section of this report entitled "The Industry in Japan." The available data concerning U.S. importers' inventories of cased DRAM's from Japan are presented in table 24.

U.S. importers' yearend inventories of all cased DRAM's made from uncased DRAM's produced and assembled in Japan * * * from 1982 to 1983 and * * * from 1983 to 1984. From 1984 to 1985, yearend inventories of all cased DRAM's imported from Japan continued to increase, at a more modest rate of 6 percent. U.S. importers' yearend inventories of cased 64K DRAM's, accounting for * * * percent of importers' yearend inventories of all cased DRAM's in 1982, 74 percent in 1983, 59 percent in 1984, and 44 percent in 1985, more than tripled from 1982 to 1983, rose by 77 percent from 1983 to 1984, and fell by 21 percent from 1984 to 1985. As of December 31, 1984, inventories of cased 256K DRAM's accounted for * * * percent of importers' inventories of all cased DRAM's, and as of December 31, 1985, inventories of these cased 256K DRAM's accounted for nearly 50 percent of inventories of all cased DRAM's imported from Japan.

Table 24.—DRAM's, cased: U.S. importers' inventories of DRAM's produced in Japan, by densities, as of Dec. 31 of 1982-85

(In thousands of units)

Item	1982	1983	1984	1985
Under 16K	***	***	***	***
16K	***	***	***	***
64K	***	7,793	13,809	10,910
256K	***	***	***	12,124
1M	***	***	***	***
Total	***	10,471	23,264	24,552

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

U.S. importers' yearend inventories of uncased DRAM's produced in Japan and cased DRAM's made from uncased DRAM's produced in Japan and assembled in a third country are presented in tables B-5 and B-6.

A discussion of the level of shipments of cased DRAM's imported from Japan and the market shares of shipments of cased DRAM's is presented in the section of this report concerning the causal relationship between imports sold at LTFV and the alleged material injury or threat thereof.

Consideration of the Causal Relationship between Imports Sold at LTFV and the Alleged Material Injury or Threat Thereof

U.S. imports from Japan

Data on U.S. imports from Japan were compiled from responses to the Commission's questionnaires. Eighteen firms provided usable data. 1/

Table 25 presents U.S. imports from Japan of cased 64K DRAM's. As shown, imports from Japan of cased 64K DRAM's increased by 40 percent from 1983 to 1984 and dropped by 34 percent from 1984 to 1985. The 1985 level of U.S. imports from Japan of cased 64K DRAM's was 7 percent lower than the level of these imports in 1983. In 1983, * * * were the * * * largest importers of cased 64K DRAM's from Japan, together accounting for * * * percent of total imports from Japan of cased 64K DRAM's. In 1984, * * * accounted for * * * percent of total imports from Japan of cased 64K DRAM's. In 1985, * * *, the largest importer of cased 64K DRAM's for that year, and * * *, the second largest importer, together accounted for * * * percent of imports from Japan of cased 64K DRAM's.

1/ * * * of these imports were of the N-channel MOS type.

Table 25.--DRAM's, cased 64K: U.S. imports from Japan, by importers, 1983-85

(In thousands of units)

Item	1983	1984	1985
* * *	***	***	***
* * *	***	***	***
* * *	***	***	***
Total	82,331	115,590	76,322

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 26 presents U.S. shipments of imports from Japan of all cased DRAM's during 1983-85. 1/ As shown, shipments of imports from Japan of cased 64K DRAM's accounted for over 80 percent of shipments of imports from Japan of all cased DRAM's in 1983 and 1984. In 1985, the share of shipments of all cased DRAM's imported from Japan held by shipments of cased 64K DRAM's dropped to 58 percent, primarily as a result of an increased share accounted for by shipments of cased 256K DRAM's imported from Japan. The unit values of the open-market shipments of DRAM imports from Japan are presented in table 27. 2/

U.S. market shares of shipments

Table 28 presents the market shares of total apparent U.S. consumption accounted for by shipments of cased DRAM's on the bases of the country of origin of the uncased DRAM used to make the product and the country in which the uncased DRAM was assembled. As shown, shipments of all cased DRAM's made from uncased DRAM's produced and assembled in Japan (i.e., shipments of imports from Japan of cased DRAM's) increased steadily, from 24.1 percent in 1983 to 27.4 percent in 1984 and to 35.8 percent in 1985. Shipments of such imports from Japan of cased 64K DRAM's as a share of total apparent U.S. consumption of cased 64K DRAM's declined from 35.9 percent in 1983 to 29.6 percent in 1984 but rose to 30.2 percent in 1985. Although the ratios of shipments of these imports of cased 64K DRAM's to apparent U.S. open-market consumption of cased 64K DRAM's * * * (table 29).

1/ Imports from Japan of uncased DRAM's and imports of cased DRAM's made from uncased DRAM's produced in Japan and assembled in a third country prior to importation into the United States are not included within the scope of this investigation. Shipments of these imports are presented in tables B-7 and B-8 and may represent other factors relevant to the consideration of the causal relationship between the imports subject to the investigation and the alleged material injury or threat thereof.

2/ The unit values of the open-market shipments of cased DRAM's made from uncased DRAM's produced in Japan and assembled in a third country are presented in table B-9.

Table 26.—DRAM's, cased: U.S. shipments of imports from Japan, by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Under 16K	***	***	***
16K	***	***	***
64K	63,512	98,950	75,540
256K	***	***	***
1M	***	***	***
Total	79,460	115,698	129,296

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 27.—DRAM's, cased: U.S. open-market 1/ shipments of cased DRAM's imported from Japan, by densities, 1983-85

* * * * * * *

Table 28.—DRAM's, cased: U.S. market shares of total apparent U.S. consumption accounted for by shipments 1/ of specified DRAM's, by densities, 1983-85

(In percent)

Item	1983	1984	1985
Made from uncased DRAM's produced and assembled in Japan:			
Under 16K	***	***	***
16K	***	***	***
64K	35.9	29.6	30.2
256K	***	***	***
1M	***	***	***
Average	24.1	27.4	35.8
Made from U.S.-produced uncased DRAM's and assembled in the United States:			
Under 16K	***	***	***
16K	***	***	***
64K	5.8	15.9	18.7
256K	***	***	***
1M	***	***	***
Average	***	***	***
Made from U.S.-produced uncased DRAM's and assembled in third countries:			
Under 16K	***	***	***
16K	***	***	***
64K	33.9	31.7	31.7
256K	***	***	***
1M	***	***	***
Average	56.8	39.7	30.3
Made from uncased DRAM's produced in Japan and assembled in the United States:			
Under 16K	***	***	***
16K	***	***	***
64K	11.2	10.0	7.8
256K	***	***	***
1M	***	***	***
Average	***	***	***
Made from uncased DRAM's produced in Japan and assembled in third countries:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Average	***	***	***
Made from uncased DRAM's produced and assembled in third countries:			
Under 16K	***	***	***
16K	***	***	***
64K	***	***	***
256K	***	***	***
1M	***	***	***
Average	***	***	***

1/ Includes intracompany and intercompany transfers.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 29.—DRAM's, cased: U.S. market shares of apparent U.S. open-market consumption accounted for by shipments 1/ of specified DRAM's, by densities, 1983-85

* * * * * * *

Shipments of imports from Japan of cased 64K DRAM's as a share of total apparent U.S. consumption and as a share of apparent U.S. open-market consumption of all cased DRAM's are shown in the following tabulation (in percent):

	Ratio to total apparent U.S. consumption of all cased DRAM's	Ratio to apparent U.S. open-market consumption of all cased DRAM's
1983	19.2	***
1984	23.4	***
1985	20.9	***

Unlike the ratio of shipments of imports from Japan of cased 64K DRAM's to total apparent U.S. consumption of cased 64K DRAM's, the ratio of shipments of cased 64K DRAM's imported from Japan to total apparent U.S. consumption of all cased DRAM's (and to apparent U.S. open-market consumption of all cased DRAM's) rose from 1983 to 1984 and then fell from 1984 to 1985. The ratio of shipments of cased 64K DRAM's imported from Japan to total apparent U.S. consumption on the basis of bits of memory (K-equivalents) is presented in the following tabulation (in percent):

	Ratio to total apparent U.S. consumption of all DRAM's on the basis of bits of memory
1983	29.3
1984	23.6
1985	13.5

Prices

Demand for 64K DRAM's is a derived demand dependent on the demand for end products that incorporate such memory devices in their design and function. These end products include mini; micro, and mainframe computers; electronic business and office equipment; industrial process-control equipment, including scientific instruments; telecommunications equipment; and consumer electronic products, including personal computers (PC's).

In the past decade, demand for computer and electronic products has exhibited sharp growth punctuated by pauses that mirror the vulnerability of these products to the ups and downs of business and industrial investment and the pattern of consumer confidence. 1/ During 1983 and 1984, the driving force in creating demand for 64K DRAM's was the growth in the overall level of economic activity, and particularly the strong surge in demand for personal computers. This period of strong demand was characterized by firm and rising prices (in some market segments premium prices), long-term contracts to ensure supply, double ordering to guarantee adequate supply, allocations from domestic and import suppliers, and investments by producers to expand capacity. As the economy began to slow in late 1984, prices softened and price competition sharpened. Micron, in October, cut its long-term contract price for 200 ns 64K DRAM's to $1.85 per unit. 2/ This period was characterized by a sharp downturn in demand for OEM products that use 64K DRAM's, heavy inventory buildups that increased grey-market activity in offers of low prices, downward price adjustments to long-term contracts, push backs in scheduled delivery dates, and large cancellations of scheduled deliveries. 3/ By yearend 1984 it was increasingly clear that demand for personal computers had fallen far short of forecasts and expectations, resulting in heavy inventories in producers' warehouses. 3/

As noted in the "Channels of Distribution" section of this report, DRAM's are sold through three general channels of distribution: (1) to OEM's and board stuffers on a contract basis, (2) to distributors, and (3) to spot-market purchasers (which may include OEM's, board stuffers, and distributors). These three channels reflect different pricing policies and different sized purchases and purchasers. 5/ In order to compare domestic and import price trends and measure margins of underselling or overselling by imports from Japan, the Commission asked U.S. purchasers in each of these categories to provide price data 6/ for their purchases of 150 and 200 ns 64K DRAM's during September 1984-April 1986. 7/ Separate price data were requested from four categories of OEM's (those that produce (1) office automation equipment, (2) telecommunications equipment, (3) industrial

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1/ San Jose Mercury News, "Chips the Struggle to Survive," section D, June 10, 1985.

2/ Micron's petition, p. 11.

3/ Electronic News, Jan. 14, 1985, p. 1; Feb. 11, 1985, p. 19; and Mar. 4, 1985, p. 1.

4/ See, for example, Fortune, Aug. 5, 1985, "Behind the Fall of Steve Jobs," pp. 21-29.

5/ For example, long-term contracts generally are subject to price renegotiations at the purchaser's option. Distributor prices are adjusted on a "meet competition" basis to enable sales of in-stock product at competitive prices without a distributor selling below cost and absorbing a loss.

6/ The Commission asked firms to report transaction prices that represented their lowest net delivered purchase price in each of the specified periods.

7/ Producers and importers of 64K DRAM's were also asked to provide selling price data for sales to these categories of purchasers. Because the coverage is better and believed to be more representative, prices reported by purchasers are discussed in the text of this report. Selling price data reported by producers and importers are separately presented in appendixes.

automation equipment, and (4) consumer electronic products (including personal computers)); two categories of distributors (authorized and independent); and spot-market purchasers. The following discussion addresses prices paid by each of these categories of purchasers separately (except spot-market purchasers, for which inadequate data were received for analysis). However, some of the categories had fewer responses than others, and the reader should keep this in mind in assessing the significance of price trends or underselling/overselling for a particular category. For the entire period covered (September 1984-April 1986), the shares of total purchases reported by each category were as follows (in percent): 1/

Item	Share of total reported purchases of domestic products	Share of total reported purchases of imports from Japan
150 ns 64K DRAM's:		
Office automation OEM's	17.2	53.5
Telecommunication OEM's	6.6	2.5
Industrial automation OEM's	3.0	1.3
Consumer products OEM's	20.5	15.3
Authorized distributors	14.0	7.1
Independent distributors	2.5	5.0
Subtotal, 150 ns 64K DRAM's	63.8	84.7
200 ns 64K DRAM's:		
Office automation OEM's	5.9	7.4
Telecommunication OEM's	-	.2
Industrial automation OEM's	1.4	.7
Consumer products OEM's	16.9	4.7
Authorized distributors	10.1	.7
Independent distributors	1.9	1.6
Subtotal, 200 ns 64K DRAM's	36.2	15.7
Grand total	100.0	100.0
150 and 200 ns DRAM's:		
Office automation OEM's	23.1	60.9
Telecommunication OEM's	6.6	2.7
Industrial automation OEM's	4.4	2.0
Consumer products OEM's	37.4	20.0
Subtotal, OEM's	71.5	85.6
Authorized distributors	24.1	7.8
Independent distributors	4.4	6.6
Subtotal, distributors	28.5	14.4
Total	100.0	100.0

1/ The total volume reported during this period for purchases of domestic products was 54.6 million units; the total volume reported for purchases of imports from Japan was 87.9 million units. Eighty percent of the total quantity was purchased by OEM's.

More than 50 firms 1/ responded with usable data on their purchases of 64K DRAM's, providing a data base of almost 4,000 purchases that span the subject time period. 2/ The Commission asked purchasers to provide, by months, their lowest net purchase prices for each brand name purchase of domestic and imported 64K DRAM's (150 and 200 ns) during September 1984-April 1986. Weighted averages of the prices received are presented in absolute terms and as indexes in tables 30 through 33. 3/

Prices of 150 ns 64K DRAM's purchased by office automation OEM's.—The price trend in factory direct purchases of domestic 64K DRAM's by office automation OEM's was sharply and steadily downward beginning in January 1985. Prices decreased 72 index points from a December 1984 level of $3.49 to less than $1.00 in August 1985. By December 1985, the average price had plummeted to 79 cents, 78 percent below the $3.61 base-period price (table 30 and fig. 1). During January-March 1986, domestic prices rose to $1.06.

Purchases of imports from Japan by this category of OEM reflect a similar sharp downturn. Prices dipped a bit during September-December 1984, then plunged 22 index points in January 1985 to $2.51, continued the downturn through March to $2.25, then slid 20 points to $1.53 in April. The second quarter 26-point downturn in import prices outpaced the 2-point drop of domestic prices as the average import price fell to $1.33. Although the domestic price compensated with a 23-point decline to $1.06 in July, the average import price dropped 10 more points to 97 cents. During the next 6 months the average import price moved steadily downward to a period low of 73 cents in January 1986, before strengthening 7 points to end the period in April at 99 cents.

1/ Eighty firms were selected from customer lists provided by producers and importers to receive purchaser questionnaires. The coverage included most of the large firms known as national accounts, as well as many smaller firms.

2/ As mentioned, this discussion is based on purchase prices reported by U.S. purchasers. The Commission also collected selling price data from U.S. producers (f.o.b. plant, net of all discounts and allowances) and importers (duty-paid, ex-dock, port of entry (or importer warehouse), net of all discounts and allowances and excluding U.S. inland freight). Weighted averages of the net selling prices reported by producers and importers are presented in absolute terms and as indexes in tables C-1 through C-4 and figs. D-1 through D-7.

3/ Domestic price data include purchases of DRAM's from * * *; import price data include purchases from * * *. Some of the firms identified as "domestic" import 64K DRAM's from Japan and some of the firms identified as "import" produce 64K DRAM's in the United States. Accordingly, it is often difficult or impossible for a purchaser to determine whether product from a specific supplier is domestic or imported. This is a problem for the Japanese-owned firms in particular, as many of them (* * *, for example) report that they do not distinguish between product imported from Japan and product produced in their U.S. facilities in terms of prices. Because of this problem, it is helpful in understanding pricing in this market to examine prices separately for each supplier. Such prices are presented in tables E-1 through E-15.

Table 30.--64K DRAM's (150 ns) purchased by OEM's: Weighted-average purchase prices for purchases of domestic products and of imports from Japan, and indexes of those prices, 1/ by classes of OEM's and by months, September 1984-April 1986

(Per unit)

Month	Office automation OEM				Telecommunication OEM				Industrial automation OEM				Consumer products OEM			
	U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price	
	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
1984:																
September	100	$3.61	100	$3.50	100	$4.11	100	$3.80	100	$3.73	100	$3.73	100	$2.99	100	$3.69
October	101	3.63	97	3.39	101	4.15	94	3.59	109	4.05	101	3.76	83	2.49	102	3.76
November	91	3.28	96	3.36	82	3.37	94	3.59	107	4.00	100	3.72	89	2.67	99	3.68
December	97	3.49	94	3.30	100	4.13	95	3.62	90	3.37	97	3.62	104	3.12	91	3.37
1985:																
January	78	2.81	72	2.51	63	2.57	73	2.78	73	2.72	71	2.65	57	1.71	66	2.45
February	73	2.65	71	2.49	61	2.51	64	2.45	71	2.64	64	2.40	60	1.80	68	2.51
March	54	1.95	64	2.25	59	2.43	44	1.69	62	2.33	46	1.71	62	1.84	53	1.95
April	58	2.14	44	1.53	46	1.91	42	1.59	49	1.84	40	1.48	47	1.41	40	1.48
May	53	1.96	42	1.47	45	1.85	33	1.26	41	1.53	35	1.29	41	1.23	34	1.27
June	52	1.87	38	1.33	45	1.85	31	1.16	34	1.25	32	1.20	34	1.03	28	1.05
July	29	1.06	28	.97	45	1.85	23	.86	40	1.50	23	.86	31	.92	24	.87
August	25	.92	26	.92	45	1.85	23	.87	20	.75	23	.86	30	.91	23	.84
September	27	.98	27	.96	22	.90	24	.90	-	-	24	.88	26	.78	21	.76
October	22	.78	24	.84	22	.90	19	.72	20	.75	21	.77	24	.72	19	.72
November	22	.78	21	.75	22	.90	21	.78	21	.80	20	.76	21	.63	19	.71
December	22	.79	21	.74	-	-	21	.79	20	.75	20	.75	22	.66	19	.70
1986:																
January	27	.96	21	.73	-	-	18	.70	24	.90	19	.71	-	-	21	.77
February	25	.90	24	.85	39	1.59	20	.75	24	.90	20	.76	31	.94	22	.83
March	29	1.06	23	.82	39	1.59	22	.82	29	1.09	21	.79	28	.85	23	.85
April	-	-	28	.99	-	-	28	1.06	-	-	-	-	-	-	30	1.11

1/ First period with data=100.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 31.--64K DRAM's (200 ns) purchased by OEM's: Weighted-average purchase prices for purchases of domestic products and of imports from Japan, and indexes of those prices, 1/ by classes of OEM's and by months, September 1984-April 1986

(Per unit)

Month	Office automation OEM				Telecommunication OEM				Industrial automation OEM				Consumer products OEM			
	U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price	
	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
1984:																
September	100	$3.44	100	$3.54	-	-	100	$3.54	100	$3.70	100	$3.54	100	$3.06	100	$3.42
October	107	3.67	94	3.31	-	-	-	-	-	-	99	3.50	106	3.23	102	3.49
November	107	3.68	96	3.40	-	-	-	-	-	-	94	3.32	99	3.05	99	3.38
December	105	3.61	93	3.29	-	-	103	3.65	101	3.73	96	3.39	82	2.51	102	3.48
1985:																
January	82	2.83	84	2.96	-	-	103	3.65	71	2.63	86	3.03	47	1.44	101	3.49
February	73	2.51	70	2.48	-	-	103	3.65	69	2.56	80	2.83	35	1.06	73	2.50
March	56	1.92	58	2.05	-	-	47	1.65	68	2.52	77	2.71	42	1.30	53	1.81
April	47	1.61	45	1.60	-	-	39	1.38	65	2.40	64	2.27	30	0.92	45	1.55
May	35	1.20	44	1.57	-	-	-	-	34	1.27	64	2.25	37	1.13	39	1.30
June	32	1.10	31	1.08	-	-	-	-	27	1.00	-	-	24	.75	33	1.12
July	28	.97	22	.78	-	-	-	-	31	1.15	-	-	24	.75	26	.90
August	25	.86	24	.84	-	-	-	-	26	.95	-	-	-	-	25	.85
September	21	.72	23	.81	-	-	-	-	24	.90	-	-	-	-	24	.82
October	21	.72	21	.75	-	-	25	0.90	-	-	16	.55	-	-	24	.82
November	21	.72	22	.77	-	-	-	-	28	1.05	31	1.10	17	.52	24	.82
December	21	.72	21	.75	-	-	-	-	-	-	16	.55	19	.57	24	.82
1986:																
January	19	.67	23	.83	-	-	-	-	-	-	33	1.17	-	-	25	.86
February	26	.89	22	.78	-	-	-	-	-	-	18	.64	36	1.10	23	.78
March	31	1.07	22	.77	-	-	-	-	-	-	28	1.00	36	1.10	23	.78
April	-	-	32	1.13	-	-	-	-	-	-	-	-	-	-	33	1.12

1/ First period with data=100.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 32.--64K DRAM's (150 ns) purchased by distributors and * * *: Weighted-average purchase prices for purchases of domestic products and of imports from Japan, and indexes of those prices, 1/ by classes of distributors and by months, September 1984-March 1986

(Per unit)

Month	All distributors				Authorized distributors				Independent distributors				* * *			
	U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price	
	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
1984:																
September--	100	$2.64	100	$3.10	100	$2.62	100	$3.23	100	$3.07	100	$3.01	***	***	***	***
October----	86	2.28	88	2.73	86	2.25	90	2.91	79	2.44	88	2.64	***	***	***	***
November---	83	2.18	85	2.65	83	2.18	78	2.51	81	2.50	91	2.74	***	***	***	***
December---	89	2.36	67	2.07	90	2.36	70	2.27	-	-	61	1.85	***	***	***	***
1985:																
January----	59	1.56	50	1.54	60	1.57	63	2.03	47	1.44	44	1.32	***	***	***	***
February---	48	1.26	38	1.18	48	1.26	39	1.27	42	1.29	37	1.11	***	***	***	***
March------	29	.76	29	.89	28	.73	27	.89	29	.89	30	.91	***	***	***	***
April------	26	.69	25	.79	26	.67	25	.81	25	.76	25	.76	***	***	***	***
May--------	24	.64	21	.66	25	.66	21	.69	16	.50	20	.61	***	***	***	***
June-------	19	.51	19	.58	20	.52	18	.57	12	.38	20	.61	***	***	***	***
July-------	17	.44	15	.48	18	.46	20	.65	10	.32	13	.39	***	***	***	***
August-----	14	.38	14	.43	15	.39	20	.64	12	.36	13	.40	***	***	***	***
September--	15	.41	14	.45	15	.40	18	.59	14	.44	13	.39	***	***	***	***
October----	15	.40	14	.44	15	.40	20	.66	12	.37	13	.40	***	***	***	***
November---	19	.50	17	.54	18	.47	19	.60	19	.57	18	.54	***	***	***	***
December	20	.54	20	.61	20	.53	21	.67	25	.76	20	.60	***	***	***	***
1986:																
January----	26	.68	22	.68	26	.69	19	.62	22	.67	26	.78	***	***	***	***
February---	31	.82	23	.70	31	.82	18	.59	26	.81	29	.86	***	***	***	***
March------	37	.99	23	.72	38	.99	23	.75	-	-	23	.69	***	***	***	***

1/ First period with data=100.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 33.--64 DRAM's (200 ns) purchased by distributors: Weighted-average purchase prices of domestic products and of imports from Japan, and indexes of those prices, 1/ by classes of distributors and by months, September 1984-March 1986

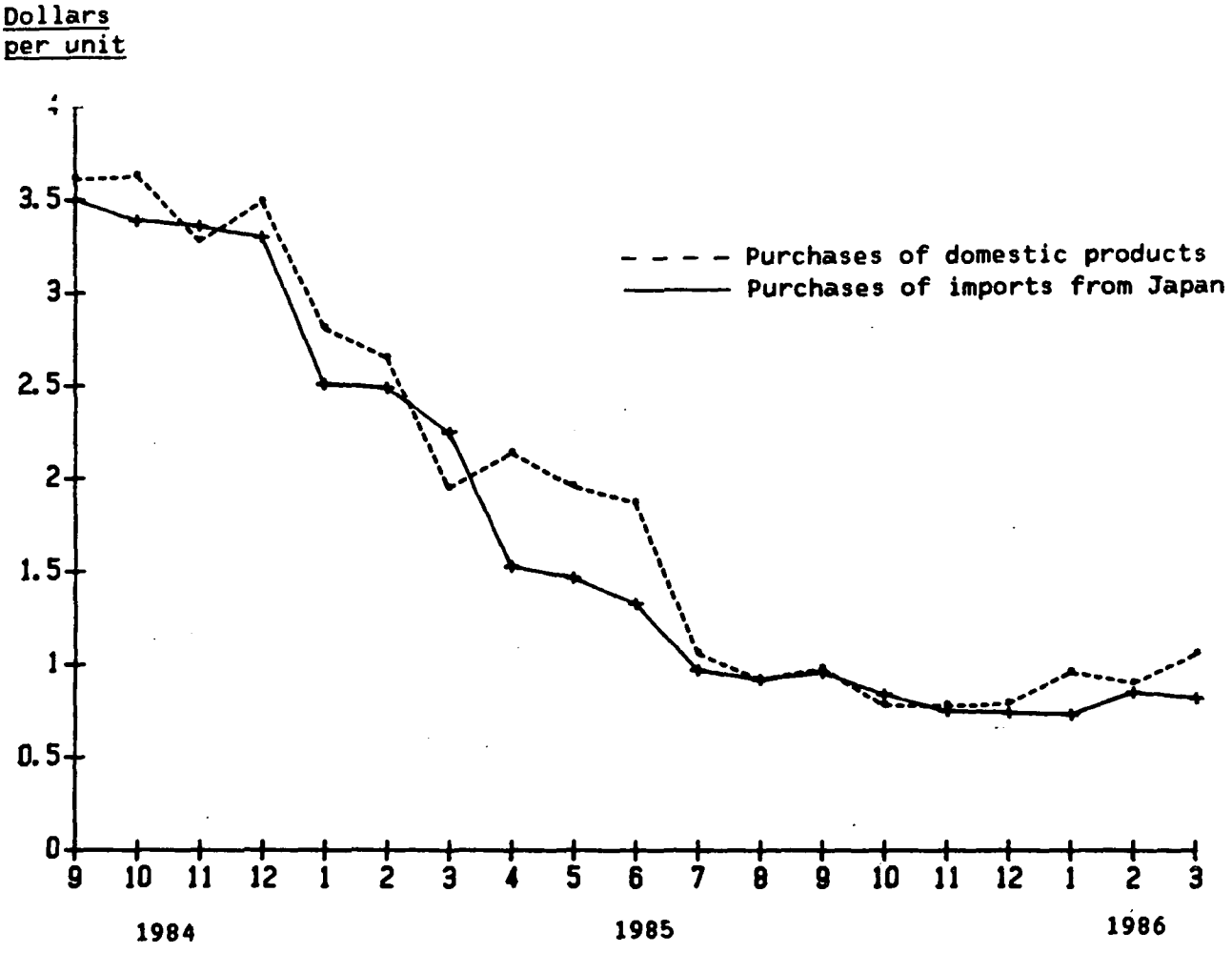
(Per unit)

Month	All distributors				Authorized distributors				Independent distributors			
	U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price		U.S. weighted-average price		Japanese weighted-average price	
	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
1984:												
September	100	$2.93	100	$2.93	100	$2.91	100	$3.20	100	$3.10	100	$2.89
October	89	2.60	94	2.77	89	2.58	91	2.91	85	2.64	94	2.73
November	80	2.36	84	2.47	82	2.38	86	2.76	72	2.23	76	2.19
December	69	2.03	64	1.87	70	2.03	77	2.47	56	1.75	63	1.83
1985:												
January	52	1.52	53	1.56	55	1.60	50	1.61	36	1.12	54	1.55
February	32	.95	41	1.20	32	.93	48	1.55	42	1.30	37	1.07
March	25	.72	32	.93	25	.72	28	.91	23	.71	35	1.02
April	25	.72	26	.75	25	.74	23	.75	18	.57	26	.76
May	22	.64	26	.77	23	.68	28	.89	16	.49	17	.50
June	20	.58	15	.43	22	.64	22	.72	11	.33	11	.33
July	15	.43	17	.50	17	.49	34	1.10	11	.34	13	.39
August	14	.42	15	.44	14	.42	24	.78	-	-	13	.38
September	10	.29	19	.56	15	.43	22	.71	8	.25	14	.40
October	15	.43	13	.38	23	.68	21	.68	11	.35	13	.37
November	17	.50	14	.42	25	.73	17	.55	15	.47	14	.42
December	33	.97	25	.74	33	.97	29	.93	-	-	22	.63
1986:												
January	23	.67	31	.91	22	.65	.36	1.16	24	.76	21	.60
February	38	1.12	34	1.00	39	1.15	32	1.02	26	.80	21	.61
March	-	-	-	-	-	-	-	-	-	-	-	-

1/ First period with data=100.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure 1.—64K DRAM's (150 ns) purchased by office automation OEM's: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Prices of 150 ns 64K DRAM's purchased by telecommunication OEM's.—Factory direct purchase prices of 64K DRAM's by telecommunication OEM's started at a higher average base price than did purchases by office automation OEM's, but also trended downward sharply. Domestic prices fell from a peak of $4.15 in October 1984 to a period low of 90 cents during September–November 1985, representing a decline of 78 percent from the base-period price of $4.11 (table 30 and fig. 2). The largest single downturn occurred in January 1985 when the index fell 37 points as the price dropped from $4.13 to $2.57. In September 1985, the price slid 23 points to the 90-cent period low. In February–March 1986, prices showed marked improvement to a level of $1.59.

Purchase prices by this category of OEM of 64K DRAM's imported from Japan reflect a steady but even sharper downward trend than domestic prices. From the period high of $3.80 (September 1984), the import price fell to a low of 70 cents in January 1986, 82 percent below the base-period level. Two very steep declines marked the subject period—a drop of 22 index points in January 1985 as the price fell from $3.62 to $2.78, and another drop of 20 index points in March 1985 as the average price fell from $2.45 to $1.69. From the period low of 70 cents in January 1986, import prices recovered appreciably to $1.06 in April.

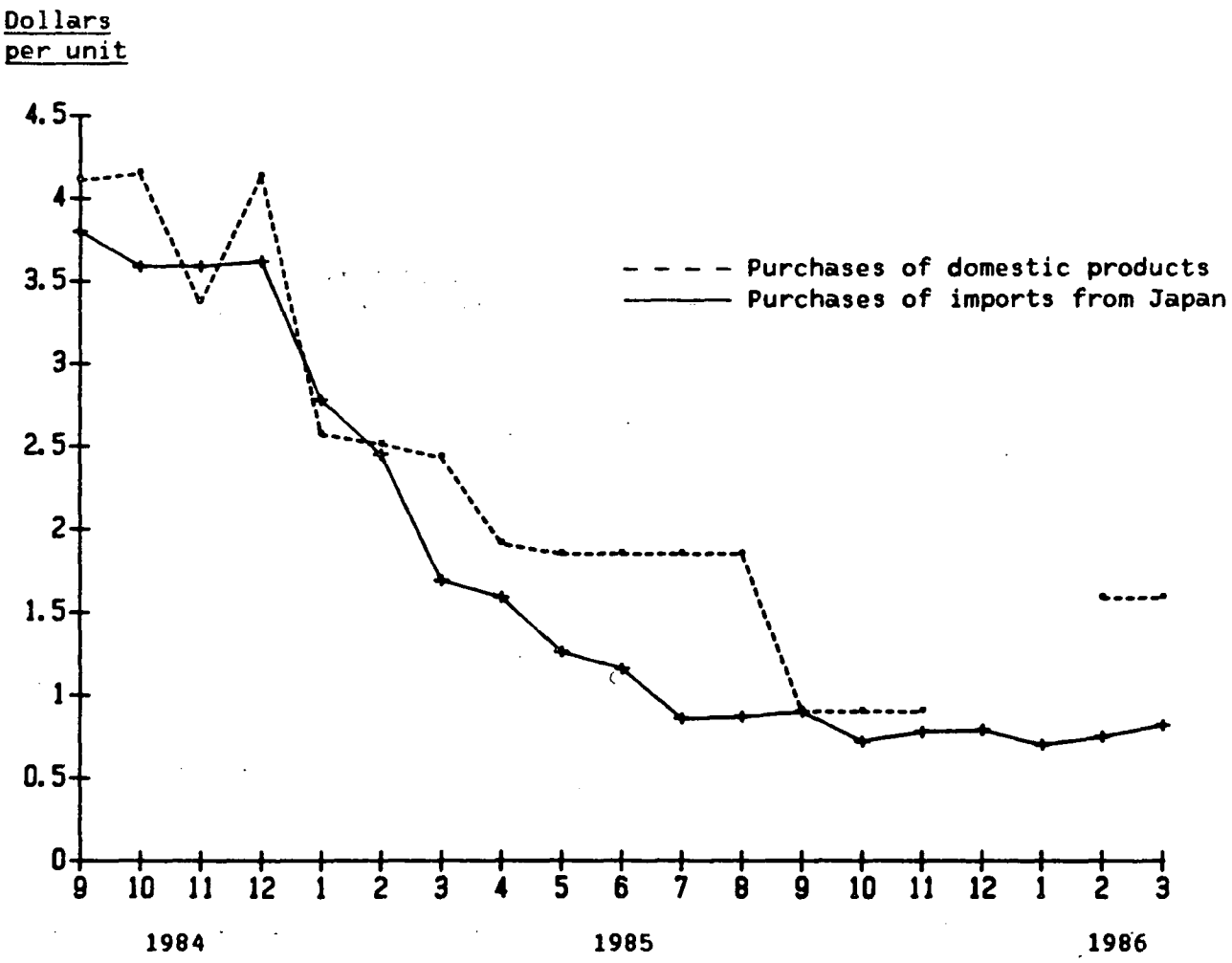
Prices of 150 ns 64K DRAM's purchased by industrial automation OEM's.—Domestic prices for this OEM category of purchasers showed an increase to a peak of $4.05 in October 1984 that held fairly steady until December (table 30 and fig. 3). At that point, a sharp downturn began that extended through August 1985, before prices leveled off at a period low of 75 cents. The largest single price drop occurred in August 1985, when the price fell 20 index points from $1.50 to 75 cents.

Purchase prices for 64K DRAM's imported from Japan by this category of OEM's reflect a similar steep downward trend to a period low of 71 cents in January 1986, a level 81 percent below the base-period price of $3.73. A drop of 26 index points in January 1985 and another of 18 points in March 1985 marked the steepest declines of the period.

Prices of 150 ns 64K DRAM's purchased by consumer products OEM's.—Factory direct purchases of domestic 64K DRAM's by this purchaser group also trended sharply downward from the lowest OEM base-period average of $2.99 to the lowest absolute price level (63 cents in November 1985) of any of the OEM categories (table 30 and fig. 4). The average price fell from a peak of $3.12 in December 1984 to $1.71 in January 1985, a decline of 47 index points. Another sharp drop occurred in April 1985, when the index fell 15 points as the price slid in a single month from $1.84 to $1.41. The downward trend continued to the period low of 63 cents in November 1985, a level 79 percent below the $2.99 base-period price.

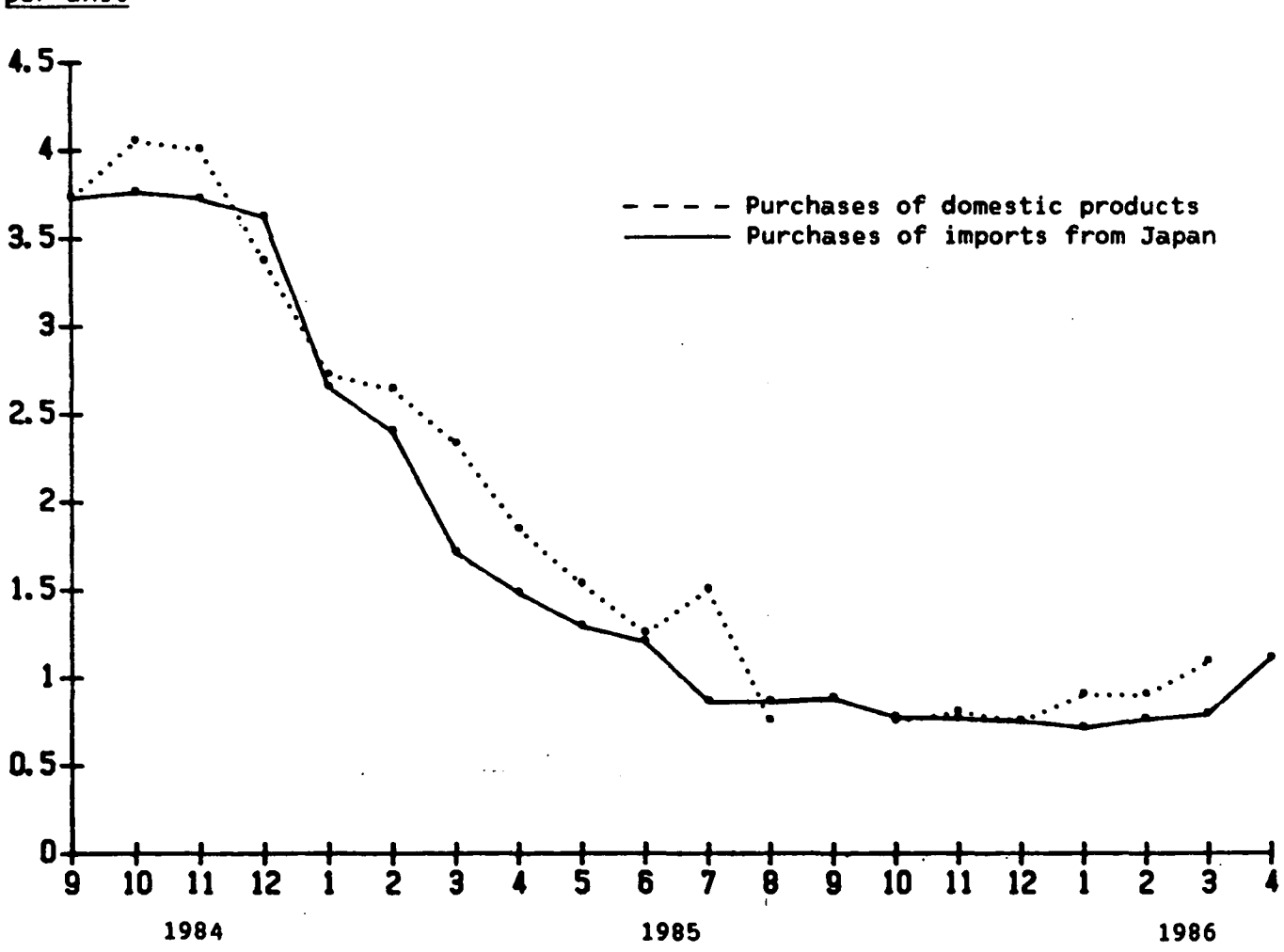
The price trend for imports by this category of OEM purchaser reflects a similar steep downward trend of 81 percent from a higher base-period price of $3.69 to a period low of 70 cents in December 1985. In 1986, prices climbed to $1.11 by April, representing a gain of 11 index points. The sharpest downturns occurred in January, March, and April 1985, when prices plunged by 25, 15, and 13 points, respectively.

Figure 2.—64K DRAM's (150 ns) purchased by telecommunication OEM's: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984–March 1986.



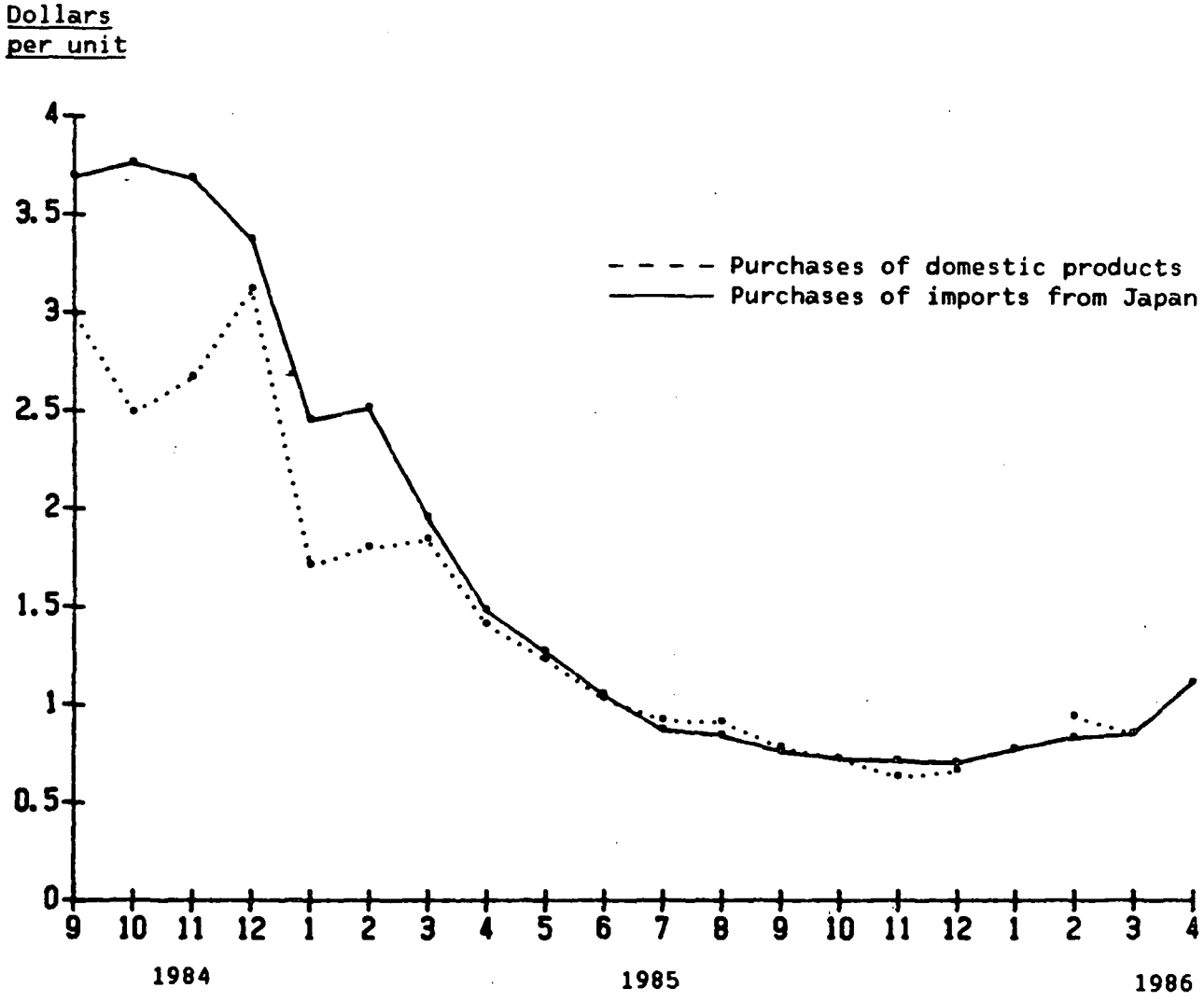
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure 3.—64K DRAM's (150 ns) purchased by industrial automation OEM's: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984-April 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure 4.—64K DRAM's (150 ns) purchased by consumer products OEM's: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984-April 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Prices of 200 ns 64K DRAM's purchased by office automation OEM's.—Domestic prices for these 64K DRAM's purchased by this category of OEM purchasers reflect a temporary upward trend during October-December 1984 that peaked at $3.68 in November, 7 percent above the base-period price of $3.44 (table 31). Again, the price trend turned sharply downward in January 1985, sliding 23 index points as the price fell to $2.83. Prices continued this steep decline in February-March to $1.92. By July, the price was below $1.00, and it reached a period low of 67 cents in January 1986. Prices strengthened in the February-March period, climbing to $1.07.

Imported 64K DRAM's show a steady but irregular downward trend in price that began in October 1984 and continued to a low of 75 cents in October 1985. Prices then held fairly steady into 1986. The sharpest price drops occurred in February and April 1985, when the index fell 14 and 13 points, respectively.

Prices of 200 ns 64K DRAM's purchased by telecommunication OEM's.—Scattered purchases of DRAM's imported from Japan provide a sketchy pattern that shows the price dropping from $3.54 in September 1984 to $1.65 in March 1985, $1.38 in April 1985, and 90 cents in October 1985, a level 75 percent below the base-period price. No data on purchases of domestic 200 ns 64K DRAM's by this category of OEM were received (table 31).

Prices of 200 ns 64K DRAM's purchased by industrial automation OEM's.—Prices of 64K DRAM's purchased by this category of OEM exhibit the same steep slide in January 1985 as previously noted, falling 30 index points to $2.63 from a plateau level of $3.73 in December 1984. In May 1985 the average price plummeted to $1.27 from the April level of $2.40, and it reached a low of 90 cents in September. Prices then turned up by 4 index points to a final reported level of $1.05 in November 1985 (table 31).

Import prices for these DRAM's reflect a steady downward trend. The steepest decline occurred in April 1985, when the price tumbled 13 points to $2.27. An irregular pattern marks the period October 1985-March 1986. A period low of 55 cents in October appears again in December, in contrast to average prices of $1.00 or more in November, January, and March.

Prices of 200 ns 64K DRAM's purchased by consumer products OEM's.—Domestic prices for 64K DRAM's purchased by this category of OEM fell from a period high of $3.23 in October 1984 to a period low of 52 cents in November 1985. At 57 cents, the average price at yearend 1985 was 81 percent below the base-period price of $3.06. By February-March 1986 the price had almost doubled to $1.10 (table 31).

Imports from Japan reflect a price pattern that plateaued during September 1984-January 1985 at an average price of roughly $3.47, then fell 28 index points to $2.50 in February 1985. The downward trend in price continued to 82 cents in September 1985, a price that held through December. A period low of 78 cents marks the February-March 1986 period. In April the price was $1.12.

* * * * * * *

Distributor prices.—As noted previously, the Commission requested purchase price data from both authorized and independent distributors. Although these two channels of distribution purchase their product very differently, they compete vigorously against each other for sales to the same end-user customers. Authorized distributors are vendors of either domestic DRAM's or imported brands, but not both. Sharing shelf space is frowned on not only by domestic (U.S. brand name) producers but also by Japanese (brand name) suppliers. In contrast, independent distributors may buy from any available sources, domestic or offshore. Some independent distributors are stocking distributors; others are more brokers than distributors, although they usually take title to the goods, even if they are presold, to avoid disclosure of the source of the DRAM's. Producers, importers, and authorized distributors label the independent distributors as the grey-market dimension of competition. Industry estimates put the number of grey-market vendors as high as 300. A witness at the hearing stated that he could identify at least 20 in the Maryland/Virginia area alone. 1/ Among the largest of these independent distributors are * * *. These firms have offices in Japan and the Far East.

In order to compare overall and discrete purchase prices in the two distributor channels of distribution, tables 32 and 33 present weighted-average net purchase prices for all distributors, authorized distributors, and independent distributors.

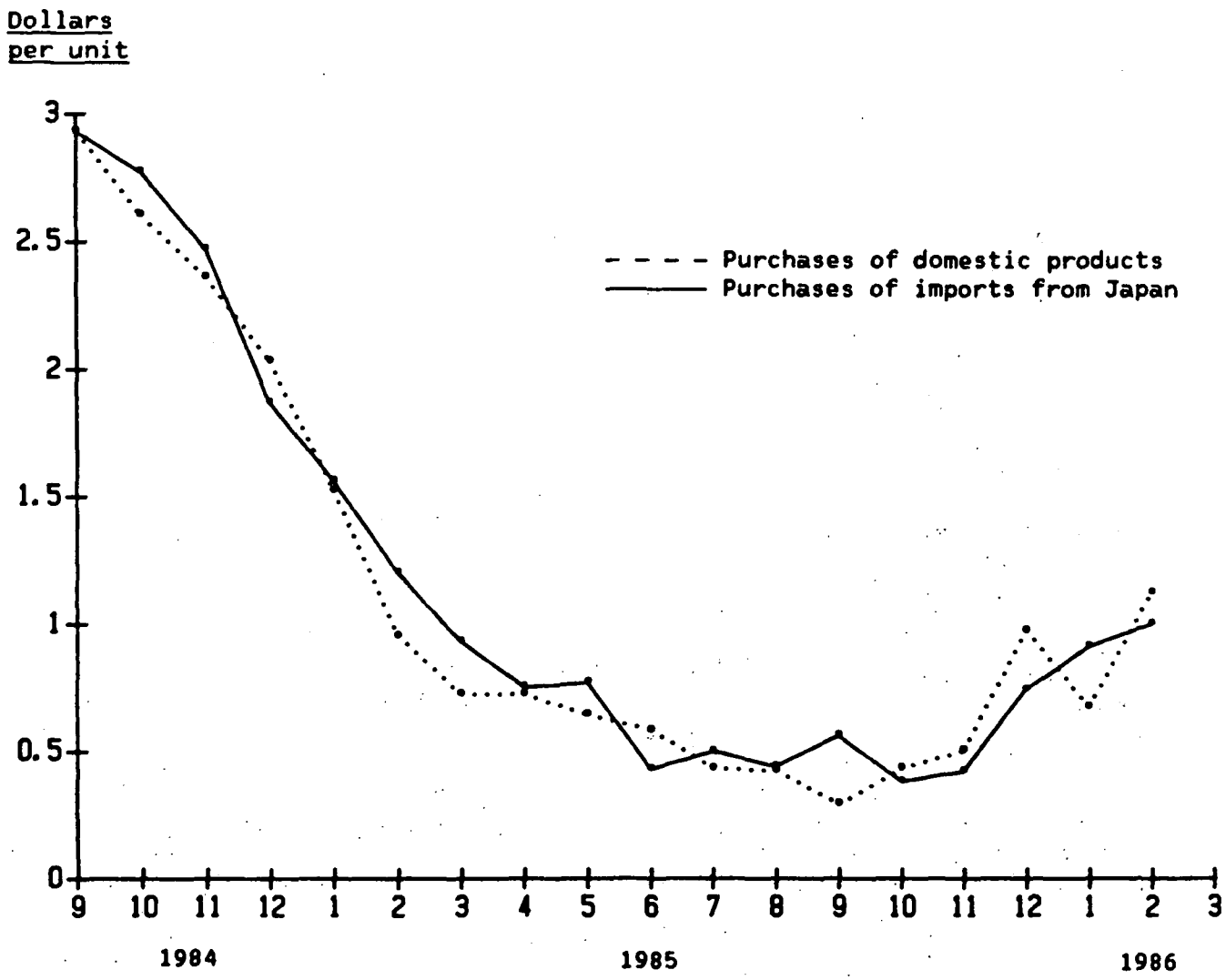
Prices of 150 ns 64K DRAM's purchased by all distributors.—The domestic price of $2.64 in September 1984, the base period, was almost 15 percent below the import price of $3.10. Domestic prices declined steadily over the next 11 months to a low of 38 cents in August 1985, 86 percent below the initial price level. At that point prices climbed slowly up to 99 cents in March 1986 (table 32 and fig. 5).

The trend in import prices also was steadily downward to an August 1985 low of 43 cents; prices held at about that level through October, then moved up month by month to 72 cents in March 1986.

Prices of 150 ns 64K DRAM's purchased by authorized distributors.—Excluding the weight of purchase prices of domestic DRAM's by independent distributors for a net weighted-average price series for authorized distributors did not significantly change either the trend or the absolute price level of domestic prices. Import prices, however, were generally higher for authorized distributors. The import price fell steadily from $3.23 in September 1984 to a period low of 57 cents in June 1985. The sharpest monthly decline was a 24-point index drop in February 1985 as the price slid from $2.03 to $1.27. From June 1985 through February 1986 the import price moved

1/ * * * provided this insight to Commission staff after the Apr. 30 hearing.

Figure 5.—64K DRAM's (150 ns) purchased by all distributors: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984–March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

irregularly up and down (by 2 to 3 index points); it then jumped to 75 cents in March 1986 (table 32 and fig. 6).

Prices of 150 ns 64K DRAM's purchased by independent distributors.—A steep drop in 1984 marked the domestic price trend in sales to independent distributors. The average price fell 53 percent from $3.07 in September 1984 to $1.44 in January 1985, lost 13 index points in March to reach 89 cents, then declined month by month to hit a low of 32 cents in July, 90 percent below the base-period level. From August through October 1985 the price ranged from 36 cents to 44 cents; it then climbed sharply upward to 81 cents in February 1986, 16 index points above the period low (table 32 and fig. 7).

The import price decline was even steeper in late 1984 than was the domestic price drop. Import prices fell 56 percent between September 1984 and January 1985, or from $3.01 to $1.32. Prices fell to a low of 39 cents in July 1985, and held at 39 to 40 cents through October. An upward trend began in November, and continued to a high of 86 cents in February 1986; prices then fell to 69 cents in March.

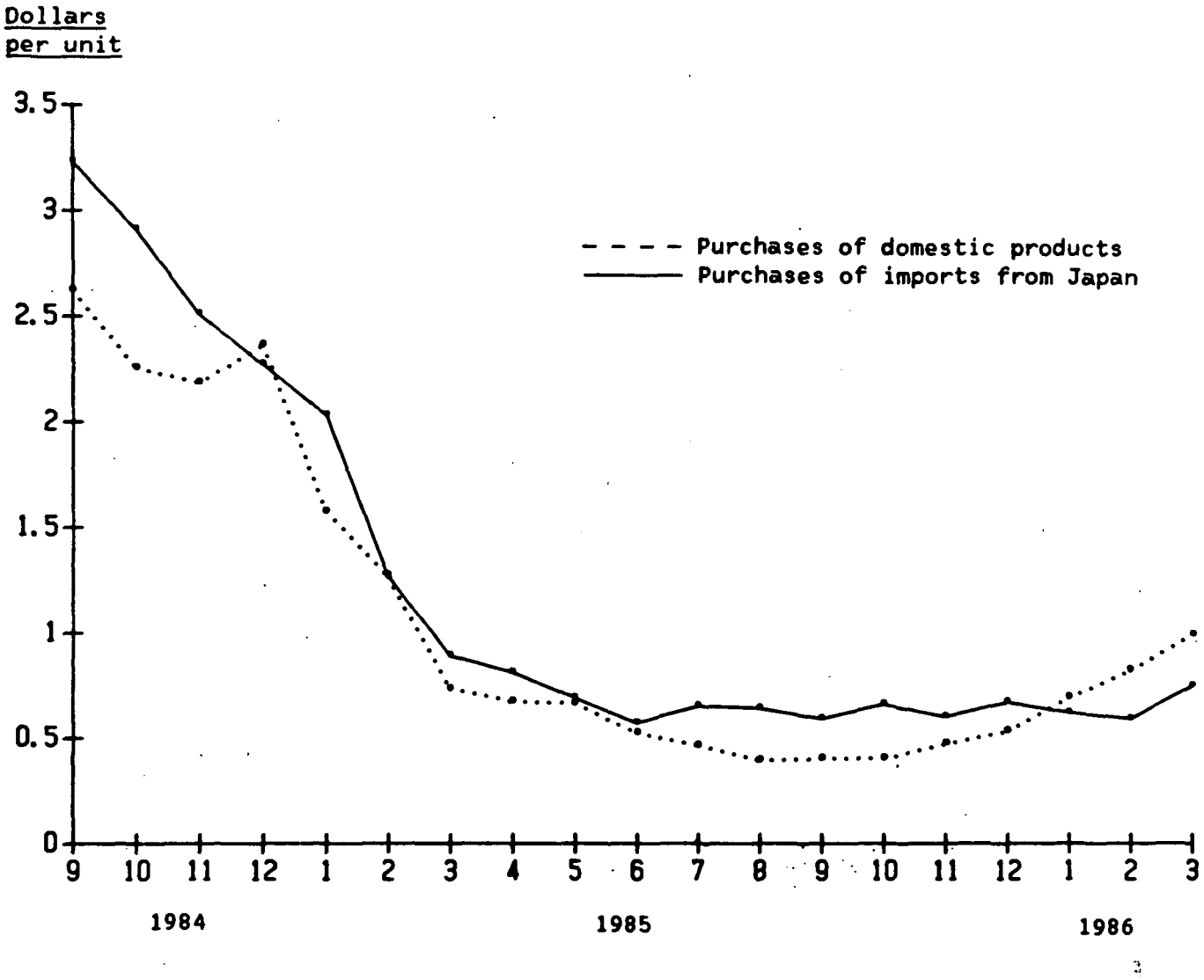
Prices of 200 ns 64K DRAM's purchased by all distributors.—In September 1984 the average price for these domestic and imported DRAM's was the same, $2.93. By January 1985 domestic prices had dropped 48 percent to $1.52; in February they fell 20 index points to 95 cents. The downward trend continued through September 1985 to a period low of 29 cents. Prices recovered month by month during October-February to end the period at $1.12, a level 62 percent below the base-period price (table 33).

The same steep price decline marked the import price trend as prices dropped 47 percent to $1.56 in January 1985, slid to 93 cents in March, then fell irregularly to a period low of 38 cents in October 1985, 87 percent below the base-period price of $2.93. During the next 4 months prices climbed to an average of $1.00 in February 1986.

Prices of 200 ns 64K DRAM's purchased by authorized distributors.—Absent the weights of domestic prices of these DRAM's sold to independent distributors, the price trend of sales to authorized distributors shows almost an identical trend to that for all distributors. The period low, however, appears in August 1985 at 42 cents, and the upward trend that followed was sharper to end the period at $1.15 in February 1986 (table 33).

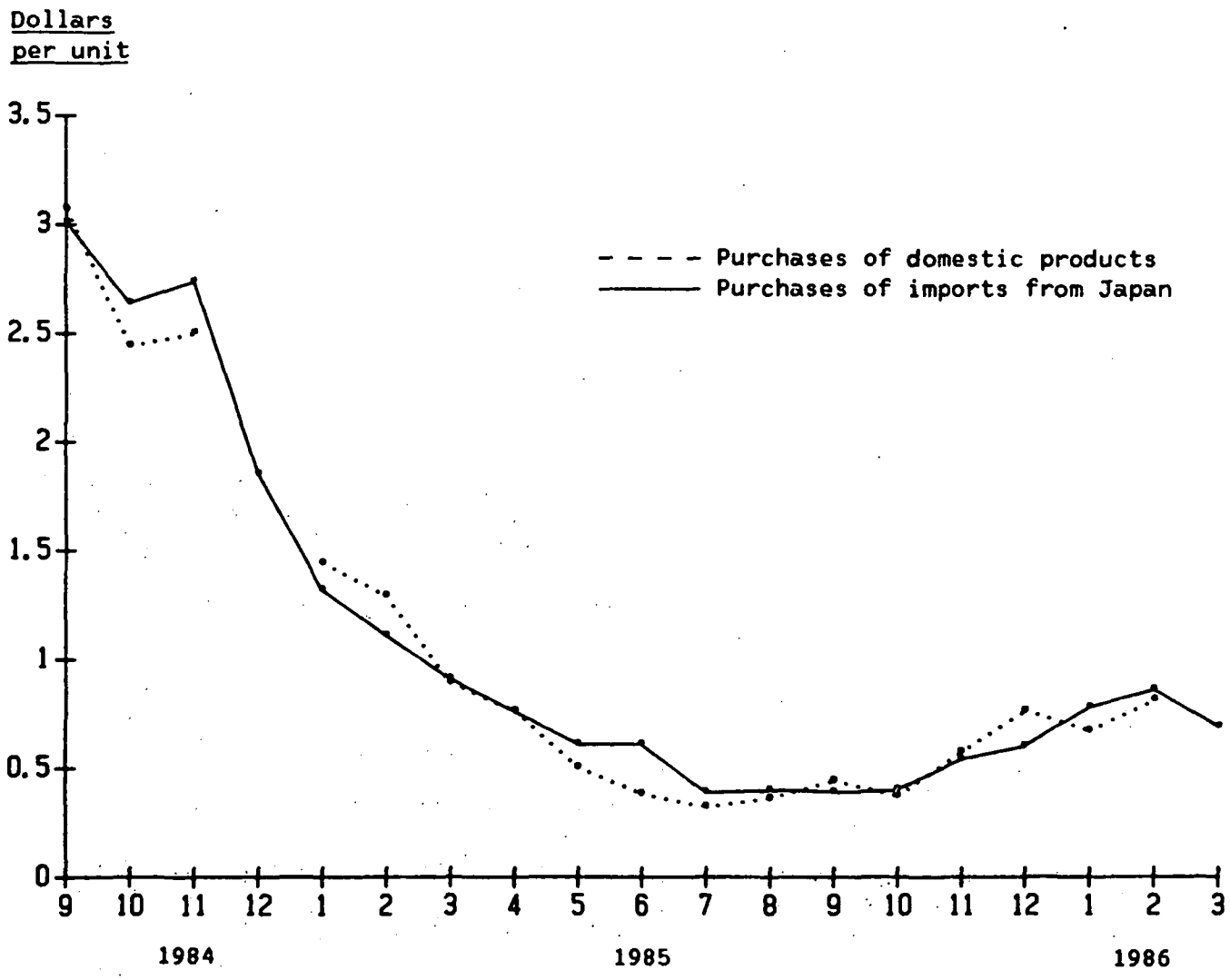
Again, import prices were generally higher for authorized distributors than for independent distributors. From a base-period price of $3.20, the price of imports from Japan fell by almost one-half to $1.61 in January 1985, and lost 22 additional index points by March to hit 91 cents. Average prices were irregular from April through December 1985, ranging from a high of $1.10 in July to a low of 55 cents in November. In January 1986, import prices rose to $1.16; they then fell back to $1.02 in February.

Figure 6.—64K DRAM's (150 ns) purchased by authorized distributors: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984–March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure 7.—64K DRAM's (150 ns) purchased by independent distributors: Weighted-average purchase prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Prices of 200 ns 64K DRAM's purchased by independent distributors.—The price trend for purchases of domestic 64K DRAM's by independent distributors reflects the same steep downturn from September 1984 to January 1985, when the average price fell 64 percent from $3.10 to $1.12. Thereafter, the price declined to a low of 25 cents in September, then moved upward to a February 1986 recovery high of 80 cents, still 74 percent below the base-period price level (table 33).

Import prices followed a similar downward trend, with a 46-percent drop to $1.55 in January 1985 from the September 1984 price of $2.89. The decline continued through June 1985 to 33 cents; prices then rose irregularly to 61 cents in February 1986.

Margins of underselling/overselling

Monthly comparisons of the weighted-average net purchase prices for the two representative 64K DRAM devices (tables 30 through 33) provided the basis for the margins of underselling or overselling presented in tables 34 through 37. The margins of underselling or overselling by imports from Japan are shown in dollars and as a percentage. Margins based on monthly comparisons were possible for most months of the subject period and are presented by class of customer. In general, there is a pattern of mostly underselling by imports in purchases by office automation, telecommunication, and industrial automation OEM's, and a pattern of mostly overselling by imports in purchases by consumer products OEM's and both categories of distributors. 1/

150 ns 64K DRAM's purchased by office automation OEM's.—Nineteen month-by-month comparisons of weighted-average prices reveal that the imported Japanese product purchased by this OEM category of purchasers undersold domestic DRAM's in 15 instances, by margins that ranged from 2.0 to 29.2 percent or from 2 cents to 55 cents per unit (table 34). The highest margins of underselling occurred in the April-June 1985 period, a time in which the price trend analysis shows steep declines in the prices of DRAM's imported from Japan. In July 1985, the weighted-average domestic price fell sharply and the margin of underselling narrowed. The four scattered instances of overselling by the imported product reflect margins of 0.2 to 15.7 percent, or from less than 0.5 to 30 cents per device. 2/

1/ These general patterns of underselling/overselling also hold true for the selling price data presented in appendix C. In addition to sales to OEM's and distributors, producers and importers also provided selling price data for sales to subcontractors and spot-market purchasers. For 150 ns 64K DRAM's (table C-3), overselling by imports from Japan was reported in 15 of 19 periods in sales to subcontractors and in 13 of 18 periods for spot-market sales. For 200 ns 64K DRAM's (table C-4), overselling by imports from Japan was reported in 10 of 16 periods in sales to subcontractors and in 10 of 18 periods for spot-market sales. Specific margins of underselling/overselling are presented in tables C-3 and C-4.

2/ Comparisons of weighted-average selling prices calculated from price data submitted by producers and importers for sales to office automation OEM's (table C-1) show 14 examples of underselling by imported DRAM's from Japan. Margins ranged from 0.7 to 29.8 percent or from 2 to 36 cents. Overselling margins ranged from 20.4 to 72.5 percent or from 21 cents to $1.06.

Table 34.—64K DRAM's (150 ns) purchased by OEM's: Average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, 2/ by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Office automation OEM		Telecommunication OEM		Industrial automation OEM		Consumer products OEM	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
1984:								
September	$0.11	3.12	$0.32	7.67	$-0.00	-0.05	$-0.70	-23.41
October	.24	6.58	.56	13.55	.29	7.13	-1.28	-51.36
November	-.08	-2.30	-.22	-6.43	.27	6.84	-1.01	-37.67
December	.19	5.32	.51	12.35	-.25	-7.44	-.25	-7.97
1985:								
January	.28	10.68	-.21	-8.21	.07	2.66	-.74	-43.61
February	.14	6.04	.06	2.39	.24	9.07	-.71	-39.25
March	-.30	-15.71	.74	30.32	.62	26.54	-.11	-6.00
April	.57	28.50	.32	16.55	.36	19.48	-.07	-4.92
May	.44	25.00	.59	31.69	.25	15.99	-.04	-3.27
June	.55	29.25	.69	37.40	.05	3.71	-.02	-1.75
July	.09	8.88	.99	53.68	.64	42.87	.06	6.05
August	-.00	-.25	.98	53.01	-.11	-14.25	.07	8.00
September	.02	2.00	-.00	-.43	-	-	.02	3.11
October	-.05	-7.01	.18	20.46	-.02	-3.09	-.00	-.64
November	.03	4.34	.12	13.60	.04	5.32	-.08	-12.07
December	.04	5.70	-	-	-.00	-.16	-.04	-6.62
1986:								
January	.23	23.96	-	-	.19	21.64	-	-
February	.05	5.74	.84	52.98	.14	15.57	.11	11.99
March	.24	22.38	.77	48.38	.30	27.65	.00	.28

1/ Overselling is shown with a negative (-) sign.
2/ Margins are calculated from unrounded weighted-average prices.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 35.—64K DRAM's (200 ns) purchased by OEM's: Average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, 2/ by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Office automation OEM		Telecommunication OEM		Industrial automation OEM		Consumer products OEM	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
1984:								
September	$-0.10	-2.93	-	-	$0.16	4.36	$-0.35	-11.55
October	.35	9.59	-	-	-	-	-.26	-8.13
November	.27	7.41	-	-	-	-	-.33	-10.81
December	.32	8.81	-	-	.34	9.20	-.97	-38.76
1985:								
January	-.13	-4.74	-	-	-.40	-15.24	-2.04	-141.57
February	.03	1.36	-	-	-.27	-10.37	-1.44	-136.04
March	-.13	-6.93	-	-	-.19	-7.71	-.50	-38.72
April	.01	.61	-	-	.12	5.15	-.63	-67.81
May	-.37	-30.44	-	-	-.99	-77.85	-.17	-14.81
June	.02	1.57	-	-	-	-	-.37	-50.00
July	.19	19.57	-	-	-	-	-.15	-20.00
August	.02	2.86	-	-	-	-		
September	-.09	-12.41	-	-	-	-		
October	-.02	-3.38	-	-	-	-		
November	-.05	-6.65	-	-	-.05	-4.76	-.31	-59.04
December	-.03	-4.53	-	-	-	-	-.26	-45.87
1986:								
January	-.15	-22.50	-	-	-	-		
February	.12	13.00	-	-	-	-	.31	28.64
March	.31	28.79	-	-	-	-	.31	28.64

1/ Overselling is shown with a negative (-) sign.
2/ Margins are calculated from unrounded weighted-average prices.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 36.—64K DRAM's (150 ns) purchased by distributors: Average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, 2/ by classes of distributors and by months, September 1984-March 1986

(Per unit)

Month	All distributors		Authorized distributors		Independent distributors		Authorized vs. independent 3/	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
1984:								
September	$-0.46	-17.25	$-0.60	-22.92	$0.06	2.00	$-0.39	-14.82
October	-.45	-19.54	-.66	-29.36	-.20	-8.27	-.39	-17.22
November	-.46	-21.24	-.33	-14.91	-.24	-9.41	-.55	-25.24
December	.29	12.33	.10	4.03	-	-	.52	21.83
1985:								
January	.02	1.33	-.45	-28.81	.12	8.42	.26	16.40
February	.08	6.70	-.01	-1.02	.17	13.52	.14	11.49
March	-.13	-17.71	-.15	-21.13	-.02	-2.28	-.18	-24.80
April	-.10	-14.71	-.14	-21.27	-.00	-.39	-.09	-14.01
May	-.02	-2.48	-.04	-5.91	-.10	-20.57	.05	7.34
June	-.08	-15.65	-.06	-10.82	-.23	-59.56	-.10	-19.10
July	-.04	-8.76	-.19	-40.77	-.07	-21.83	.07	15.01
August	-.05	-12.32	-.25	-62.92	-.03	-8.81	-.00	-.31
September	-.04	-10.59	-.19	-47.29	.05	10.44	.00	.69
October	-.04	-10.39	-.26	-65.41	-.03	-7.16	-.00	-.31
November	-.04	-8.74	-.13	-26.89	.03	5.59	-.07	-13.91
December	-.07	-13.06	-.13	-25.02	.16	21.03	-.06	-12.01
1986:								
January	.00	.15	.06	9.33	-.11	-16.99	-.09	-13.37
February	.12	14.61	.23	28.50	-.06	-7.28	-.04	-4.88
March	.26	26.74	.24	23.87	-	-	.29	29.80

1/ Overselling is shown with a negative (-) sign.

2/ Margins are calculated from unrounded weighted-average prices.

3/ These margins are based on comparisons of authorized distributors' domestic purchase prices for 64K DRAM's and independent distributors' purchase prices for 64K DRAM's imported from Japan (table 32).

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 37.—64K DRAM's (200 ns) purchased by distributors: Average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, 2/ by classes of distributors and by months, September 1984-March 1986

(Per unit)

Month	All distributors		Authorized distributors		Independent distributors		Authorized vs. independent 3/	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
1984:								
September	$-0.00	-0.10	$-0.29	-10.06	$0.21	6.76	$0.02	0.69
October	-.18	-6.78	-.33	-12.91	-.08	-3.19	-.15	-5.82
November	-.11	-4.55	-.37	-15.66	.04	1.58	.19	8.16
December	.17	8.17	-.44	-21.62	-.08	-4.46	.21	10.17
1985:								
January	-.04	-2.30	-.00	-.27	-.43	-37.98	.05	3.33
February	-.26	-27.09	-.62	-66.37	.23	17.99	-.13	-14.23
March	-.21	-28.51	-.19	-26.62	-.31	-43.80	-.29	-40.56
April	-.03	-3.78	-.01	-1.40	-.19	-33.15	-.03	-3.69
May	-.13	-19.44	-.22	-32.42	-.01	-2.88	.18	25.96
June	.15	25.43	-.08	-12.86	.00	.53	.31	48.13
July	-.08	-17.97	-.61	122.95	-.05	-13.57	.11	21.74
August	-.02	-4.95	-.36	-84.56	-	-	.05	11.30
September	-.27	-92.28	-.28	-64.36	-.15	-58.11	.04	8.48
October	.05	12.50	-.00	-.49	-.02	-6.65	.30	45.02
November	.08	15.55	-.18	24.30	.04	9.36	.30	41.94
December	.23	23.54	.04	4.24	-	-	.34	34.87
1986:								
January	-.24	-35.81	-.51	-77.86	.16	21.00	.05	7.99
February	.11	10.17	.12	10.78	.19	23.75	.54	46.88
March	-	-	-	-	-	-	-	-

1/ Overselling is shown with a negative (-) sign.

2/ Margins are calculated from unrounded weighted-average prices.

3/ These margins are based on comparisons of authorized distributors' domestic purchase prices for 64K DRAM's and independent distributors' purchase prices for 64K DRAM's imported from Japan (table 33).

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

150 ns 64K DRAM's purchased by telecommunication OEM's.—Price data on purchases by this category of OEM enabled 17 monthly comparisons of weighted-average domestic and import prices. In 14 of these comparisons the DRAM's imported from Japan undersold the domestic product. The margins of underselling ranged from 2.4 to 53.7 percent, or from 6 cents to 99 cents per device (table 34). Again, the highest margins occurred during the period of March through August 1985, but high margins reappear in February-March 1986. The three instances of overselling by the Japanese DRAM's show margins of 0.4 to 8.2 percent, or from less than 0.5 to 21 cents per unit. 1/

150 ns 64K DRAM's purchased by industrial automation OEM's.—Eighteen monthly comparisons of weighted-average prices were possible for purchases by this OEM category of purchasers of 64K DRAM's. Thirteen of these comparisons reveal underselling by the imported product from Japan. The margins ranged from 2.7 to 42.9 percent, or from 7 to 64 cents per device. Margins in the five scattered instances of overselling ranged from 0.1 to 14.2 percent, or from less than 0.5 to 11 cents per DRAM (table 34). 2/

150 ns 64K DRAM's purchased by consumer products OEM's.—Comparisons of 18 monthly weighted-average prices of DRAM's purchased by this category of purchaser show a strikingly different pattern. The weighted-average price of DRAM's imported from Japan was above the domestic price in 13 of the 18 months. Margins ranged from 0.6 to 51.4 percent, or from less than 0.5 cents to $1.28 (table 34). The largest margins of overselling by the Japanese products occurred in the September 1984-February 1985 period. It is during this period that the Micron price cut, the fall off in demand, and the increase in supply of 64K DRAM's exerted downward price pressure throughout the market and caused prices to be renegotiated on backlog shipments of 64K DRAM's from prior contracts. Producers, importers, and OEM purchasers have indicated that the highly competitive consumer end-product market, especially in a down market, makes the derived demand for 64K DRAM's by this OEM category very price sensitive. Moreover, the volume of 64K DRAM's sold to this market segment is very high. 3/

1/ Ten of 19 comparisons of producer/importer weighted-average prices for sales to telecommunication OEM's (table C-1) show underselling by Japanese imported DRAM's at margins that ranged from 0.1 to 48.8 percent, or from less than 0.5 to 85 cents. Overselling margins ranged from 3.7 to 33.0 percent, or from 14 to 78 cents.

2/ Eleven of 18 comparisons of weighted-average producer and importer prices for sales to industrial automation OEM's (table C-1) reflect underselling by margins that ranged from 4.8 to 67.8 percent, or from 4 cents to $1.69. Overselling margins ranged from 6.8 to 53.1 percent, or from 24 cents to $1.30.

3/ The personal computer and computer game manufacturers are among the largest key accounts for 64K DRAM's. As such, they are in a position to exercise a considerable amount of "monopsonist power" in negotiating or renegotiating price. Their volume provides a very attractive base load for production and utilization of capacity, especially in a down market. Moreover, these OEM's had very large inventory overhangs during this time period, adding to their strong negotiating position for honoring existent contracts only at renegotiated prices.

The price trend data indicates that domestic producers opted to renegotiate prices to these OEM customers to lower levels about 3 to 4 months before importers of the Japanese product. In January 1985 the price of imported Japanese DRAM's fell sharply, as did the domestic price. By March, however, the Japanese price was within 11 cents of the domestic price. From April through December 1985 the price spread between the domestic and imported Japanese DRAM's had narrowed to a range of 2 to 8 cents. The five instances of underselling by imported DRAM's from Japan show margins that ranged from 0.3 to 12 percent, or from less than 0.5 to 11 cents per device. 1/

200 ns 64K DRAM's purchased by office automation OEM's.—Nineteen comparisons of weighted-average prices of the above DRAM's purchased by this category of OEM reveal a mixed pattern of underselling and overselling. In 10 scattered months the imported DRAM's from Japan undersold the domestic DRAM's, by margins that ranged from 0.6 to 28.8 percent, or from 1 to 31 cents per DRAM (table 35).

Imported Japanese DRAM's oversold domestic DRAM's in 9 months, by margins that ranged from 2.9 to 30.4 percent, or from 10 to 37 cents per device. The price trend data indicate that the price of Japanese DRAM's dropped to 10 percent below the domestic price during October-December 1984 from a slightly higher (3 percent) base price. In 1985, the spread between domestic and import prices was narrow (1 to 5 cents), except for 3 or 4 scattered months in which the spread ranged between 9 and 37 cents on the side of overselling and one month when the underselling margin was 9 cents. 2/

200 ns 64K DRAM's purchased by telecommunication OEM's.—No comparisons were possible because purchasers did not submit any prices for domestic 64K DRAM's.

200 ns 64K DRAM's purchased by industrial automation OEM's.—Eight comparisons of monthly weighted-average prices for purchases of these 64K DRAM's by industrial automation OEM's show a mixed pattern of underselling and overselling by imported DRAM's from Japan. In five instances the imported DRAM's were priced above the domestic DRAM's, by margins of 4.8 to 77.9 percent, or from 5 to 99 cents per device. In three comparisons the imported DRAM's undersold the domestic DRAM's, by margins that ranged from 4.4 to 9.2 percent, or from 16 to 34 cents per unit (table 35).

1/ Thirteen of 17 comparisons of weighted-average producer and importer prices for sales to consumer products OEM's (table C-1) showed margins of overselling by imported DRAM's from Japan. These margins ranged from 3.0 to 83.2 percent, or from 5 cents to $1.41. Underselling margins ranged from 1.9 to 17.4 percent, or from 1 to 15 cents.

2/ Nine of 18 comparisons of weighted-average domestic producer and importer prices for sales to office automation OEM's (table C-2) showed underselling. The underselling margins ranged from 1.6 to 34.3 percent, or from 1 to 50 cents. Overselling margins by imported DRAM's from Japan ranged from 2.0 to 35.6 percent, or from 5 to 29 cents.

200 ns 64K DRAM's purchased by consumer products OEM's.—Thirteen of 15 month-by-month comparisons of weighted-average purchase prices for DRAM's by this OEM category of purchasers indicate overselling by the product imported from Japan. The margins range from 8.1 to 141.6 percent, or from 26 cents to $2.04 per device. The price trend data show that the Japanese price held steady during the period September 1984 through January 1985 at roughly $3.45 per DRAM. The domestic price held at the $3.00 level through September-November 1984, then dropped sharply to less than one-half that level as domestic producers renegotiated prices with these OEM's as market prices fell. The Japanese weighted-average prices also declined sharply, but on a month-to-month basis held at higher levels than the domestic prices until February-March 1986. During that period the imported DRAM's from Japan undersold the domestic DRAM's by a margin of 28.6 percent, or 31 cents per device (table 35). 1/

* * * * * * *

150 ns 64K DRAM's purchased by all distributors. 2/—Month-by-month comparisons of weighted-average prices paid by all distributors are possible for 19 months of the subject time period. During roughly two-thirds of the time period (13 months) imported DRAM prices were above domestic prices, by margins that ranged from 2.5 to 21.2 percent, or from 2 to 46 cents. Six comparisons reflect margins of underselling; 3 of these occurred in the December 1984-February 1985 period and 3 in the January-March 1986 period. Margins ranged from 0.2 to 26.7 percent, or from less than 0.5 to 26 cents per DRAM (table 36). 3/

1/ Seven month-by-month comparisons of weighted-average producer and importer prices for sales to consumer products OEM's (table C-2) all reflected overselling by imported DRAM's from Japan. Margins ranged from 0.5 to 46.6 percent, or from 1 to 89 cents.

2/ The policy of price protection to distributors, implemented by producers and importers with authorization in specific instances for distributors to "ship from stock and debit" the vendor for the difference between the original "buy price" and the authorized meet competition price casts a shadow on the comparisons of these prices. To the extent that respondent firms may well have reported buy prices rather than adjusted ship from stock and debit prices, the data comparisons would be flawed. In the preliminary investigation, Hitachi submitted unadjusted buy prices without so noting. One key distributor, Marshall, initially submitted buy prices in its final investigation questionnaire response but Marshall revised its data at staff request. It is not possible to verify distributors purchase price data against producer and importer price data because the problem of tracing price adjustments to meet competition is common to both sellers and purchasers.

3/ Sixteen of 19 comparisons of weighted-average domestic producer and importer prices for sales to distributors (table C-3) showed overselling. The overselling margins ranged from 3.6 to 93.3 percent, or from 2 to 40 cents. Underselling margins by imported DRAM's from Japan ranged from 1.2 to 22.4 percent, or from 1 to 15 cents.

150 ns 64K DRAM's purchased by authorized distributors.—Fifteen of 19 monthly comparisons of weighted-average prices of DRAM's purchased by this category of distributors show that imported Japanese DRAM's were priced above the domestic DRAM's. Margins of overselling ranged from 1.0 to 65.4 percent, or from 1 to 26 cents. The four comparisons that reflect underselling had margins that ranged from 4.0 to 28.5 percent, or from 10 to 23 cents. Three of the four instances of underselling occurred in the January-March 1986 period (table 36).

150 ns 64K DRAM's purchased by independent distributors.—Weighted-average price data for purchases of these DRAM's by independent distributors enabled 17 month-by-month comparisons. Eleven of these comparisons show margins of overselling by the imported Japanese product, which ranged from 0.4 to 59.6 percent or from less than 0.5 to 23 cents. In six instances imported Japanese DRAM's were purchased at lower prices than domestic DRAM's. The margins of underselling ranged from 2.0 to 21.0 percent, or from 6 to 16 cents per unit (table 36).

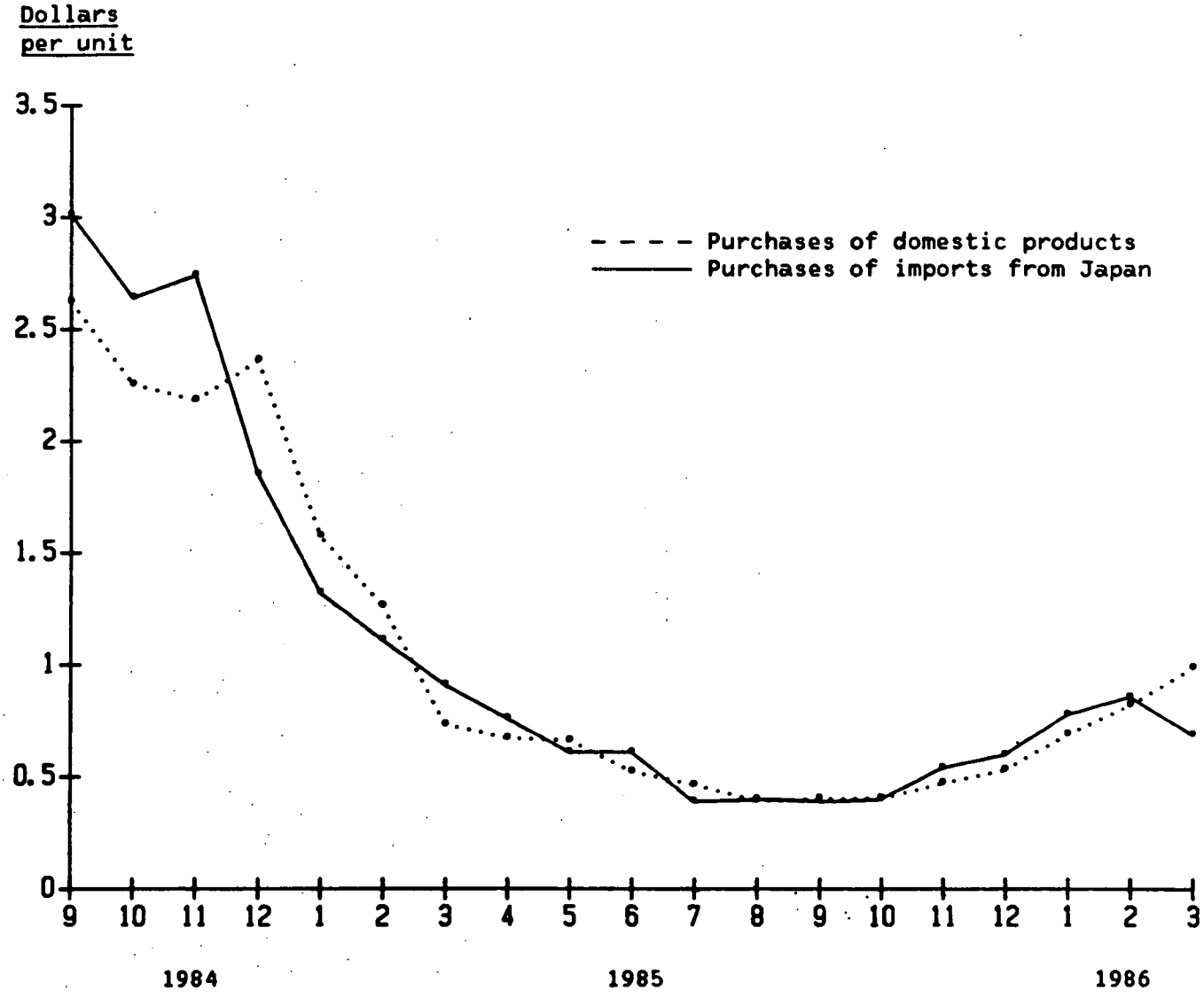
150 ns 64K domestic DRAM's purchased by authorized distributors and imported Japanese DRAM's purchased by independent distributors.—This comparison is made to obtain a perspective of the so-called grey-market import dimension of price competition against authorized distributors purchasing domestic 64K DRAM's. In 12 comparisons there was overselling by the imported DRAM's; the margins ranged from 0.3 to 25.2 percent, or from less than 0.5 to 55 cents. In the remaining 7 comparisons the imported Japanese DRAM's undersold the domestic DRAM's, by margins that ranged from 0.7 to 29.8 percent, or from less than 0.5 to 29 cents (table 36 and fig. 8).

200 ns 64K DRAM's purchased by all distributors.—Of the 19 month-by-month comparisons of these weighted-average prices, 13 indicate overselling by imported Japanese DRAM's, by margins that ranged from 0.1 to 92.3 percent, or from less than 0.5 to 27 cents. The other 6 show that imported DRAM's from Japan undersold the domestic product. Margins of underselling ranged from 8.2 to 23.5 percent, or from 17 to 23 cents (table 37). 1/

200 ns 64K DRAM's purchased by authorized distributors.—In 16 of 19 possible comparisons imports oversold domestic products in purchases by authorized distributors. Overselling margins ranged from 0.3 to 122.9 percent or from less than 0.5 to 61 cents. The other 3 comparisons reflect underselling by the DRAM's imported from Japan. The margins ranged from 4.2 to 24.3 percent or from 4 to 18 cents. All 3 instances occurred within the last 4 months of the subject time period (table 37).

1/ Fourteen of 19 comparisons of weighted-average domestic producer and importer prices for sales to distributors (table C-3) showed overselling. The overselling margins ranged from 1.7 to 96.4 percent, or from 1 cent to $1.05. Underselling margins by imported DRAM's from Japan ranged from 2.8 to 27.0 percent, or from 2 to 26 cents.

Figure 8.—64K DRAM's (150 ns): Weighted-average purchase prices for purchases of domestic products by authorized distributors and for purchases of imports from Japan by independent distributors, by months, September 1984-March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

200 ns 64K DRAM's purchased by independent distributors.—Sixteen month-by-month comparisons of weighted-average prices of DRAM's purchased by independent distributors show a mixed pattern of underselling and overselling by imports from Japan (table 37). In 9 months the imported product oversold domestic DRAM's, by margins that ranged from 2.9 to 58.1 percent, or from 1 to 15 cents. In the other 7 months imported DRAM's undersold domestic DRAM's, by margins that ranged from 0.5 to 23.8 percent, or from less than 0.5 to 19 cents per DRAM.

200 ns 64K domestic DRAM's purchased by authorized distributors and imported Japanese DRAM's purchased by independent distributors.—Fourteen of the 18 month-by-month comparisons of purchases by these firms reveal underselling by the Japanese DRAM's. The margins of underselling ranged from 0.7 to 48.1 percent, or from 2 to 31 cents. In the four instances of overselling, the margins ranged from 3.7 to 40.6 percent, or from 3 to 29 cents (table 37).

Lost sales

U.S. producers were requested in the Commission's questionnaires to provide specific instances of lost sales of 64K DRAM's to imports of these products from Japan. This section presents, separately, the results of the Commission's inquiries into these allegations during the preliminary and final investigations.

Preliminary investigation.—* * * named * * *, * * *, as the purchaser involved in an alleged lost sale of * * * 64K DRAM's in * * * 1985. * * *'s quote of * * * allegedly was rejected in favor of a Japanese product offered at * * * per unit. * * * stated that the sale in question was lost to * * *. * * * explained that, in prior months (* * *), grey-market brokers selling the Japanese product were setting the price. After that—as early as * * * and * * *—U.S. manufacturers began to meet these low prices. * * * was very competitive for a while, but then lost out, * * * said. In * * *, Japanese 64K DRAM's were offered at the * * * range and * * * was at or a little below that range. The Koreans were * * * percent below * * *. * * * named * * * as key brokers in the grey market. 1/

Commenting on the current market (i.e., fall 1985), * * * stated that he recently placed an order with * * * for * * * 64K DRAM's at * * * per unit. In June, he bought an * * * quantity of 64K DRAM's from * * * at * * *. He can't buy Japanese units currently at that * * *. The Japanese 64K DRAM's he has bought were not purchased direct from Japanese producers but through the broker intermediaries. Although * * * sees the 64K DRAM as a commodity product, some of the firm's customers prefer the Japanese product.

1/ * * * is a * * * distributor that goes to Japan "with dollars" and, says * * *, buys heavily at the end of the month when Japanese DRAM producers unload unsold inventory at reputedly below-cost prices. * * *, based in Japan, has entree to the large Japanese producers of DRAM's, and has strong financial backing in Japan. * * * stocks heavily and, * * * says, can fill orders of * * * Japanese DRAM's at any time. * * *.

Two other alleged lost sales involved * * *. * * * alleged that it lost * * * orders for * * * 64K DRAM's, respectively, in * * * 1985. * * *'s April price of * * * allegedly was rejected in competition with a quote of * * * per unit for Japanese units. In * * *, the Japanese DRAM's were allegedly offered at * * * and * * *'s bid was refused. * * * confirmed the facts as alleged. He stated that * * * wanted a long-term contract to supply a * * * quantity on scheduled delivery. Offer prices for units made by * * * were priced lower on the spot market, sold through what * * * called "wholesalers." 1/ He said these vendors were not distributors in the accepted definition. Distributor prices were higher than prices in this "spot market." * * * decided not to buy on a contract basis but to "buy spot from Japanese sources at lower prices."

* * * identified * * * in an alleged lost sale of * * * 64K DRAM's in * * * 1985. * * *'s quote of * * * per unit was rejected in favor of Japanese DRAM's offered at * * *. * * * explained the facts concerning this transaction. In * * *, he thought the * * * price level would hold for some time so he considered a long-term (1 year) contract with * * * for a scheduled delivery of * * * per month. As prices spiraled downward, he was offered very attractive prices for Japanese product from vendors in the so-called grey market. * * * named * * * as "nonauthorized distributor sources" of * * *. * * * in particular has given excellent terms, delivery, and quality product to the firm. Most of * * *'s purchases beginning in * * * have been in this spot market. The volume involved amounts to about * * * per month. 2/

Another alleged lost sale involved the alleged purchase of * * * 64K DRAM's in * * * 1985 by * * *. * * *'s quote of * * * per unit allegedly was rejected in favor of Japanese product offered at * * *. * * * confirmed buying Japanese 64K DRAM's, as well as Korean product from * * *. The latter, he asserts, bought at low price, was very poor quality. He paid * * * for * * * 64K DRAM's and bought * * * per month. * * * has also bought * * * DRAM's through distributors, but not direct. His firm also buys from * * *, said * * *, and is "still negotiating with * * *."

* * * was named in an alleged lost contract sale for * * * 64K DRAM's in * * * 1985. * * *'s offer price of * * * allegedly lost out to a competing bid of * * * per unit for Japanese product. * * * stated that only recently (i.e., * * * 1985) had a Japanese source, * * *, offered a lower price than that of * * *. * * * had been purchasing from * * *, buying * * * per month at * * * each. * * * quoted * * * and * * * was considering that offer. He also had approached * * *, but that vendor was unable to beat * * *'s price on 64K, although it did quote better prices on * * * and on 256K. * * *'s price for 256K DRAM's was * * * percent below * * *'s quote on a recent purchase by * * *.

1/ * * * named several * * * wholesalers: * * *.
2/ * * *.

* * * identified * * * in an alleged instance of a lost sale for * * * 64K DRAM's in * * * 1985. * * *'s quote to this * * * firm allegedly was * * * per unit and was undercut by a * * * offer for Japanese DRAM's. * * * confirmed the facts as alleged. He is trying to be competitive and "shops for the best prices." His sources for the lower priced Japanese DRAM's are local distributors and grey-market sources. The products are manufactured by * * *.

* * * was cited in an alleged lost sale of * * * 64K DRAM's in * * * 1985. * * * alleged that its offer price of * * * was rejected in favor of a competing bid of * * * for Japanese DRAM's. * * * explained that * * *. The foreign (Japanese) vendor for this purchase supplied the 64K DRAM's from * * *. So this supply could not be classed as imports into the U.S. market. * * * noted that the Japanese price could have come from a U.S. source or direct from offshore. * * * does not know how the product was shipped for export to the * * * purchaser.

Final investigation.—* * * was named by * * * in an alleged lost sale for * * * 64K DRAM's in * * * 1985. * * *'s bid of * * * per unit lost out to a Japanese offer price of * * *. * * * recalled that * * * and * * * other qualified vendors submitted bids for that contract. They included * * *. It was * * *, however, who won the contract with a bid of "* * *" per device, based on an estimated annual requirement of * * * 64K DRAM's. * * * only released purchase orders for * * * over the year. * * * noted that he also buys Japanese DRAM's. * * *. * * * characterized * * *'s DRAM's as "very good quality."

* * * cited * * * in an alleged lost sale of * * * 64K DRAM's in * * * 1985. * * *'s offer price of * * * per unit was rejected in favor of a competing quote of * * * per device for Japanese DRAM's. * * * stated that * * * had not purchased Japanese DRAM's until * * * 1985. The bid in question went to * * * at * * * for scheduled deliveries beginning in * * *. * * * noted that by * * * 1985, Japanese as well as domestic 64K DRAM's could be purchased for * * *, and in later months, * * *.

* * * was identified by * * * in an alleged lost sale for part of an estimated annual requirement of * * * 64K DRAM's. * * * allegedly lost out on its offer price of * * * to a competing bid of * * * for Japanese product in * * * 1984. * * * traced the pattern of purchasing and confirmed buying some Japanese 64K DRAM's. During the cited time period, * * * was negotiating with * * *. However, * * *. * * *. As a result, its anticipated volume requirement was in some question. * * * ultimately issued a purchase order to * * * in * * * 1984 after * * * dropped its price to * * *. This was the first time * * *'s offer price was competitive against Japanese quotes. In early 1985, the prices were reviewed on a monthly basis. At that time, * * *'s price was * * * per unit. * * * had an offer price of * * * from the * * * factory representative and bought * * * 64K DRAM's in * * * 1985. * * * needed the reduced price, said * * *.

During the first 6 months of 1985, * * * percent of * * *'s purchases of 64K DRAM's were domestic. * * * was the primary source, with a shipment volume of about * * * units. * * *'s price fell from * * * in * * * to * * * in * * *. * * * has switched to 256K and is purchasing from * * * through * * *'s purchasing office in Japan. Consequently, its demand for 64K DRAM's has declined sharply. * * * are in the process of qualifying their 256K DRAM's with * * *.

Lost revenue

U.S. producers were also requested to provide specific instances in which they had to reduce prices in order to avoid losing sales to competitors selling 64K DRAM's imported from Japan.

Preliminary investigation.--* * * was named in an alleged instance of lost revenue involving the purchase of * * * 64K DRAM's in * * * 1984 after * * * allegedly reduced its price from * * * to * * * per unit in competing with the lower priced Japanese product. * * * confirmed the facts as alleged but noted that the renegotiated price was actually * * *. The contract was renegotiated at * * *'s option because of the sharp downturn in prices. * * * buys 64K DRAM's from * * * Japanese firms 1/ as well as from * * *. With lower prices offered for Japanese DRAM's, * * * told * * * the contract should be renegotiated. * * * reduced its price and * * * continued to honor the contract. Currently, competition is keen and prices are even lower, * * * noted. In * * * 1985, * * * bought * * * 64K DRAM's from * * * at * * * per unit after shopping the market. A Japanese source quoted * * *, and * * * was offered a Korean product priced in the * * * range. According to * * *, there is no appreciable quality differential among the 64K DRAM's * * * purchases from its qualified vendors. * * *. The firm is gearing up to use 256K DRAM's and has a target date in * * * 1986 for the switchover. Lost revenue in this instance amounted to * * *.

Another allegation of lost revenue named * * * as purchaser of * * * 64K DRAM's in * * * 1984 after * * * reduced its price from * * * to * * * per unit to save the sale. * * * confirmed the allegation. * * * had a contract for * * * or for the total amount of the remaining commitment (* * *). * * * explained that as market prices dropped she was offered much lower prices by her approved Japanese sources so she had to go back to * * * and ask for a reevaluation of the contract price. * * * reduced the price to * * *. * * * noted that since then, Japanese prices from all the * * * sources have dropped further and recently are as low as * * * per unit. 2/ Nevertheless, * * * is honoring the * * * contract price as a matter of policy. It will pay off, she

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1/ * * *.

2/ * * * buys 64K DRAM's from * * *. * * * is currently a "candidate". All have offered lower prices than * * * with no minimum quantity stated.

adds, in long-term benefits. * * * has had no quality problems with * * * DRAM's. Lost revenue in this transaction amounted to * * *.

* * * cited * * * in an instance of lost revenue. This allegation involved a contract sale for * * * 64K DRAM's (200 ns) in * * * 1984 after * * * reduced its offer price from * * * to * * * per unit in order to meet lower Japanese price quotes. At that time, * * * had lower price offers from Japanese vendors and other U.S. producers. 1/ He called * * *, requesting that they reevaluate their price. As a result, the contract price was cut to * * *, as alleged. Later, as prices dropped, * * * reduced its contract price to * * * per unit and then to * * * to cover the remaining contract through * * * 1985. * * * emphasized that, among vendors, * * * has been "very competitive and aggressive in their pricing." As a result of the first price reduction, the lost revenue amounted to * * *.

* * * named * * * in an allegation of lost revenue that involved a * * * contract sale for * * * 64K DRAMS (200 ns) in * * * 1984. * * * alleged that it reduced its initial offer price of * * * to * * * per unit in the face of a lower price quoted by Japanese vendors. * * * acknowledged that * * * did decide to "go with * * *" in this instance rather than the Japanese vendors. The decision was made by * * *. * * * explained that * * * did reduce its first offer price as alleged. Typically, contracts with U.S. producers are for 1 year, and price can be renegotiated. * * *. Commenting on quality, * * * stated that "after qualification as an approved vendor, price is the key consideration." 2/ Lost revenue totaled * * *.

* * * was identified as a purchaser involved in an alleged instance of lost revenue, again in * * * 1984. 3/ This contract sale for * * * 64K DRAM's was made after * * * allegedly reduced its initial offer price of * * * to * * * per unit to meet the offer price for imports from Japan. * * * affirmed the facts as alleged. The contract was for delivery of * * * per month and was renegotiable as to price. * * * buys 64K DRAM's direct from * * *, but buys the Japanese product through distributors that offer the imported units. * * *. * * * emphasized that his firm must be able to compete with other * * *. The market price has continued downward, * * * noted. Recently, he made a spot purchase of * * * 64K DRAM's from * * * at * * * per unit. * * * buys Japanese 64K DRAM's from several distributors that he classed as handling so-called grey-market products, among them * * *, a large-volume firm well known for its low prices. 4/ Finally, * * * stated that he can buy 64K DRAM's in lots of * * * from many sources at * * * per unit. The lost revenue involved in this contract amounted to * * *.

1/ * * * buys 64K DRAM's from * * *.
2/ * * * buys 64K DRAM's from * * *.
3/ * * * buys * * *. * * *.
4/ * * *.

* * * named * * * in another alleged instance of lost revenue related to a contract sale of * * * 64K DRAM's (150 ns) in * * * 1984. * * * alleged that it reduced its initial offer price from * * * to * * * per unit in competition with Japanese product offered at prices as low as * * * per unit. * * * confirmed the facts as alleged. The contract price was renegotiated downward on two occasions—first, to * * * after * * * units were shipped, and again, in * * * 1985, to * * * per unit because of lower price offers that included quotes on Japanese product. * * * also receives offers from grey-market brokers whose prices are "quite a bit lower on 64K DRAM's coming from Japan directly." * * * does not buy from brokers. 1/ She noted that * * * matched the import prices being quoted at the time of price renegotiation. The lost revenue attributable to the first cut in price amounted to * * *.

Another alleged instance of lost revenue cited * * *. 2/ This contract sale for * * * 64K DRAM's (200 ns) in * * * 1984 called for delivery of * * * units per month. * * * received the order after allegedly reducing its initial quote of * * * per unit to * * * to meet Japanese competition. * * * confirmed the facts but stated that it is unclear whether Japanese or U.S. producers were leading or following the price down. 3/ This is a very difficult question, he says. He believes that the brokers (grey market) with the Japanese product set the price level, especially on the downside of the market. * * *. * * * stated that they buy a commodity product, but he thinks that the Japanese DRAM's have "a bit better reliability." His approved sources are * * *. In late * * * 1985, * * * was paying * * * for 64K DRAM's and * * * for 256K DRAM's. The lost revenue on this contract amounted to * * * per month.

The * * * lost revenue allegation by * * * cited * * * as the purchaser involved in a long-term contract sale for 64K DRAM's, 200 ns, scheduled for initial monthly shipment in * * * 1984. This was a fixed contract (with no price renegotiation clause) drawn at a time in 1984 (* * *) that made the contract price quite attractive to * * *. The * * * contract called for about * * * per month through * * * 1984 and continuing into 1985. The alleged value of the contract on a monthly basis was * * * based on a monthly delivery of * * * at a price of * * * per unit. The accepted value amounted to * * * based on an alleged price reduction to * * * per unit in the face of Japanese competition quoting * * * per unit. * * * was one of the negotiators on this contract. He acknowledged that * * * had such a long-term contract with * * * and that it had been renegotiated periodically on price and on scheduled delivery quantities. * * *'s annual forecast of needed "on order" supply of * * * did not materialize, said * * *. * * *. * * * immediately cut its orders, said * * *, and aware of the * * * quarter downtrend in 64K DRAM prices, began renegotiating the contract prices. * * * had shipped * * * * * * orders in * * *, * * * in * * *, but only * * * in * * *. * * * stated

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1/ Approved vendors that supply * * * include * * *.
2/ * * *.
3/ * * * commented that * * * was very sensitive about price leadership.

that the price was renegotiated down in * * * to * * * 1/ for the * * * and * * * shipment of * * * per month. In * * * the price was renegotiated to * * * and covered accelerated shipments. * * * stated that * * * agreed to accept a quantity of the units in * * * with the caveat that * * * keep in step with the market. At that time, said * * *, the Japanese price was at the * * * level; it dropped a bit below that price in * * *. The final price for delivery by * * * of * * * (in * * *) was negotiated at * * *. At that time, * * * had a large number of 64K DRAM's in storage. In previous months, * * * had bought Japanese DRAM's through * * *. According to * * *, * * * "is in competition" with the domestic * * *. * * * has good relations with all the major Japanese producers. * * * believes that the 64K DRAM's were purchased from * * * early in 1985 at a price of about * * * per unit. * * * noted that * * * "hammered down" the * * * price to * * *, and subsequently lower, by using the leverage of Korean offer prices as well as Japanese prices. * * * added that, in his view, the biggest problem was Korea's entry with lower prices. 2/

* * * described the Japanese producers' structure as two tier. The top-ranked producers, for example * * *, sell to the large computer companies at prices similar to * * *. The second tier, he says, citing * * * as examples, sell to board stuffers and assemblers. These Japanese firms are more aggressive in selling to those kinds of customers. * * * recalled that early in the fall of 1984, the top tier pricing was at about * * * and the second tier was seeking sales at about * * *. It was at this point, said * * *, that * * * quoted * * * to * * *. The lost revenue associated with the first price cut by * * * amounted to * * * of the scheduled * * * and * * * shipments of * * * per month.

* * * was named by * * * as the purchaser of * * * 64K DRAM's after * * * allegedly reduced its price from * * * to * * * per unit because of competing offer prices for Japanese units. * * * recalled that the * * * contract called for about * * * on a scheduled delivery of * * * per month. The price was renegotiated down for * * * of that contract. The price reductions were periodic, dropping first to * * *, then to * * *, and finally to a low of * * * per unit. * * * never finished out the total contract because * * * has switched to 256K DRAM circuitry for their products. 3/ According to * * *, after * * *'s first round price drop to * * *, * * * did lead the price down with their offer prices to * * *. * * * lagged in the spiral. * * * adds that "to this date those (latter) companies have not equaled the Japanese price levels" in quotes received by * * *. Lost revenue from these renegotiated prices totaled * * * over a * * * delivery period.

1/ According to * * *, the price was to be * * * if the invoice was paid within * * *, * * * if paid in * * *, and * * * if receipt of payment ran the full net * * * period.

2/ In * * * 1985 * * * bought a spot order of Korean 64K DRAM's at * * * per unit. * * * offered * * * a price of * * * in * * * 1985.

3/ * * * acknowledged that * * * had a heavy inventory of 64K DRAM's in stock. Although the usage now is minimal for these memory devices, he emphasized that at current market prices he "would not off-load this excess inventory now held," but would opt to work it off rather than take a heavy loss.

Another alleged instance of lost revenue by * * * cited * * * as the purchasing firm. * * * allegedly contracted for * * * 64K DRAM's after renegotiating the original contact price from * * * down from * * * to * * * per unit in competing with lower offer prices on imported units from Japan. * * * acknowledged the facts as alleged. * * *. The firm uses about * * * 64K DRAM's per month. 1/ * * * shops the market for best prices. The last time * * * polled the market, earlier in the year, the "Japanese came in with real low prices" in the * * * range. * * *, asked by * * * to renegotiate the contract price, came down reasonably close to the Japanese price with an offer price of * * *, so * * * continued his contract. * * * noted that service and product quality from * * * were good. 2/

* * * was named as purchaser in a lost revenue allegation involving a contract for * * * 64K DRAM's drawn in * * * 1984. The price allegedly was renegotiated downward beginning in * * * 1985 in competition with Japanese prices to a low of * * *. * * * confirmed the periodic drop in price to a level of * * * as a reflection of competing market prices including Japanese offers. * * * buys from an approved vendor list that includes * * *. There has been some field failure with * * * 64K DRAM's; * * * does not have that problem with the * * * product.

* * * renegotiated the * * * price down in * * * to * * *, in * * * to * * *, in * * * to * * *, and in * * * to * * *. The lost revenue as a result of this price reduction pattern amounts to * * * over the * * * delivery schedule through * * * 1985.

* * * identified * * * in an alleged instance of lost revenue in a sale for * * * 64K DRAM's, 150 ns, in * * * 1984. 3/ The price was allegedly reduced from * * * to * * * because of competing offer prices for the Japanese product. * * * confirmed that the long-term contract was renegotiated both on price and to reduce "on order" quantity. After * * * cut its price to * * *, vendor prices were reduced all over the industry, said * * *. Prices kept spiraling down. "Even after * * * backed off," he emphasized, "the offer prices continued to drop." Based on both Japanese and other U.S. producer prices, 4/ * * * asked * * * for a renegotiated price. * * *, as alleged,

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1/ * * * has not yet switched over to 256K DRAM's and noted that it would never altogether stop using 64K DRAM's.

2/ * * * stated that, for a long time, people (end users) wouldn't buy * * * DRAM's because of market talk that the product was poor quality. * * *. He views the * * * DRAM's as "high quality product." * * * gets more yield of quality dice per wafer than other producers, he says.

3/ * * *.

4/ * * * of the Japanese and U.S.-based producers are approved vendors for * * *.

dropped the price to * * * per unit. * * * added that since then the firm has cut its order for 64K DRAM's for two reasons. One reason is that the firm has converted the majority of its * * * to 256K DRAM's. 1/ * * * is using Japanese 256K DRAM's but also buys some from * * *. Another reason is that overall demand for the end products is down. Lost revenue to * * * attributable to the price reduction on the * * * delivered amounted to * * *.

Final investigation.—* * * was named in two alleged examples of lost revenue; both referred to bid negotiations that began in * * * 1984. * * * allegedly reduced its price to a low of * * * per device on estimated annual volume requirements of * * * 64K DRAM's for a 150 ns device and to the same level on a contract for * * * 64K DRAM's for a 200 ns device. * * *'s offer prices in late 1983 or early 1984 were at a respective level of * * * and * * * for these two 64K DRAM devices. * * * confirmed the * * * offer price of * * * in * * * 1985 for product to be delivered in * * * and * * *. He provided the Commission with a profile of * * *'s purchase order releases which showed, by brand name, that in * * *, * * * reduced its offer price from * * * to * * * in facing competition from * * * at * * *, and then to * * *, matching * * *'s offer price for * * *. * * * in * * * quoted * * * against * * *'s offer price of * * * per unit. * * *'s share of * * *'s release volume in * * * fell from * * * to * * *, while * * *'s increased from * * * to * * *. 2/ According to * * *, * * * of the * * * product came from Japan. He could not recall ever seeing a packaged * * * DRAM "in an American box."

* * * named * * * in an instance of alleged lost revenue that involved price negotiations in * * * 1985 for an estimated volume of scheduled deliveries that would total * * * 64K DRAM's. * * * alleged that it reduced its price from * * * to * * * per unit to meet Japanese competition from * * *. * * * acknowledged the price reduction as alleged. He added, however, that the quantity requirement was reduced for the * * * quarter and * * * quarter supply that was negotiated with * * *. * * * also buys DRAM's and at that time had roughly * * * DRAM's in inventory. The word came from a corporate source to use that inventory. * * * "bought" this inventory over a number of months at a transfer price of * * * a device. This cut the volume purchased from * * * at * * * to * * *. * * * noted that the Japanese "were always 10 percent under the market," but, he added, "they (Japanese) never left any extra margin on the table." * * *'s day-to-day knowledge of pricing levels comes from the international arena. Currently, 64K DRAM's are priced at * * * in Japan with the yen at 175 to the dollar.

1/ According to * * *, the only reason the crossover from 64K to 256K DRAM's has not been made by more firms was because 64K DRAM prices continued to spiral down. Still, the price for 256K DRAM's is more than four times the 64K price. As a result, he states, the 256K crossover has been set back at least 6 months.

2/ See memorandum to the Commission No. INV-I-160, dated Aug. 2, 1985.

* * * was named by * * * in an instance of lost revenue on an order negotiated in * * * for anticipated volume of * * * 64K DRAM's for scheduled delivery in 1985. * * * allegedly reduced its offer price from * * * to * * * in the face of lower priced competing Japanese offers. * * * acknowledged that * * * lowered its prices beginning in late 1984 from * * * in * * * 1984 to * * * late in 1984 as prices spiraled down. * * * had * * * approved vendors who shared * * *'s 64K DRAM volume requirements. 1/ In * * * 1985, * * * reduced its price to * * * against a * * * price of * * * per unit. * * *'s volume was * * * compared to * * * for * * *. * * * noted that during this time period he scheduled renegotiations of price because he had numerous offers from brokers and distributors for imported Japanese DRAM's at low prices. * * * shipped the product to * * * through * * * 1985, then * * *. * * * had a backlog of scheduled shipments at that time.

* * * was cited by * * * in one instance of alleged lost revenue and by * * * in another. * * * alleged that it reduced its price from * * * to * * * in * * * 1984 to meet competing quotes from Japanese suppliers for an order of * * * 64K DRAM's. * * * alleged that it reduced its offer price from * * * to * * * in negotiating a contract in * * * for delivery monthly through * * * 1985. * * * checked * * *'s records on both allegations. October is the normal time to negotiate delivery of a product beginning in January. Periodic negotiations with * * * resulted in prices that fell from * * * per device in * * * 1984 to * * * in * * * 1985; * * * in * * * and * * *; * * * in * * *; and * * * in * * *. As for * * *, * * * said the * * * price in * * * 1984 and * * * 1985 was * * *, down from a former price. In * * *, the * * * price was reduced to * * *; it then fell to * * * in * * *. As for import competition, she emphasized that there were brokers as well as Japanese firms vying for a share of * * *'s volume at this time. Brokers, especially, were offering imported Japanese DRAM's at attractive prices. These offer prices were the catalyst for negotiating lower prices from * * * and * * *.

* * * identified * * * in four instances of alleged lost revenue beginning in * * * 1984 that involved a contract for an estimated volume requirement of * * * 64K DRAM's for scheduled delivery beginning in 1985. * * * alleged that it reduced its offer price in * * * from * * * to * * * in competing against Japanese offer prices for imported DRAM's. * * * alleged that it reduced its price in * * * from * * * to * * *, in * * * to * * *, and in * * * to * * *. The * * * price was for * * * 64K DRAM's, the * * * price related to * * *, and the * * * price covered a volume of * * * 64K DRAM's. * * * confirmed the price reduction pattern as alleged. * * * in * * * had bids from * * * qualified vendors of 64K DRAM's—* * *. * * *'s annual volume amounts to roughly * * * 64K DRAM's. * * * splits this volume among the qualified suppliers. Japanese vendors shipped about * * * 64K DRAM's to * * * in 1985. * * *, and, to a lesser extent, * * * split this volume. * * * was * * *. * * * during late 1984 and early 1985 was renegotiating price every * * * weeks. In * * *, the negotiations are for annual requirements but the

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1/ Qualified 64K DRAM's include those produced by * * *.

price negotiated often is effective for the first quarter of the new year. In this case * * * proposed offering the lower price for backlog shipments from * * * through * * *. In exchange, * * * wanted a guaranteed order for * * * to be delivered in * * *. * * * was the price leader at that time. * * * noted that he has a policy of asking the Japanese for a price and then bringing in * * * for a bid response. In the end, he says, all * * * final bidders will be within * * * percent of each other's prices. * * * added that after * * *, the Japanese began to drop the price very fast and * * * was the follower. * * * were the last to reduce their offer prices. * * * were the leaders. For * * *, * * * was paid for * * * product, then the price went down to * * *. * * * said that the 64K DRAM's of all qualified vendors are substitutes, so if the price spread between vendors is too broad, i.e., not within the acceptable range, he "redivides the pie in favor of the lower priced vendor." All suppliers were at the * * * price level but * * * received most of the volume. Recently, * * * has decided to limit the number of vendors used and has cut * * * from its approved supplier list.

* * * identified * * * in an instance in which a price reduction was needed to prevent an order being awarded to a Japanese supplier. The claim was confirmed by * * * who reported that, in * * * 1985, one of the Japanese qualified suppliers (* * *) had offered to supply * * * for * * * each. * * * said that * * * had called regarding the order and was informed that a Japanese supplier had offered the lowest price. * * * agreed to match the offered price of the Japanese supplier and was given the order. * * * had previously offered to supply the devices for * * * per unit.

* * * was identified by * * * as an instance of lost revenue. * * * reported that in * * * 1985 it had reduced its unit prices from * * * to * * * to obtain an order from * * * for * * *. * * * disagreed with the claim, citing that market conditions had driven prices down and that * * * was selling 64K DRAM's to * * *'s competitors, including * * *, at lower prices. * * * reported that as part of * * *'s corporate agreement, * * * had agreed to adjust its prices voluntarily as market prices declined. When * * * failed to notify * * * after the severe price decline in * * * 1984, * * * contacted * * * and * * * subsequently agreed to lower its prices. At the time the order was placed with * * *, a Japanese supplier, * * *, had offered to supply the order for * * * per unit. According to * * *, * * *'s willingness to accept a higher offered price related to an agreement in which * * * gives * * * access to * * * prior to giving access to these products to * * *'s competitors. * * * also indicated that he was aware of prices being offered by * * * and other suppliers in the grey market and how they influenced market prices. He indicated, however, that * * * does not make large purchases from these suppliers.

Exchange rates

Table 38 presents nominal- and real-exchange-rate indexes for U.S. dollars per Japanese yen. The real-exchange-rate index represents the nominal index adjusted for differences in the relative inflation rates between the United States and Japan. As shown in the table, the nominal value of the Japanese yen depreciated relative to the U.S. dollar by 1.2 percent between January-March 1983 and July-September 1985. The real-exchange-rate index shows that the Japanese yen actually depreciated by 5.6 percent during that period. Between July-September 1985 and January-March 1986, the nominal value of the Japanese yen appreciated relative to the U.S. dollar by 27.0 percent and the real value of the Japanese yen appreciated by 23.4 percent.

Table 38.—Indexes of nominal and real exchange rates between the U.S. dollar and the Japanese yen, by quarters, January 1983-March 1986

(January-March 1983=100)

Period	Nominal-exchange-rate index	Real-exchange-rate index
1983:		
January-March	100.0	100.0
April-June	99.2	98.0
July-September	97.2	95.2
October-December	100.6	97.4
1984:		
January-March	102.1	97.9
April-June	102.7	97.8
July-September	96.8	93.2
October-December	95.8	92.2
1985:		
January-March	91.5	88.5
April-June	94.0	90.2
July-September 1/	98.8	94.4
October-December	113.8	105.7
1986:		
January-March	125.5	2/ 116.5

1/ In September 1985, the United States and its major trading partners agreed to intervene in foreign-exchange markets to reduce the value of the dollar. Between July 1985 and March 1986, the yen had appreciated by approximately 23 percent in real terms relative to the dollar. Producers of DRAM's in early 1986 adjusted prices upward by roughly an equivalent amount.

2/ Derived from Japanese producer price data for January and February only.

Source: International Monetary Fund, International Financial Statistics, May 1986.

APPENDIX A

FEDERAL REGISTER NOTICES AND LIST OF WITNESSES APPEARING AT THE COMMISSION'S HEARING

[Investigation No. 731-TA-270 (Final)]

Import Investigations; 64K Dynamic Random Access Memory Components (DRAM's) From Japan

AGENCY: International Trade Commission.

ACTION: Institution of a final antidumping investigation and scheduling of a hearing to be held in connection with the investigation.

SUMMARY: The Commission hereby gives notice of the institution of final antidumping investigation No. 731-TA-270 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. 1673d(b)) to determine whether an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Japan of 64K dynamic random access memory components (DRAM's) of the N-channel metal oxide semiconductor type, provided for in item 687.74 of the Tariff Schedules of the United States, which have been found by the Department of Commerce, in a preliminary determination, to be sold in the United States at less than fair value (LTFV) (50 FR 50649, Dec. 11, 1985). Commerce has extended its investigation and will make its final LTFV determination on or before April 23, 1986 (51 FR 234, Jan. 3, 1986). The Commission will make its final injury determination by June 6, 1986 (see sections 735(a) and 735(b) of the act (19 U.S.C. 1673d(a) and 1673d(b))).

For further information concerning the conduct of this investigation, hearing procedures, and rules of general application, consult the Commission's Rules of Practice and Procedure, Part 207, subparts A and C (19 CFR Part 207), and Part 201, subparts A through E (19 CFR Part 201).

EFFECTIVE DATE: December 11, 1985.

FOR FURTHER INFORMATION CONTACT: Lynn Featherstone (202-523-0242), Office of Investigations, U.S. International Trade Commission, 701 E Street NW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-724-0002.

SUPPLEMENTARY INFORMATION:

Background.—This investigation is being instituted as a result of an affirmative preliminary determination by the Department of Commerce that imports of 64K DRAM's from Japan are being sold in the United States at less than fair value within the meaning of section 731 of the act (19 U.S.C. 1673). The investigation was requested in a petition filed on June 24, 1985, by Micron Technology, Inc., of Boise, ID. In response to that petition the Commission conducted a preliminary antidumping investigation and, on the basis of information developed during the course of that investigation, determined that there was a reasonable indication that an industry in the United States was materially injured by reason of imports of the subject merchandise (50 FR 32778, Aug. 14, 1985).

Participation in the investigation.—Persons wishing to participate in this investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in § 201.11 of the Commission's rules (19 CFR 201.11), not later than twenty-one (21) days after the publication of this notice in the Federal Register. Any entry of appearance filed after this date will be referred to the Chairwoman, who will determine whether to accept the late entry for good cause shown by the person desiring to file the entry.

Service list.—Pursuant to § 201.11(d) of the Commission's rules (19 CFR 201.11(d)), the Secretary will prepare a service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance. In accordance with §§ 201.16(c) and 207.3 of the rules (19 CFR 201.16(c) and 207.3), each document filed by a party to the investigation must be served on all other parties to the investigation (as identified by the service list), and a certificate of service must accompany the document. The Secretary will not accept a document for filing without a certificate of service.

Staff report.—A public version of the prehearing staff report in this investigation will be placed in the public record on April 15, 1986, pursuant to § 207.21 of the Commission's rules (19 CFR 207.21).

Hearing.—The Commission will hold a hearing in connection with this investigation beginning at 10:00 a.m. on April 30, 1986, at the U.S. International Trade Commission Building, 701 E Street NW., Washington, DC. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission not later than the close of business (5:15 p.m.) on April 11, 1986. All persons desiring to appear at the hearing and make oral presentations should file prehearing briefs and attend a prehearing conference to be held at 9:30 a.m. April 15, 1986, in room 117 of the U.S. International Trade Commission Building. The deadline for filing prehearing briefs is April 25, 1986.

Testimony at the public hearing is governed by § 207.23 of the Commission's rules (19 CFR 207.23). This rule requires that testimony be limited to a nonconfidential summary and analysis of material contained in prehearing briefs and to information not available at the time the prehearing brief was submitted. Any written materials submitted at the hearing must be filed in accordance with the procedures described below and any confidential materials must be submitted at least three (3) working days prior to the hearing (see § 201.6(b)(2) of the Commission's rules (19 CFR 201.6(b)(2))).

Written submissions.—All legal arguments, economic analyses, and factual materials relevant to the public hearing should be included in prehearing briefs in accordance with § 207.22 of the Commission's rules (19 CFR 207.22). Posthearing briefs must conform with the provisions of section 207.24 (19 CFR 207.24) and must be submitted not later than the close of business on May 7, 1986. In addition, any person who has not entered an appearance as a party to the investigation may submit a written statement of information pertinent to the subject of the investigation on or before May 7, 1986.

A signed original and fourteen (14) copies of each submission must be filed with the Secretary to the Commission in accordance with § 201.8 of the Commission's rules (19 CFR 201.8). All written submissions except for confidential business data will be available for public inspection during regular business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary to the Commission.

Any business information for which confidential treatment is desired must be submitted separately. The envelope and all pages of such submissions must be clearly labeled "Confidential Business Information." Confidential submissions and requests for

confidential treatment must conform with the requirements of § 201.6 of the Commission's rules (19 CFR 201.6).

Authority: This investigation is being conducted under authority of the Tariff Act of 1930, title VII. This notice is published pursuant to § 207.20 of the Commission's rules (19 CFR 207.20).

Issued: January 22, 1986

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 86-1960 Filed 1-29-86; 8:45 am]

BILLING CODE 7020-02-M

CALENDAR OF PUBLIC HEARING

Subject: 64K Dynamic Random Access Memory Components (DRAM's) from Japan

Inv. No.: 731-TA-270 (Final)

Date/time: April 30, 1986; 10:00 a.m.

Those listed below appeared as witnesses at the United States International Trade Commission's hearing on the subject investigation. Sessions were held in the Commission's Hearing Room, at 701 E Street, NW, Washington, DC.

Government appearance

Federal Trade Commission, Bureau of Competition
Washington, DC

Benjamin Cohen, Attorney, Division of International Antitrust
Dr. John Woodbury, Deputy Assistant Director, Bureau of Economics
Dr. Sarah Goodfriend, Economist, Bureau of Economics

In support of the imposition of antidumping duties

Micron Technology, Inc.
Boise, Idaho

Larry L. Grant, Vice President and General Counsel
Juan A. Benitez, President and Chief Operating Officer
Leslie A. Gill, Vice President, Finance and Treasurer

Quick, Finan & Associates
Washington, DC

William F. Finan, Principal

Covington & Burling—Counsel
Washington, DC
on behalf of—

Motorola, Inc.

Steve Sparks, Director, MOS Memory Marketing, MOS Memory Group

Harvey M. Applebaum)
O. Thomas Johnson, Jr.)—OF COUNSEL
Sonya D. Winner)

CALENDAR OF PUBLIC HEARING—Continued

In support of the imposition
of antidumping duties—Continued

Jones, Day, Reavis & Pogue—Counsel
Washington, DC
on behalf of—

Texas Instruments, Inc.

Thomas F. Cullen—OF COUNSEL

Dewey, Ballantine, Bushby, Palmer & Wood—Counsel
Washington, DC
on behalf of—

Intel Corp.

R. Michael Gadbaw)
Rosemary E. Gwynn) —OF COUNSEL

In opposition to the imposition
of antidumping duties

Wilmer, Cutler & Pickering—Counsel
Washington, DC
on behalf of—

Oki Electric Industry Co., Ltd.

Jim Griffin, Vice President of Integrated Circuit Engineering

John D. Greenwald—OF COUNSEL

Coudert Brothers—Counsel
Washington, DC
on behalf of—

NEC Corp.
NEC Electronics, Inc.

John Marck, General Manager of the Memory Products Division,
NEC Electronics, Inc.

Michael J. Calvey)
Mark D. Herlach) —OF COUNSEL

CALENDAR OF PUBLIC HEARING—Continued

In oppositions to the imposition of antidumping duties—Continued

Metzger, Shadyac & Schwarz—Counsel
Washington, DC
on behalf of—

Hitachi, Ltd.
Hitachi America, Ltd.
Hitachi Semiconductor (America), Inc.
Nissei Sangyo America, Ltd.

Dr. Kenneth Elzinga, Professor of Economics, University of Virginia
William Scharrenberg, MOS Marketing Manager for Hitachi
Patrick Walsh, President of Technology Sales

Carl W. Schwarz)
William H. Barrett)—OF COUNSEL
Paul J. Pantano, Jr.)

Fenwick, Davis & West—Counsel
Washington, DC
Akin, Gump, Strauss, Hauer & Feld—Counsel
Washington, DC
on behalf of—

Fujitsu, Ltd.
Fujitsu Microelectronics, Inc.

James Kane, MOS Marketing Manager

Donald R. Davis)
Ronald S. Poelman)
L. Daniel O'Neill) —OF COUNSEL, Fenwick, David
David L. Teichmann)

Richard R. Rivers)
Warren E. Connelly)—OF COUNSEL, Akin, Gump
Valerie A. Slater)

CALENDAR OF PUBLIC HEARING—Continued

In oppositions to the imposition of antidumping duties—Continued

Mudge, Rose, Guthrie, Alexander & Ferdon—Counsel
Washington, DC
on behalf of—

Toshiba Corp.
Toshiba America, Inc.

David A. Vaughan)
David P. Houlihan)
Robert D. Bannerman) —OF COUNSEL
Jeffrey S. Neeley)

Baker & McKenzie—Counsel
Washington, DC
on behalf of—

Mitsubishi Electric Corp.
Mitsubishi Electronics America, Inc.

William D. Outman, II) —OF COUNSEL
Temple Jordan)

Phoenix Electrics, Inc.
Baltimore, Maryland

Robert Stevenson, President

Clearpoint, Inc.
Hopkinton, Massachusetts

Charles C. Snell, Director of Manufacturing

[A-588-503]

64K Dynamic Random Access Memory Components (64K DRAM's) From Japan: Final Determination of Sales at Less Than Fair Value

AGENCY: International Trade Administration/Import Administration/ Commerce.

ACTION: Notice.

SUMMARY: We have determined that 64K DRAMs from Japan are being, or are likely to be, sold in the United States at less than fair value, and have notified the U.S. International Trade Commission (ITC) of our determination. We have also directed the U.S. Customs Service to continue to suspend the liquidation of all entries of 64K DRAMs from Japan that are entered, or withdrawn from warehouse, for consumption, on or after December 11, 1985 and to require a cash deposit or bond for each entry in an amount equal to the estimated dumping margin as described in the "Suspension of Liquidation" section of this notice.

EFFECTIVE DATE: April 29, 1986.

FOR FURTHER INFORMATION CONTACT: John Brinkmann, Karen Sackett, or Paul Thran, Office of Investigations, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, N.W., Washington, DC 20230; telephone: (202) 377-3965, 377-5050, or 377-3963.

Final Determination

We have determined that 64K DRAMs from Japan are being, or are likely to be, sold in the United States at less than fair value, as provided in section 735(a) of the Tariff Act of 1930, as amended (19 U.S.C. 1673(a)) (the Act). We made fair value comparisons on almost all sales of the class or kind of merchandise to the United States by the respondents during the period of investigation. We excluded from our fair value comparisons U.S. sales of certain 64K DRAMs sold in insignificant quantities. The weighted-average margins are shown in the "Suspension of Liquidation" section of this notice.

Case History

On June 24, 1985, we received a petition from Micron Technology, Inc. on behalf of the domestic merchant manufacturers of 64k DRAMs. In compliance with the filing requirements of § 353.36 of the Commerce Regulations (19 CFR 353.36), the petition alleged that imports of 64k DRAMs from Japan are being, or are likely to be, sold in the United States at less than fair value within the meaning of section 731 of the Act, and that these imports are materially injuring, or are threatening material injury to a United States industry. The petition also alleged that sales of the subject merchandise were being made in the home market at less than the cost of production. After reviewing the petition, we determined that it contained sufficient grounds upon which to initiate an antidumping duty investigation. We notified the ITC of our action and initiated such an investigation on July 15, 1985 (50 FE 29458). On August 8, 1985, the ITC determined that there is a reasonable indication that imports of 64k DRAMs from Japan are materially injuring, or are threatening material injury to, a U.S. industry (50 FR 32778).

On August 19, we presented antidumping duty questionnaries to NEC Corporation (NEC), Hitachi Ltd. (Hitachi), Oki Electric Industry Co. Ltd. (Oki) and Mitsubishi Electric Corporation (Mitsubishi). Respondents were requested to answer the questionnaire in 30 days. However, at the requests of the companies and the Japanese Ministry of International Trade and Industry, we granted two extensions of time for response submissions of two weeks and one week respectively. We received incomplete responses from the companies on October 10-11, 1985. In letters dated November 8, 12, and 13, the Department requested supplemental information

from each of the respondents. Additional information was submitted by the respondents on November 21, 1985.

On December 11, 1985, we published a preliminary determination that 64K DRAMs from Japan were being sold at less than fair value in the United States (50 FR 50649).

After the preliminary determination, all of the respondents in this investigation requested an extension of the final determination date until not later than April 23, 1986. The respondents were qualified to make such a request since they accounted for a significant proportion of exports of the merchandise to the United States. If exporters who account for a significant proportion of exports of the merchandise under investigation properly request an extension after an affirmative preliminary determination, we are required, absent compelling reasons to the contrary, to grant the request. Accordingly, we granted the request and postponed our final determination on January 3, 1986 (51 FR 234).

Between January 10 and March 22, 1986, we verified the information provided by respondents at their facilities in Japan and the United States. On March 10, 1986, we held a hearing to provide all interested parties with an opportunity to comment on the investigation.

Products Under Investigation

The products covered by this investigation are all 64K dynamic random access memory components of the N-channel metal oxide semiconductor type (64K DRAMs) from Japan. This merchandise is currently provided for in item 687.7441 of the *Tariff Schedules of the United States Annotated*. We investigated sales of 64K DRAMs during the period January 1 through June 30, 1985.

Fair Value Comparisons

To determine whether sales of the subject merchandise in the United States were made at less than fair value, we compared the United States price to the foreign market value for all companies. We used data provided in their responses, as explained in the "Foreign Market Value" section of this notice, except where otherwise noted.

We used date of shipment as the date of sale as that was the first date on which a binding commitment to sell the subject merchandise can be said to have occurred, as explained more fully in the comment section of this notice. All companies provided shipment dates for U.S. sales. Hitachi, Mitsubishi, and Oki provided shipment dates for home market sales as well. NEC provided only order dates for its home market sales. However, examination of individual NEC home market sales showed that the average length of time between order and shipment in the home market was substantially less than 30 days. Therefore, we determined that NEC's home market order date was a reasonable indication of shipment date, and we used that as best information available.

United States Price

For certain Hitachi sales we used the purchase price of the subject merchandise to represent United States price, as provided in section 772(b) of the Act, since the merchandise was sold to unrelated purchasers prior to its importation into the United States. For other Hitachi sales and sales by all other respondents, we used exporter's sales price (ESP) to represent United States price, in accordance with section 772(c) of the Act, as the merchandise was sold after the time of importation.

We calculated purchase price and ESP based on the packed, duty paid, C.I.F. prices to unrelated purchasers in the United States.

For purchase price, we made deductions for foreign inland freight and insurance, air freight, marine insurance, brokerage charges in Japan and the United States, and U.S. duty. For ESP, where appropriate, we made deductions for brokerage charges in Japan and the United States, foreign inland freight and insurance, air freight and insurance, U.S. duty, U.S. freight and insurance, commissions to unrelated parties, U.S. selling expenses incurred in the U.S. and Japan, credit expenses, warranties, advertising, royalties, and post-shipment price adjustments in the U.S. market. As Oki had no U.S. short-term borrowing, we used the U.S. prime rate for the first and second quarter of 1985 as the best information available in calculating Oki's U.S. credit expense.

Foreign Market Value

The petitioner alleged that sales in the home market by all the respondents were at prices below the cost of producing the merchandise.

In accordance with section 773(a) of the Act, for all companies, we calculated foreign market value based on home market prices where there were sufficient home market sales at or above the cost of production to determine foreign market value. We used constructed value as the basis for calculation foreign market value where there were no sales of such or similar merchandise in the home market or where there were insufficient sales above the cost of production, as defined in section 773(b) of the Act.

Where foreign market value was based on home market prices, we calculated a foreign market value for each product group for each month of the period of investigation, due to sharp declines in monthly prices. Where foreign market value was based on constructed value, we used a quarterly constructed value for each product group.

Since the production of 64K DRAMs was not at the developmental stage but rather at a mature stage of production, the Department used quarterly costs as the basis for the constructed value. The Department considered the significant changes in cost from quarter to quarter, the length of time for production, and the average inventory level of 64K DRAMs in order to appropriately match the sales data to the cost data. We concluded that the average costs of manufacturing incurred in the quarter proceding the sale most accurately reflected the costs of the product sold. Accordingly, the Department based its cost of production on the average manufacturing cost for the prior quarter and general expenses for the quarter in which the sale took place.

Cost of Production

In determining the cost of production for the respondents, the Department relied on the submissions, when verified and appropriately valued, and adjusted such data when certain costs necessary for the production of 64K DRAMs were not verified, not included, or not appropriately quantified or valued.

The Department analyzed industry practices of accounting for the equipment used to produce 64K DRAMs and concluded that the accelerated method of depreciation based on a five-year useful life was appropriate. In reaching this conclusion, the Department considered the characteristics of the industry which show rapid changes in manufacturing technology and a relatively brief market life for the 64K DRAM integrated circuits.

The Department included, as part of the depreciation expense, additional depreciation which was expensed when a company utilized the equipment in excess of normal production hours and when such expense was reflected on its records.

The Department's method of accounting for research and development (R&D) expenses encompassed the historic R&D for 64K DRAMs allocated over the market life of

the product, which was considered part of the cost of manufacturing, and a proportional share of the current product line R&D and general R&D, which were considered to be part of the general expenses.

NEC

The following adjustments were made to the cost of production information presented in NEC's response:

For the cost of manufacturing:

1. An amount, based on "best information available" for product-specific research and development was included because the submitted costs of manufacturing did not include product-specific research and development.

2. Special depreciation which was reported in the respondent's financial statements, but omitted from their response, was added to the cost of manufacture.

3. Certain manufacturing costs which were double-counted for one product were revised.

For the general expenses:

1. General and administrative expenses were revised because the response did not fully allocate general expenses incurred by the respondent's subsidiaries to the 64K DRAMs.

2. Interest expenses were revised because the submitted expenses did not include an appropriate allocation of credit expenses attributable to sales of 64K DRAMs.

Hitachi

The following adjustments were made to the cost of production information presented in Hitachi's response:

For the cost of manufacturing:

1. Retirement expenses which were recorded on the company records, but which were not included in the submitted costs, were included for the final determination.

2. "Best information available" was developed for the depreciation expenses which were adjusted from three to five years for the response on an incorrect basis.

3. Overhead costs incurred by manufacturing subsidiaries were included in the cost of manufacturing, not the general expenses, as presented in the submission.

4. Product-line R&D was reclassified as general expenses.

For the general expenses:

1. "Best information available" was developed for product-line R&D because the allocation methodology did not appropriately allocate such costs on a reasonable basis.

2. Certain headquarters general and administrative expenses excluded from the submission were included.

3. Indirect selling expenses related to the sales subsidiaries were included instead of the amount in the submission.

4. Financial expenses were recalculated to exclude investment income and to include credit expenses attributable to sales of 64K DRAMs.

5. Rebate expenses were excluded.

Mitsubishi

The following adjustments were made to the cost of production information presented in Mitsubishi's response:

For the cost of manufacturing:

1. The costs of certain subcontractors were adjusted to reflect the costs shown on the respondent's records.

2. Royalty payments on patents related to the production of 64K DRAMs were reclassified from general expenses to cost of manufacturing.

3. Depreciation expense was readjusted to reflect the respondent's method used in the ordinary course of business, and which the Department accepted as the method to be used for calculating the cost of production instead of the adjusted method used for the preparation of the response.

For the general expenses:

1. A proportional share of the corporate interest expense and the credit expenses attributable to sales of 64K DRAMs were included.

2. Corporate advertising which was included in the company records but not included in the submission was included.

3. Home market selling expenses were used instead of the amount in the submission.

Oki

The following adjustments were made to the cost of production information presented in Oki's response:

For the cost of manufacturing:

1. Depreciation expense was readjusted to reflect the respondent's method used in the ordinary course of business, which the Department accepted as the method to be used for calculating the cost of production, instead of the adjusted method used for the preparation of the response.

2. The difference resulting from correctly calculating the material variance by using materials consumed, not materials purchased, was included.

3. The miscalculation of the material variance was corrected and the results were included.

4. A six-month favorable labor variance was proportionately reallocated to the relevant quarters.

5. The yield variance was restated because the Department did not accept the credit adjustment made by the company to its March yield variance for reentering retest devices into production.

6. Royalty expense was added.

7. Historic product-specific R&D was included, because the respondent had not included this cost in its calculations. This R&D amount for the period of investigation was divided between the 64K DRAM sales and royalty income. The amount applicable to 64K DRAMs was included.

For the general expenses:

1. Home market selling expenses were used instead of the allocated selling expenses included in the submission.

2. General and administrative expenses were revised to reflect an allocation based on cost of sales rather than sales revenues.

3. Interest expense was revised to reflect an allocation based on cost of sales rather than sales revenues and to include an appropriate allocation of credit expenses attributable to sales of 64K DRAMs.

4. Royalty income was not used to offset interest expense.

5. "Best information available" was developed for product-line R&D because such amount had not been included in the submission.

Price to Price Comparisons

For each company examined, we found sufficient sales above the cost of production for certain product groups to allow use of home market prices to determine foreign market value in accordance with section 773(a)(1)(A) of the Act. We used home market prices for identical merchandise sold in the United States as the basis for foreign market value. We calculated the home market price on the basis of the F.O.B. price to unrelated purchasers. When we compared purchase price to foreign market value, we made deductions, where appropriate, for foreign inland freight and insurance, discounts and rebates. We also made adjustments, where appropriate, for differences in circumstances of sale for credit terms, in accordance with § 353.15 of our regulations. On purchase price sales by Hitachi, we offset commissions paid on U.S. sales with indirect selling expenses in the home market, in accordance with § 353.15(c) of our regulations.

When we compared ESP with foreign market value, we made deductions, where appropriate, for foreign inland freight and insurance, advertising, credit expenses, direct selling expenses, discounts, rebates, and commissions. We also used indirect selling expenses in the home market to offset United States selling expenses, in accordance with § 353.15(c) of our regulations.

For both purchase price and ESP, in order to adjust for differences in packing between the two markets, we deducted home market packing costs and added U.S. packing costs to the home market prices.

We disallowed deductions for inland freight between Hitachi and its subsidiaries, because we considered this expense an intra-company transfer and included it in the cost of production. We also disallowed technical servicing expenses incurred by Hitachi since these could not be tied to particular sales during the period of investigation.

Constructed Value

In accordance with section 773(e) of the Act, we calculated foreign market value based on constructed value when there were not sufficient home market sales above the cost of production of such or similar merchandise for the purpose of comparison. For constructed value, the Department used the cost of all materials, fabrication, general expenses, and profit based on the respondents submissions, revised, as detailed under the "Cost of Production" section of this notice. Actual general expenses were used, since in all cases, such expenses exceeded the statutory minimum of 10 percent of materials and fabrication. Only one respondent provided verifiable profit data. This figure exceeded the eight percent statutory minimum for profit. Since the other respondents were unable to provide verifiable profit data, we used the best information available for them, which was the verified profit of the one firm which provided an adequate profit submission. We made adjustments under § 353.15 of the regulations for differences in credit and royalties between the two markets.

Where there were commissions in one market and not in the other, we offset the commissions with indirect selling expenses in the other market. We also used indirect selling expenses in the home market to offset United States selling expenses, in accordance with § 353.15(c) of our regulations.

Currency Conversion

In calculating foreign market value, we made currency conversions from Japanese yen to U.S. dollars in accordance with § 353.56(a) of our regulations, using the certified daily exchange rates for comparisons involving purchase price. For ESP comparisons, we used the official exchange rate for the date of sale, which we determined was the date of shipment, since the use of that exchange rate is consistent with section 615 of the Trade and Tariff Act of 1984 (1984 Act). We followed section 615 of the 1984 Act rather than § 353.56(a)(2) of our regulations because the later law supersedes that section of the regulations.

Verification

We verified the information used in making our final determination in accordance with section 776(a) of the Act. We used standard verification procedures, including examination of relevant sales and financial records of each company.

Respondents' Comments

Hatachi Comment 1: Hitachi claims that the constructed value used by the Department for its preliminary determination included adjustments which were not appropriate and which should not be used for the final determination. These adjustments included: (1) Changing Hitachi's depreciation expense; (2) erroneously including product-specific R&D; and (3) revising Hitachi's reported general expenses which encompassed the general R&D, interest expense, and selling, general and administrative expenses (SG&A).

DOD Response: The Department reviewed the respondent's submission. For the preliminary determination, in those areas where costs did not appear to be appropriately stated, the Department adjusted these costs by using "best information available." The adjustments were described in the Department's preliminary determination notice. For the final determination, the Department used the respondent's information when such data was verified, appropriately quantified and valued, as noted in the "Cost of Production" section of this notice.

Hitachi Comment 2: Hitachi states that since the allocation method used to calculate product-specific R&D was verified, the Department should accept its submitted amount for R&D.

DOD Response: The Department accepted the methodology used by Hitachi for calculating product-specific R&D costs. However, the company's method of calculating product-line R&D for the product was unacceptable, and "best information available" was used for this amount.

Hitachi Comment 3: Hitachi states that it was justified in not providing five-year yield experience.

DOC Response: The information requested by the verifier should have been provided. The Department requested the five-year yield experience to allow it to review more fully the current yield and historic R&D information.

Hitachi Comment 4: Hitachi claims that its right to a hearing was compromised by the Department's failure to provide a timely constructed value verification report.

DOC Response: The Department afforded adequate time for all parties to comment on the constructed value verification report prior to the final determination.

Hitachi Comment 5: Hitachi argues that Motorola's cost model for 64K DRAMs is based on fundamentally fallacious assumptions and should not be considered by the Department in reviewing Hitachi's actual costs.

DOC Response: The Department considers and analyzes all information presented by the petitioners, respondents, and interested parties. The Department notes that the underlying assumptions of the cost model presented by Motorola were reviewed by the Department specifically when analyzing the relevance of the individual cost elements of the model.

Hitachi Comment 6: Hitachi points out that the petitioner's suggestion to "lag" production costs to sales prices is not valid, because there is no statutory basis for doing so and there is no justification for artificially fixing costs at the initial stage of the production process.

DOC Response: The Department concluded that a quarterly lag between sales and cost of manufacturing was appropriate. By establishing this lag, the Department is not artificially fixing costs at the initial stage of production process but rather matching the cost incurred to the sales. Such an approach is justified by section 773(e)(1) of the Act, which provides that constructed value should be based on costs "at a time preceding the date of exportation of the merchandise under consideration which would ordinarily permit the production of that particular merchandise in the ordinary course of business."

Hitachi Comment 7: Hitachi argues that it used the appropriate sale dates in both markets when it reported a) the date of shipment as date of sale for U.S. sales and b) the date that purchase orders were entered into Hitachi's central computer as the date of sale for home market sales. With respect to the U.S. date of sale, Hitachi argues that, under U.S. law, a mere offer to purchase is not a contract;

a contract requires an acceptance as well, Therefore, it is not until a legally recognized acceptance is given that a price is "confirmed" between parties to a contract. Acceptances can come in several different forms, including actual

performance in accordance with the terms of the offer, e.g., by shipment of goods in the case of a sales contract. Since Hitachi does not normally acknowledge purchase orders, its normal acceptance of an order occurs when the order is actually shipped. Thus, date of shipment appropriately defines Hitachi's date of sale for purposes of sales in the United States.

By contrast, Hitachi argues that, in Japan, in certain situations, an offer is automatically deemed accepted if it is not promptly rejected. Hitachi cited Article 509 of Japanese Commercial law on this point. Thus, Hitachi argues that it is appropriate to report Japanese sales by reference to the date the order was entered into the company's central computer, which is normally soon after the order is received, since this is a rational basis for determining when a particular price has been "confirmed."

DOC Response: In general, the contract type of analysis set forth by Hitachi would be relevant in determining when a "sale" occurs for purposes of the antidumping laws. Here, however, the Department has determined that, in this particular industry, and during the time period investigated, neither party to a purchase order intended it to be a "binding agreement" or treated it as such. This was true for both the U.S. and home-market transactions. The Department reached this conclusion based on the fact that during the time-period investigated, there were significant cancellations of 64K DRAMs orders by both parties, without any sanctions or penalties whatsoever, and frequent price revisions to reflect rapidly declining market prices. Such cancellations and revisions occurred even *after* shipment of the goods in question. Thus, the Department used date of shipment for home-market sales since that was the earliest point in the transaction at which any sort of binding commitment may be inferred. The Department determined that it would be inappropriate, in these circumstances, to use the last pre-shipment change entered into the computer as the basis for the date of sale since, as counsel for Mitsubishi notes, it is only with the benefit of hindsight that one could say that a particular pre-shipment computer entry bears any relationship to the transaction that the parties ultimately agree to. Similarly, the Department also used the date of shipment for U.S. sales. The basis for this determination is outlined in the DOC Response to Domestic Parties' Comment 13.

Hitachi Comment 8: Hitachi contends that Motorola's challenges to Hitachi's reported capital costs are misdirected because Hitachi's depreciation expenses were not understated, as Motorola suggested.

DOC Response: The Department agrees. However, since Hitachi's restatement of depreciation from a three- to five-year useful life was not correctly calculated, the Department used the "best information available." Hitachi restated depreciation by using only the remaining undepreciated assets and extending this balance, instead of recalculating the depreciation from the original date of purchase and using the full purchase price as of that date.

Hitachi Comment 9: Hitachi points out that Motorola's allegation that product-specific R&D was understated from "early write-offs" of general expenses is not true because Hitachi included historic product-specific R&D.

DOC Response: The Department agrees. The Department's methodology includes capturing historic R&D for the product under investigation and allocating such R&D to all 64K DRAMs sold.

Hitachi Comment 10: Hitachi claims that its method of allocation of certain general expenses on a sales revenue basis should not be changed because this is a long-standing practice of the Department. The Department should not use a corporate average based on the consolidated financial statements, as suggested by Motorola, to allocate these general expenses.

DOC Response: The Department used the basic methodology used by Hitachi, which included various allocation methods for different expenses and which generally followed its internal budgeting procedures for allocating general expenses. The Department adjusted general expense by including for the final determination certain amounts for general corporate expense which were excluded by Hitachi in its calculations.

Hitachi Comment 11: Hitachi's variable manufacturing costs were not understated.

DOC Response: We adjusted Hitachi's variable manufacturing costs to include certain costs, such as retirement pension expense, which were excluded by Hitachi in its submission.

Hitachi Comment 12: Hitachi claims that the Department's verification report, which states that the company did not provide historic production data for all three micron family products and for 64K DRAMs, or another allocation basis for product-line R&D, is correct. However, the Department's request for this information at the verification was untimely. Additionally, Hitachi argues that the Department should use as its basis the ratio of 64K DRAMs wafers used in the pilot run stage of development compared to total wafers expended for all products at that stage.

DOC Response: Hitachi's computation of product-line R&D did not present the information requested by the Department in its questionnaire and did not present data necessary for use in the Department's methodology. The data referred to in the verification report was requested during the initial stage of verification.

Hitachi Comment 13: Hitachi claims that the expenses deducted from its SG&A included business tax and an "extraordinary expense."

DOC Response: The Department considered the business tax similar to an income tax and therefore did not include this amount in SG&A. The Department reviewed the nature of the "extraordinary expense" and did not concur with the respondent's characterization and, therefore, included this amount in its SG&A calculations.

Hitachi Comment 14: The Department's verification report noted a difference between the amount of business tax reflected in the MOF report compared to the amount deducted from general expense in the response. Hitachi claims that this difference represents expenses involved in offshore consumer product manufacturing operations.

DOC Response: The Department was not provided with an explanation for this difference during verification. Therefore, the Department did not have a verified basis to account for this difference when making its final determination.

Mitsubishi Comment 1: The Department inappropriately relied on petitioner's data in assessing a "best information available" rate against Mitsubishi in the preliminary determination.

DOC Response: We disagree. In assessing a "best information available" rate against Mitsubishi at the preliminary determination, the Department acted in accordance with its regulations, 19 C.F.R. § 353.51(b).

Mitsubishi Comment 2: The Department erred in requiring Mitsubishi to include sales of model ANP-20 in its home market sales response because they were not made "in the usual wholesale quantities and in the ordinary course of trade for home consumption."

DOC Response: In the case of the Mitsubishi ANP-20, we found the product to be sold in the home market through the same channels of trade as other Mitsubishi 64K DRAM products

subject to the investigation and in the usual wholesale quantities. Since the ANP-20 is "such or similar" merchandise to that sold in the United States, we have included ANP-20 home market sales in our calculation of foreign market value.

Mitsubishi Comment 3: Where, as here, the purchase price of the commodity subject to an investigation is regularly subject to adjustment in light of market conditions, the Department should, as a general principle, determine the date of sale in light of the circumstances in the relevant market. While Mitsubishi argues that date of shipment is the appropriate date of sale in the U.S. market, it asserts that date of shipment may not be the appropriate basis in the Japanese context. Instead, it suggests that date of sale in the homemarket should be based on the order/confirmation date.

DOC Response: The Department has used date of shipment as the date of sale for both U.S. and Japanese sales. See DOC Responses to Hitachi's Comment 7, and Domestic Parties' Comment 13.

Mitsubishi Comment 4: All home market advertising expenses claimed by Mitsubishi qualify as direct selling expenses for which allowance should be made as a difference in circumstances of sale.

DOC Response: We agree. The Department verified the adjustment claimed by Mitsubishi for home market advertising expenses and found that the adjustment qualified as a direct selling expense since the advertising was aimed at end-users of 64K DRAM products sold by Mitsubishi.

Mitsubishi Comment 5: While the declining balance method of depreciation is used by Mitsubishi for its normal financial accounting, for purposes of this investigation, they claim that they should be allowed to use a straight-line method with a five-year estimated useful life. Mitsubishi argues that the declining balance method does not appropriately reflect the cost of the product under investigation.

DOC Response: We disagree. See the "Cost of Production" section of this notice for a description of the Department's methodology for determining depreciation.

Mitsubishi Comment 6: Mitsubishi's allocation of factory overhead on the basis of floor space utilization should be accepted, since it is the method used for its internal cost accounting.

DOC Response: The Department reviewed the charges included in the plant overhead. These charges included such items as the depreciation of the plant, maintenance, heating and lighting. The Department agrees that allocation by floor space of such charges, in this case, was a reasonable basis on which to attribute these costs to the products manufactured in the plant.

Mitsubishi Comment 7: Mitsubishi contends that while direct material costs and subcontractor costs are not associated with individual departmental cost centers, reconciliation of these costs was accomplished at verification through examination of detailed subledger accounts organized by vendor.

DOC Response: The Department performed alternative verification procedures which indicated that the costs reported in the response were reasonably stated for material costs, but that the subcontractor costs in the response did not reflect the company's records. The Department used the costs as reflected on Mitsubishi's records for the subcontractor cost.

Mitsubishi Comment 8: Mitsubishi argues that any attempt to recapture historic R&D is both impractical and in contravention of generally accepted accounting principles. They also note, however, that the use of current semiconductor related R&D would overstate R&D inasmuch as most of the R&D during the period of investigation was devoted to the development of one and four megabit DRAMs.

DOC Response: The Department's position is in accord with International Generally Accepted Accounting Standard #9 which provides that R&D associated with specific marketable products and production processes shall be capitalized and amortized over a reasonable basis.

The Department cannot attribute cost incurred for another product to the one under investigation and, additionally, must capture all costs necessary for the manufacturing of the product under investigation in its cost of production calculation.

Mitsubishi Comment 9: Mitsubishi argues that a royalty payment for technology acquired for the production of 64K DRAMs should be considered a "selling" expense, not a "cost of production" expense, since such costs are accrued on sales rather than on production quantities.

DOC Position: Since the technology acquired was necessary for production of 64K DRAMs, the Department included such costs in manufacturing. The method used for determining the amount paid under the contract is not the relevant consideration for determining its classification in the cost of production calculation.

NEC Comment 1: In objecting to the Department's use of constructed value, NEC aruges that the petition did not provide reliable data on Japanese pricing and production costs to justify the initiation of an investigation of cost of production and further, that the preliminary determination did not contain an indication that the Department had independently developed pricing and cost data to justify a cost of production investigation.

NEC notes that both the courts and the Department have repeatedly affirmed the principle that the antidumping law embodies a strong preference for use of actual home market sales data rather than constructed value and that the Department's regulations call for the use of actual sales data from third countries prior to the use of constructed value.

NEC argues that absent a finding that the conditions set forth in 19 CFR 353.7(a) were considered and satisfied with respect to NEC, the Department has no legal basis to use information other than actual home market sales data in its analysis.

DOC Response: Not only did the petition allege below-cost sales in the home market and provide substantial support for this allegation, but the Department's review, based on verified submissions of the respondents, has concluded that the petition was correct in its assertions. While the antidumping law does embody a strong preference for the use of actual home market sales data, it also directs that home market sales that are below cost of production may not be used to establish foreign market value where they: (1) Have been made over an extended period which permit recovery of all costs within a reasonable period of time in the normal course of trade. Section 773(b), and 19 CFR 353.7.

Consistent with our standard practice, we disregarded below-cost sales where they constituted more than 10 percent of total home market sales of such or similar merchandise over the six month period of investigation. We used above-cost home market sales for purposes of making our fair value comparisons, where they accounted for more than 10 percent of home market sales. Where less than 10 percent of the home market sales were above cost, we determined that such sales were insufficient to form an adequate basis for determination of foreign market value. In such situations, the Department used constructed value to determine foreign market value, in accordance with the Act, the regulations, and the legislative history (Section 773(b), 19 CFR 353.7 and S. Rep. No. 96-249, 96th Cong. 1st Sess. 95-96 (1979)).

NEC's Comment 2: NEC argues that the constructed value used by the Department for its preliminary determination included adjustments which were not appropriate and which should not be used for the final determination. These adjustments included, among others, the double counting of die costs and the use of general corporate averages for the interest and the general expenses.

DOC Position: For the preliminary determination, as explained in the Notice, the Department adjusted cost elements when it appeared such costs may not have been appropriately stated. For example, the Department notes that the total cost of manufacturing presented in the response did not appear to include the total cost of fabrication. The Department reasoned that if the fabrication were included, the cost of assembly would have been only 30 percent of the total costs. In view of the Department's knowledge of the production process, other facts presented in the response, and lacking an explanation in the response, the manufacturing costs presented did not appear to be reasonable. Accordingly, the Department adjusted the total per unit costs by the amount of the die. For other adjustments made by the Department, similar inconsistencies were present. For the final determination, the adjustments made by the Department are described under the "Cost of Production" section of this notice.

NEC Comment: Respondent argues that the Department erred in adjusting NEC's manufacturing costs by making additions for product-specific R&D because these R&D costs were included in the manufacturing costs submitted in the supplemental response. Further, they argue that the adjustment: (1) Ignored NEC's statement that no product-specific R&D costs were incurred during the period; and (2) is inconsistent with the Department's past approach of considering such expenses a part of the manufacturing costs only where R&D expenses can be "identified directly with the product under investigation or to the area in which the product is manufactured." (*Cell Site Transceivers from Japan* (Final), 49 FR 43080, 43083, Oct. 26, 1984).

DOC Response: The Department's questionnaire requested information on historic product-specific R&D. Neither NEC's original response, nor its supplemental response, provided verifiable information on this point. The Department's treatment of historic R&D in this case is consistent with prior determinations.

NEC Comment 4: NEC claims that interest expenses attributable to sales of 64K DRAMs were correctly reported.

DOC Response: Submitted interest expenses did not include an appropriate allocation of credit expenses attributable to the product under investigation. The Department added credit expenses related to the home market sales. The Department decreased the amount of corporate interest expenses attributed to the product to account for the proportional share related to the accounts receivable, so that the interest related to the home market credit expense was not double-counted.

Oki Comment 1: Oki claims that the depreciation reflected in its financial statements was a result of tax laws and should not be used for the Department's final determination.

DOC Response: The Department reviewed Oki's methods of accounting for depreciation used in the ordinary course of business. Like other companies, Oki's method reflected ordinary industry practices and followed the Department's methodology for determining depreciation. Therefore, the Department used this amount. See the "Cost of Production" section of this notice.

Oki Comment 2: Oki contends that the cost of production resulting from one of its plants which was recently put into operation should be adjusted for the costs related to start-up.

DOC Response: We agree. The Department adjusted the cost of production for only those costs presented by Oki which were directly related to the start-up operations of that plant.

Oki Comment 3: Oki argues that a credit for royalty income from licensing of 64K DRAM technology must be allowed against the cost of production.

DOC Response: The royalty income from the licensing of 64K DRAM technology was a result of the expenditures for the 64K DRAM research and development. The royalty income was not directly related to the production of 64K DRAMs during the period of investigation. Therefore, the Department allocated the product-specific research and development expenses for the period of investigation between the 64 K DRAMs produced by Oki and the royalty income.

Oki Comment 4: Oki states that historic semiconductor R&D cannot reasonably be allocated to specific products and should not be included in Oki's 64K DRAM cost of production.

DOC Response: The allocation of historic R&D that the Department requires is product-specific R&D for 64K DRAMs. The Department does not require allocation of historic product-line R&D for its calculation. It does, however, require an allocation of those product-line R&D expenses which are current. The Department included historic R&D for 64K DRAMs, based on the "best information available".

Oki Comment 5: Oki claims that the R&D expenses for 64K DRAMs were expensed when the company was selling 64K DRAMs at a profit between 1982-1984 and therefore should not be allocated to the period of investigation.

DOC Position: Historic costs necessary to manufacture the product under investigation cannot be disproportionately shifted and attributed to a period when the company was selling the product at a profit.

Oki Comment 6: Oki states that the percentage the Department included as "best information available" in the constructed value calculation for R&D in the preliminary determination is higher than the actual R&D costs under any reasonable method of computation.

DOC Response: Although the Department, in its questionnaire, requested the respondents to include both historic product-specific R&D and current product-line R&D in their calculations, Oki did not include such amounts. Therefore, the Department used "best information available" for its preliminary determination, and for this final determination. For the product-line R&D, the Department used data based on the experience of the Japanese semiconductor industry, which was obtained from public sources.

Oki Comment 7: The Department should not accept the domestic industry's argument that Oki's SG&A costs should be discarded because they are below the corporate average and claims the Department should not use this "average" as it did in its preliminary determination.

DOC Response: The Department reviewed Oki's general and administrative expenses as reported in their submission and used this amount, adjusted to a cost of sales allocation basis, for its final determination.

Oki Comment 8: Oki alleges that the domestic industry's proposals regarding the calculation of fixed costs (i.e., attributing a pro rata share of capital and R&D to 64K DRAMs on the basis of average industry expenditures during a given period) are: (1) Largely confused and (2) illegal, to the extent that they are clear.

DOC Response: The Department used the respondents' actual costs, when

verified and appropriately quantified and valued. It did not base its calculation for the respondent's cost of production on industry-wide statistics, except when such data may have been used as "best information available."

Oki Comment 9: Oki contends that the Department did not have a valid basis for questioning its claims for adjusting the yield variance which resulted when Oki reentered previously "rejected" devices into the production process during the month of March. Oki notes that the company did not maintain records which traced the retested devices back to "failure" at the initial test.

DOC Response: The Department questioned this claim because the amount of these reentered devices was a disproportionately large percentage of the total production during the relevant quarter. The Department notes that, accepting the fact these devices were reentered, it does not agree with Oki that the positive effects of the yield variance should have been recognized by the company during the month of March, since these devices were still incomplete and were still in the production process.

Oki Comment 10: Oki claims that the quantity of production differences cited by the Department at various points in the verification report are almost entirely the creation of the Department's inconsistent manner of handling the production quantity.

DOC Response: The Department's verification report notes various discrepancies in quantity throughout Oki's verification documents, submissions, and accounting records. For example, while the response listed untested devices and "stacked" devices as two die, a verification exhibit which summarized the response correctly did not include untested devices and counted "stacked" devices as two, but the original company records counted "stacked" devices as one die. The company did not explain its reason for the inconsistent manner in which it treated the production quantity throughout the investigation.

Oki Comment 11: Oki alleges, contrary to the verification report, that the verification exhibits related to the quantity of retest items of finished 64K DRAMs reconcile with one another. The company states that the difference between the retest items on these two exhibits could be reconciled by accounting for quantity of retest items of two unrelated products and the unfinished 64K DRAMs devices.

DOC Response: The Department, when attempting to reconcile the retest exhibits considered only 64K DRAMs quantities on these exhibits. One exhibit apparently includes unfinished pieces; however, the incomplete units were not specifically identified. Therefore, the Department's position remains unchanged regarding the reconciliation of these retest items.

Oki Comment 12: Oki claims, contrary to the verification report, that the production account, which measures quantity, and the production account which measures costs, include the same period of time.

DOC Response: When this question arose during verification, the verifiers requested and received documentation from the company officials concerning this difference in time period. From this documentation we were able to reconcile the period for the production quantities with the period for the cost. However, the results of this reconciliation had a *de minimis* impact on the per unit cost. Therefore, no adjustment was made to the cost.

Oki Comment 13: Oki points out that the verification report notes that material purchases were used instead of material consumed for a material variance and states that the difference resulting from this methodology is insignificant.

DOC Response: The Department used the results of this variance calculated with the materials consumed, not with the materials purchased.

Oki Comment 14: Oki objects to the Department raising its concern for an unresolved verification issue regarding Oki's determination that a variance was considered a favorable, not an unfavorable variance, when the actual labor hours exceeded standard hours during the period of investigation..

DOC Response: The Department raised its concern so that, prior to final determination, the respondent and petitioner could provide additional comments on this issue. Oki provided an explanation in its comments to the verification.

Oki Commnent 15: Oki states that the verification report is "almost" correct regarding depreciation when it states that a "double-declining balance" method was used by the company.

DOC Response: In its verification report, the Department stated that Oki used the double-declining balance method for depreciation. This method would have resulted in an effective rate which is within one percent of the rate of depreciation actually used by the company in determining costs for its financial statement..

Oki Comment 16: Oki claims that there is an error in the Department's verification report concerning two semiconductor equipment studies provided by the company. Oki states that, contrary to the Department's characterization, one of the studies reflects a four-year average life of the assets in service, not the average useful life.

DOC Response: The company provided the studies during verification. However, one study was not fully translated. Therefore, in the Department's report it notes that apparently the one study represents a four-year useful life, but is not conclusive as to this fact.

Oki Comment 17: Oki points out that the verification report notes that R&D and SG&A was allocated based on sales and this is true. However, Oki claims that the sale basis can easily be converted to the cost of sales basis, if the Department does not accept the sales basis.

DOC Response: The Department converted the G&A expenses to a cost of sales basis.

Oki Comment 18: Oki concludes that the verification report is almost correct in stating all non-operating expenses and income were included in Oki's submission, and that the Department's major concern appears to be combining these amounts, not the individual items included in the amounts.

DOC Response: The Department was concerned with the individual items included in non-operating income, e.g., dividend income and royalty income, to determine if these items were related to the production of 64K DRAMs and whether they should be taken as an offset to the cost of production of 64K DRAMs. We concluded that such income as the dividend income and royalty income were not related to the production of 64K DRAMs and, therefore, these offsets were not reflected in the cost of production used for the final determination.

Oki Comment 19: Oki claims that the difference cited in the verification report concerning the material variances is in error because it did not consider the material specification change variance. Oki describes the material variance as composed of two parts: (1) Standard to actual cost variance; and (2) the original standard cost to the revised standard cost because of material specification change variance.

DOC Response: The Department recomputed the standard cost to actual cost variance which did not reconcile to Oki's standard cost to actual cost variance. The Department was not commenting on the material specific change variance, which has no bearing on the variance under review by the Department.

Oki Comment 20: Oki claims that its basis for allocation of indirect department expenses to 64K DRAMs is reasonable and its amortization of six-month variance to the months within that six months is also reasonable.

DOC Response: The Department, after review of the company's methods, determined that these allocations adequately reflected the cost which should be attributed to the 64K DRAMs.

Oki Comment 21: Oki argues that the Department incorrectly disregarded certain below cost home market sales, as they did not meet the requirement of being in substantial quantities over an extended period of time and not at prices permitting recovery of all costs in a reasonable time in the normal course of business.

DOC Response: See DOC response to NEC Comment 1.

Oki Comment 22: Oki argues that 200NS home market sales below the cost of production should not be excluded from price to price comparisons since they were "seconds" and obsolete and were sold at whatever price the market would bear. The fair value of such devices is the price at which they were sold in the home market. Respondent cites the *Southwest Florida Winter Vegetable Growers Association* v. *United States* 584 F. Supp. 10, 16 (CIT 1984) on this point.

DOC Response: Winter Vegetables is inapposite because it applied to sales of vegetables that had to be sold within a short period of time because they were perishable. 64K DRAMs are not perishable. There were substantial sales of 200NS DRAMs in both markets during the period at a wide range of prices. The Department sees no reason to depart in this instance from its normal methodology in treating sales alleged to be made at less than the cost of production. (See DOC Response to NEC Comment 1.)

Fujitsu Comment 1: Fujitsu, a manufacturer of 64K DRAMs in Japan which was not required to respond to the antidumping duty questionnaire, opposes the method the Department used in its preliminary determination to calculate the estimated dumping margin for "all other manufacturers" in this investigation. In the preliminary determination, the Department included in its weighted-average calculation, the dumping margin for Mitsubishi which was based on the petitioner's data as the "best information available." Fujitsu argues that section 776(b) of the Act restricts the use of "best information available" to a party which "refuses or is unable to produce information requested in a timely manner and in the form required, or otherwise significantly impedes an investigation" (*Atlantic Sugar, Ltd.* v. *United States*, 744 F. 2d 1556 (Fed. Cir. 1984)). Companies in the "all other manufacturer" category do not fall into this category since they were not asked by the Department to complete questionnaire responses. Second, Fujitsu argues that estimated margins must be based on the best and most accurate information available to the Department. The data contained in Micron Technology's petition is not an accurate estimate as demonstrated by the fact that the preliminary margins for the companies which responded to the questionnaire showed the petition data to be substantially excessive. Third, Fujitsu argues that where there is adequate actual data on which to compute weighted-average margins, the Department should not include "punitive" rates in its calculation.

DOC Response: It has consistently been the practice of the Department that in an affirmative determination, producers/exporters for whom a separate weighted-average dumping margin has not been calculated will fall within the "all other manufacturers" category. The "all other manufacturers" dumping margin is the weighted-average margin of the companies investigated for whom margins were found to exist.

Although at the preliminary determination, a company investigated did not provide an adequate response to our questionnaire, section 776(b) of the Act provides a basis for making a sales at less than fair value determination through the use of the best information available. Therefore, that result, together with the other margins of fair value determined in accordance with the Act's procedures, was appropriately included in the calculation of the overall weighted-average margin for purposes of establishing the "all other" rate.

We note, however, that since we have not used a "best information available" rate for any of the respondents for the purposes of the final determination, the weighted-average margin does not include such a rate.

Fujitsu Comment 2: There is no statutory basis for the Department to use the "fabricated data" proposed by the domestic parties in place of documented and verified data submitted by respondents in response to Department questionnaires.

DOC Response: The Department uses data supplied by a company unless it cannot verify such data or it appears that such information is not appropriately quantified or valued. Only then does the Department resort to "best information available" which may include such things as published sources.

Fujitsu Comment 3: There is no statutory authority in support of petitioners' contention that R&D and capital expenses incurred by respondents prior to the period of investigation must be included as costs of production during the period of investigation.

DOC Response: We disagree. The Department notes that the constructed value provisions of the Act (section 773(e)) specify that the costs shall be those incurred "in producing such or similar merchandise, at a time preceding the date of exportation." This definition does not preclude the inclusion of costs, like those for equipment and R&D, which were incurred prior to exportation, but which are allocated to and are necessary for the manufacture of the product under investigation.

Domestic Parties' Comments

The comments addressed in the following section include not only those of the petitioner, Micron Technology Inc., but also other domestic interested parties to this investigation, namely Motorola, Inc. and Intel Corporation.

Domestic Parties' Comments 1: The Department must avoid distortions in price due to related company transactions.

DOC Response: In accordance with 19 CFR 353.22, the Department disregarded home market sales to related parties.

Domestic Parties' Comment 2: Domestic Parties express concern that respondents have distorted their data by switching to straight-line methods of varying periods for reporting expenses such as depreciation instead of methods they normally used for financial reporting.

DOC Response: We agree and have used the method of depreciation as described under the "Cost of Production" section of this notice.

Domestic Parties' Comment 3: Domestic Parties claim that the R&D methodologies and allocation methods utilized by respondents distort their costs.

DOC Response: The Department reviewed the respondents' R&D methodologies and allocation methods. When these methods and allocation bases did not properly attribute the appropriate amount of R&D to the product, the Department made appropriate adjustments. See the "Cost of Production" section of this notice.

Domestic Parties' Comment 4: Domestic Parties assert that, because production costs were rapidly decreasing and inventories were being built-up, production costs should be lagged to ensure that sale prices for 64K

DRAMs are compared with the appropriate costs for producing the units sold. Domestic Parties also argue that because wafer sort generally occurs at least two months prior to sale, there should be at least a two-month lag when comparing constructed value with the sale price. If inventory levels have increased over the period of investigation, the lag between wafer sort and actual sale will be longer.

DOC Response: The Department agrees that there should be a lag time between sales data and cost data. For a description of the Department's method used to match sales and costs, see the "Cost of Production" section of this notice. See also DOC Response to Hitachi's Comment 6.

Domestic Parties' Comment 5: Domestic Parties' claim that in a number of specific cases, SG&A was understated as a result of respondents' allocation methodology.

DOC Response: The Department used verified home market selling expenses. When it appeared SG&A was not properly stated, the Department made appropriate adjustments. See the "Cost of Production" section of this notice.

Domestic Parties' Comment 6: Domestic Parties' state that the department's verification findings call into doubt the respondents' reported yield data.

DOC Response: The Department disagrees. The Department considers the submitted yield adequately tested.

Domestic Parties' Comment 7: Domestic parties argue that, since Japanese dumping increased in severity toward the end of the period of investigation and thereafter, the dumping margins for the second and third quarters of 1985 would be a more appropriate indicator of the extent to which sales at less than fair value have been and are likely to be taking place. Thus, they argue the Department should exclude the first quarter of 1985 from its investigation period and either restrict its investigation to the second quarter of 1985, or include U.S. sales from July to September 1985 to calculate dumpings margins.

DOC Response: The petition in this investigation was filed on June 24, 1985. In accordance with 19 CFR 353.38(a), the Department instituted a period of investigation extending from 150 days prior to, and 30 days after, the first day of the month during which the petition was received—that is, January 1 through June 30, 1985. If the petitioner or other interested parties objected to the period chosen, they should have registered that objection at the commencement of the investigation, not at its conclusion.

Domestic Parties' Comment 8: Motorola claims that its cost model based on published data reflects the cost of 64k DRAMs during the period of investigation and that the low costs reported by the respondents are a result of inappropriate allocation methods, excluded costs, and other accounting practice maneuvers.

DOC Response: The Department based its final determination on the verified actual cost of each respondent as reflected on its records when such information included all necessary costs, appropriately quantified and valued. When such information was not available or not appropriately valued, the Department used "best information available," which could include industry statistics.

Domestic Parties' Comment 9: Domestic Parties point out that R&D expenditures reported by the respondents are far below the levels reported by MITI to be consistent R&D spending levels for intergrated circuits. They also note that the R&D reported is less than the R&D reported for the Japanese semiconductor industry as set forth in Published sources. Thus, they argue that the Department should substitute the levels reported in such published sources for respondents' costs.

DOC Response: The Department reviewed the respondents' R&D calculation. When such data could not be verified, was incomplete, not appropriately allocated, or could not be properly identified with the 64K DRAMs, the Department used as best information available MITI figures on R&D for Japanese semiconductor manufacturers for the first six months of 1984 (13 percent of sales), as reported by Hambrecht & Quest Incorporated.

Domestic Parties' Comment 10: Domestic Parties argue that since the respondents' capital costs in their submissions are lower than the consistent historic costs for IC's of Japanese producers, as established in published sources, the Department should use the historic costs obtained from published sources. Domestic Parties further contend that the reason the reported capital and R&D costs were substantially lower than the amounts published was because such costs were expensed by various accounting principles, to the period of time prior to the investigation.

DOC Response: The Department used the respondents's reported depreciation expenses except as noted in the "Cost of Production" section of this notice. The Department's methodology for attributing R&D costs and capital to the products sold during the period of investigation did not disproportionally allocate R&D and capital costs to the period prior to the investigation. For R&D costs, the Department has captured a proportional share of historic costs per unit.

Depreciation expense is based on equipment which is continually being modernized and replaced. At any one time the depreciation expense will reflect average depreciation for a pool of equipment purchased at various times.

Domestic Parties' Comment 11: Domestic Parties allege that because of lower production of 64K DRAMs, the variable costs should have remained the same in 1984 even if yields increased.

DOC Response: Production volume would not have a significant effect on variable costs. Such costs are more directly influenced by such factors as yields and price of inputs. See the "Cost of Production" section of this notice for details as to how we treated respondents' costs.

Domestic Parties' Comment 12: Domestic Parties allege that the general and administrative expenses reported by the companies are understated because of the diversion of certain costs to other products and the allocation of the remaining costs over the total sales of the company.

DOC Response: The Department reviewed each respondent's methodology and analyzed the costs included. When general expenses did not include some appropriate costs, adjustments were made. See the "Cost of Production" section of this notice.

Domestic Parties' Comment 13: Domestic Parties argue that the Department should use the sales agreement date as the date of sale for U.S. sales, and should not include in the period residual shipments from sales agreements made earlier. In the case of original equipment manufacturers (OEM) contracts, the date of the sale should be the date that the basic sales agreement was made with the OEM. While a subsequent price adjustment for sales to an OEM or distributor certainly affects the net sales price, it does not move the sales date to that date.

In the case of distributor sales, Motorola notes that the question as to what is the appropriate date of sale is somewhat more complex. Where the price is to be determined only after the units arrive, the date at which the price is initially set would probably be the appropriate date of sale. Thus, where the contract states that the price will be the lowest price while the units are in distributor inventory, the initial price for each of those units is established when

they first enter inventory, i.e., on the date of shipment.

The use of shipment date rather than order date removes from this investigation many low priced "sales" at the end of the period of investigation (POI) and brings into the period higher priced pre-POI "sales."

DOC Response: Department practice is to recognize a sale only when all key elements (i.e., binding commmitment, irrevocable price, quantities to be purchased) are firm. As will be shown, in this case, during the time period investigated, there is no alternative but to recognize the shipment date as the date of sale.

As noted, 64K DRAMs are sold to two basic types of customers—distributors and OEMs. Sales to distributors constitute approximately fifteen to thirty percent of the U.S. sales. As Domestic Parties note, the standard U.S. distribution agreement contains some sort of "price protection" provision. Under such a provision, if the "book" price for any product decreases, the distributor will be charged the reduced price on any products shipped thereafter. In addition, the distributor may apply for credit for the reduction in price on such products previously purchased by the distributor, and either in transit or part of the distributor's inventory.

Most distributor agreements also include a "ship and debit" clause, also known as a "ship out of stock and debit" (SOSAD) clause. This provides that a producer may reduce the price of products sold to a distributor where the distributor has negotiated a price with its customer which does not allow the distributor to meet a guaranteed margin on the resale. SOSAD authorizes the distributor to obtain a debit from the producer for the difference.

Under these distributor agreements, the earliest date on which a price can be determined is the date of shipment; thus, this is the date we have chosen as the date of "sale."

We have reached a similar conclusion with respect to the OEM contracts. We agree, in principle, with Domestic Parties' general assertion that where purchase orders are issued pursuant to a binding long-term contract, the date of sale should be the date of the long-term contract, rather than the date of the purchase orders. Here, however, it did not appear that purchase orders were issued in accordance with the terms of any long-term contract. Indeed, even where a producer had a long-term contract on the books with a particular customer, it appeared that those purchase orders that were issued during the period of investigation were not issued in conformance with the terms of the long-term contract, but rather reflected new pricing arrangements.

Thus, the only question before us was whether it would be appropriate to use the purchase order date as the date of sale. There are at least two bases for concluding that, given the characteristics of this particular industry and the market conditions as they existed during the period of investigation, that it would not.

First, many of the purchase orders expressly provide, in essence, that acceptance of the order could be made either by means of express acknowledgment or by shipment of conforming goods. Since written acknowledgments or other confirmations of purchase orders were generally not received, the date of shipment constituted acceptance of the conforming goods. See UCC 2-206.

Second, it appears that neither party to a purchase order treated that purchase order as a binding agreement. During the time period investigated, there were significant cancellations of 64K DRAM orders by both parties, without any sanctions or penalties whatsoever, and frequent price revisions to reflect rapidly declining prices. Under these conditions, neither price nor quantity were firm until the order was shipped and, in fact, post-shipment price revisions were not uncommon. Thus, the date of shipment is the earliest point in the transaction at which any sort of binding commitment may be inferred.

Contrary to the Domestic Parties' assertions, the potential for post-shipment cancelations or price adjustments does not make this situation analogous to one where rebates are granted after a sale. While rebates may not be "earned" until after a sale has occurred, the conditions and amounts of rebates are established at the time of sale. (See Department's definition of "rebates" provided in its questionnaire in this investigation.) Here, however, these post-shipment adjustments are not based on any specified conditions or formulae; they are simply renegotiations of price and quantity. Thus, the Department's use of date of shipment as date of sale in this case is distinguishable from its usual methodology of using date of contract as date of sale where rebates are involved.

It should also be noted, that the Department has taken the position here that there can be no new dates of sale after shipment and any subsequent price modifications must be reported as one of the following, as appropriate: (1) Rebates; (2) discounts; (3) price protection adjustments; or (4) ship and debit adjustments. By taking this position the Department has ensured that respondents may not be in a position to move their sales outside of the period of investigation by the simple expedient of granting a further price adjustment.

Finally, the Department notes that Motorola's argument that the Department's decision on the "sale" date will remove certain low priced "sales" from the end of the period of investigation and add certain higher priced "sales" at the beginning of the investigation is misplaced. The Act directs the Department to look at U.S. sales by reference to "agreements" to purchase or sell, regardless of the impact on the investigation. (Section 772 (b) and (c).)

Domestic Parties' Comment 14: In considering price adjustments, the Department should pay particular attention to ensure that all relevant price adjustments were reported, especially price adjustments occurring subsequent to the period of investigation, and that these adjustments were properly allocated to the sales to which they apply.

DOC Response: In order to ensure the completeness and accuracy of post-shipment price adjustments, the Department-checked price issued well after the period of investigation for each of the companies. In the event the Department found credits outside the period which were not reported, these credits were quantified and allocated to particular sales by the Department for our final determination. The Department found that the allocation methods used by NEC AND Oki reasonably tied credits to specific sales. Mitsubishi's methodology of allocating the adjustments over all units sold, instead of attributing them to particular sales, was not accepted. In the case of Mitsubishi, the Department developed alternative methods for allocating price protection and ship and debit adjustments to specific sales. Hitachi allocated ship and debit credits attributed to each distributor. Because Hitachi had only a small amount of ship and debit credits, we accepted Hitachi's allocation method as "best information available" in this instance.

Suspension of Liquidation

In accordance with section 733(d)(2) of the Act, we are directing the United States Customs Service to continue to

suspend liquidation of all entries of 64K DRAMs from Japan that are entered, or withdrawn from warehouse, for consumption, on or after December 11, 1985. The United States Customs Service shall require a cash deposit or the posting of a bond equal to the estimated weighted-average amount by which the foreign market value of the merchandise subject to this investigation exceeds the United States price as shown in the table below. This suspension of liquidation will remain in effect until further notice.

Manufacturer/producer/exporter	Margin percentage
NEC Corporation	22.76
Hitachi Ltd.	11.67
Oki Electric Industry Co. Ltd.	36.34
Mitsubishi Electric Corporation	13.43
All other manufacturers/producers/exporters	20.75

ITC Notification

In accordance with section 735(d) of the Act, we will notify the ITC of our determination. In addition, we are making available to the ITC all non-privileged and non-confidential information relating to this investigation. We will allow the ITC access to all privileged and confidential information in our files, provided the ITC confirms that it will not disclose such information either publicly or under an administrative protective order without the consent of the Deputy Assistant Secretary for Import Administration. The ITC will determine whether these imports materially injure, or threaten material injury to, a U.S. industry within 45 days after we make our final determination. If the ITC determines that material injury or threat of material injury does not exist, this proceeding will be terminated and all securities posted as a result of the suspension of liquidation will be refunded or cancelled. However, if the ITC determines that such injury does exist, we will issue an antidumping duty order on 64K DRAMs from Japan entered, or withdrawn from warehouse, for consumption after the suspension of liquidation, equal to the amount by which the foreign market value exceeds the United States price.

This determination is published pursuant to section 735(d) of the Act (19 U.S.C. 1673d(d)).

April 23, 1986.

Paul Freedenberg,

Assistant Secretary for Trade Administration.

[FR Doc. 86-9543 Filed 4-28-86; 8:45 am]

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APPENDIX B

SUPPLEMENTAL TRADE TABLES

Table B-1.--DRAM's, cased: Total apparent U.S. consumption on the basis of bits of memory, 1/ by densities, 1983-85

(In thousands of K-equivalents)

Item	1983	1984	1985
Under 16K	***	***	***
16K	***	***	***
64K	11,329,920	21,404,224	15,982,272
256K	126,720	4,293,120	19,313,408
1M	-	-	***
Total	13,880,324	26,810,532	35,944,040

1/ Assumes that under 16K are 4K DRAM's.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table B-2.--DRAM's, cased: Domestic shipments of cased DRAM's made from uncased DRAM's produced and assembled in the United States, by densities, 1983-85

* * * * * * *

Table B-3.--DRAM's, cased: Domestic shipments of cased DRAM's made from uncased DRAM's produced in the United States and assembled in third countries, by densities, 1983-85

* * * * * * *

Table B-4.--DRAM's, cased: Domestic shipments of cased DRAM's made from uncased DRAM's produced in Japan and assembled in the United States, by densities, 1983-85

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Table B-5.--DRAM's, uncased: U.S. importers' inventories of DRAM's produced in Japan, by densities, as of Dec. 31 of 1982-85

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Table B-6.--DRAM's, cased: U.S. importers' inventories of DRAM's produced in Japan and assembled in a third country, by densities, as of Dec. 31 of 1982-85

* * * * * * *

Table B-7.--DRAM's, uncased: U.S. shipments 1/ of imports from Japan, by densities, 1983-85

(In thousands of units)

Item	1983	1984	1985
Under 16K	***	***	***
16K	***	***	***
64K	26,006	40,863	17,507
256K	***	***	***
1M	***	***	***
Total	34,864	43,420	30,774

1/ Includes intracompany or intercompany transfers which account for virtually all shipments of uncased DRAM's imported from Japan.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table B-8.--DRAM's, cased: U.S. shipments 1/ of imports of DRAM's made from uncased DRAM's produced in Japan and assembled in a third country, by densities, 1983-85

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Table B-9.--DRAM's, cased: U.S. open-market shipments of cased DRAM's made from uncased DRAM's produced in Japan and assembled in a third country, by densities, 1983-85

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APPENDIX C

SELLING PRICES REPORTED BY U.S. PRODUCERS AND IMPORTERS

Table C-1.—64K DRAM's (150 ns) sold to OEM's: Weighted-average net selling prices for sales of domestic products and for sales of imports from Japan, and average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Office automation OEM				Telecommunication OEM				Industrial automation OEM				Consumer products OEM			
	U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)	
	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent
1984:																
Sept—	$3.98	$3.53	$0.44	11.19	$3.73	$3.87	$-0.14	-3.66	$3.46	$3.91	$-0.45	-12.86	$3.43	$3.20	$0.23	6.61
Oct—	3.27	3.25	.02	.72	3.73	3.72	2/	.08	3.51	3.75	-.24	-6.78	2.19	3.37	-1.18	-53.90
Nov—	3.52	3.24	.27	7.77	3.24	3.95	-.71	-21.80	2.59	3.75	-1.16	-44.90	2.13	3.43	-1.30	-61.27
Dec—	3.24	3.20	.04	1.08	2.64	3.44	-.80	-30.34	2.45	3.75	-1.30	-53.06	2.75	3.10	-.35	-12.80
1985:																
Jan—	2.87	2.72	.15	5.19	2.93	3.62	-.70	-23.75	3.24	2.80	.44	13.57	1.85	3.01	-1.16	-62.78
Feb—	2.56	2.39	.17	6.57	2.37	3.15	-.78	-32.99	3.85	2.52	1.34	34.71	1.69	3.10	-1.41	-83.83
Mar—	1.46	2.51	-1.06	-72.49	2.39	2.57	-.18	-7.51	2.77	1.25	1.52	54.86	2.21	2.60	-.39	-17.50
Apr—	1.53	1.45	.08	5.04	1.67	1.10	.57	34.07	3.13	1.29	1.84	58.74	1.65	1.70	-.05	-3.00
May—	1.31	1.29	.03	2.06	1.03	.90	.13	12.41	2.38	1.01	1.37	57.68	1.29	1.65	-.36	-27.68
June—	1.48	1.26	.23	15.19	1.14	1.09	.05	4.53	1.95	.98	.96	49.52	.83	1.51	-.68	-81.30
July—	.92	1.33	-.41	-44.92	1.37	1.10	.27	19.80	2.49	.80	1.69	67.84	.87	-	-	-
Aug—	1.05	1.26	-.21	-20.35	1.23	.90	.33	27.09	1.87	.99	.88	46.94	.76	-	-	-
Sept—	1.03	.82	.21	20.49	1.76	.90	.86	48.76	1.90	.84	1.07	56.06	.71	.70	.01	1.86
Oct—	.92	1.26	-.34	-36.59	.99	.75	.24	24.41	1.45	.84	.61	42.41	.70	.65	.05	7.66
Nov—	1.22	.87	.36	29.21	.70	.90	-.20	-28.13	.66	.71	-.06	-8.43	.61	.65	-.04	-6.42
Dec—	.77	1.16	-.39	-50.21	.70	.90	-.20	-28.22	.75	.83	-.08	-11.05	.62	.72	-.09	-15.14
1986:																
Jan—	1.10	.85	.25	22.44	.66	.75	-.10	-14.51	.76	.72	.04	4.80	.80	.85	-.06	-7.06
Feb—	1.08	.90	.18	16.96	.91	.60	.31	33.73	1.10	1.25	-.15	-13.64	.73	.92	-.19	-25.28
Mar—	1.20	.84	.36	29.77	.92	.80	.12	13.43	.75	-	-	-	.85	.70	.15	17.41

1/ Margins are calculated from unrounded weighted-average prices.
2/ Less than 0.05.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table C-2.—64K DRAM's (200 ns) sold to OEM's: Weighted-average net selling prices for sales of domestic products and for sales of imports from Japan, and average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Office automation OEM				Telecommunication OEM				Industrial automation OEM				Consumer products OEM			
	U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)	
	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent
1984:																
Sept	$3.77	$3.58	$0.19	4.97	-	-	-	-	$3.57	-	-	-	$2.95	$3.47	$-0.52	-17.81
Oct	3.65	3.21	.44	12.08	-	-	-	-	3.27	-	-	-	2.38	3.32	-.94	-39.40
Nov	3.72	3.37	.34	9.17	-	-	-	-	2.89	-	-	-	2.62	3.16	-.53	-20.39
Dec	3.64	3.48	.15	4.19	-	-	-	-	2.96	-	-	-	2.41	3.01	-.61	-25.12
1985:																
Jan	2.67	2.73	-.05	-1.97	$1.85	-	-	-	2.78	-	-	-	2.17	2.82	-.65	-29.83
Feb	1.75	2.15	-.40	-22.97	1.85	-	-	-	2.44	-	-	-	1.91	2.80	-.89	-46.59
Mar	1.84	2.01	-.17	-9.42	1.85	-	-	-	1.87	-	-	-	1.84	1.85	-.01	-.48
Apr	1.33	1.65	-.32	-23.89	1.40	-	-	-	1.34	-	-	-	1.79	-	-	-
May	1.60	1.39	.21	13.25	1.40	-	-	-	.95	-	-	-	.65	-	-	-
June	1.47	.96	.50	34.25	1.20	-	-	-	.95	-	-	-	.60		-	-
July	.88	.83	.04	4.96	-	-	-	-	.82	-	-	-	-	-	-	-
Aug	.89	.88	.01	1.59	-	-	-	-	.82	-	-	-	.47	-	-	-
Sept	.81	1.10	-.29	-35.64	-	-	-	-	.57	-	-	-	2.25	-	-	-
Oct	.68	.74	-.06	-9.06	-	-	-	-	.52	-	-	-	-	-	-	-
Nov	.70	.74	-.04	-5.71	-	-	-	-	.53	-	-	-	.65	-	-	-
Dec	.68	.71	-.03	-4.38	-	-	-	-	.71	-	-	-	-	-	-	-
1986:																
Jan	.72	.74	-.03	-3.55	-	-	-	-	.85	-	-	-	.80	-	-	-
Feb	1.04	.71	.33	31.62	-	-	-	-	.85	-	-	-	-	-	-	-
Mar	1.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1/ Margins are calculated from unrounded weighted-average prices.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table C-3.—64K DRAM's (150 ns) sold to subcontractors, distributors, and spot-market purchasers: Weighted-average net selling prices for sales of domestic products and for sales of imports from Japan, and average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Subcontractors				Distributors				Spot-market purchasers			
	U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)	
	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent
1984:												
Sept—	$2.59	$3.90	$-1.31	-50.45	$2.59	3.56	$-0.98	-37.75	$3.52	$3.38	$0.13	3.77
Oct—	3.37	3.95	-.58	-17.18	2.56	3.40	-.84	-32.77	2.43	3.69	-1.26	-52.12
Nov—	3.10	4.14	-1.04	-33.35	2.44	2.91	-.47	-19.22	2.58	3.01	-.43	-16.60
Dec—	2.54	4.13	-1.58	-62.35	2.02	2.46	-.44	-21.84	2.56	2.85	-.29	-11.42
1985:												
Jan—	2.63	2.32	.31	11.82	2.03	2.36	-.33	-16.04	1.98	1.99	-.01	-.53
Feb—	1.63	1.85	-.22	-13.68	1.28	1.49	-.22	-16.92	1.73	1.20	.53	30.73
Mar—	1.74	1.39	.35	20.15	.86	1.19	-.33	-39.02	1.49	1.59	-.10	-6.55
Apr—	.80	1.15	-.35	-43.53	.93	1.10	-.17	-18.21	1.50	1.06	.44	29.46
May—	1.11	1.15	-.04	-3.39	.71	.73	-.03	-3.61	.65	.79	-.14	-21.17
June—	1.37	1.09	.28	20.57	.55	.57	-.02	-3.72	.56	.68	-.12	-21.99
July—	.50	.95	-.45	-90.38	.37	.59	-.22	-57.66	.66	.66	.00	.48
Aug—	.62	.90	-.28	-44.13	.41	.66	-.25	-60.85	.60	.63	-.03	-5.04
Sept—	.70	.90	-.20	-27.78	.56	.94	-.38	-67.52	.56	.40	.16	28.65
Oct—	.68	.91	-.23	-34.21	.66	.51	.15	22.38	.56	.48	.07	13.35
Nov—	.56	.79	-.23	-40.53	.65	.61	.04	6.22	.57	.67	-.10	-16.75
Dec—	.72	.76	-.05	-6.47	.43	.84	-.40	-93.28	.57	.74	-.17	-29.82
1986:												
Jan—	.60	.72	-.12	-19.48	.82	1.04	-.22	-26.58	.75	.80	-.05	-7.09
Feb—	.85	.85	.00	0.02	.96	.95	.01	1.21	.78	.84	-.06	-7.05
Mar—	.71	.93	-.22	-31.52	.87	.91	-.04	-4.44	-	.74	-	-

1/ Margins are calculated from unrounded weighted-average prices.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table C-4.—64K DRAM's (200 ns) sold to subcontractors, distributors, and spot-market purchasers: Weighted-average net selling prices for sales of domestic products and for sales of imports from Japan, and average margins by which imports of Japanese DRAM's undersold or oversold 1/ U.S.-produced DRAM's, by classes of OEM's and by months, September 1984-March 1986

(Per unit)

Month	Subcontractors				Distributors				Spot-market purchasers			
	U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)		U.S. weighted-average price	Japanese weighted-average price	Margins of underselling/overselling (-)	
	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent	Amount	Amount	Amount	Percent
1984:												
Sept—	$3.24	$3.36	$-0.12	-3.79	$2.94	$3.52	$-0.58	-19.80	$3.43	$3.30	$0.13	3.78
Oct—	2.75	3.12	-.37	-13.59	2.59	3.31	-.72	-27.91	3.58	3.24	.34	9.51
Nov—	2.99	3.07	-.08	-2.54	2.14	3.05	-.91	-42.25	3.03	3.56	-.52	-17.30
Dec—	3.03	3.07	-.04	-1.45	1.83	3.13	-1.30	-70.88	2.36	2.97	-.61	-25.77
1985:												
Jan—	1.92	2.80	-.88	-45.45	1.70	2.09	-.39	-22.77	1.96	2.14	-.18	-9.07
Feb—	1.44	1.08	.36	25.05	1.11	2.16	-1.05	-94.77	1.76	1.94	-.18	-10.51
Mar—	.95	1.08	-.13	-13.13	.90	.95	-.05	-5.76	1.38	1.86	-.48	-34.79
Apr—	1.01	-	-	-	.73	1.37	-.64	-87.65	.53	1.48	-.95	-177.54
May—	.73	.60	.13	17.48	.56	1.10	-.54	-96.39	.78	1.35	-.58	-74.01
June—	.64	.60	.04	5.87	.62	.60	.02	2.76	.47	.74	-.27	-58.26
July—	.71	.60	.11	15.11	.51	.75	-.24	-48.04	.44	.42	.02	4.60
Aug—	.83	.50	.33	39.58	.36	.67	-.31	-85.51	.39	.49	-.10	-25.72
Sept—	.49	.60	-.11	-21.56	.60	.61	-.01	-1.70	.68	.41	.27	39.85
Oct—	.50	.60	-.10	-19.87	.43	.34	.10	22.15	.76	.30	.46	60.38
Nov—	.53	.60	-.07	-13.21	.71	.55	.16	22.74	.65	.55	.10	14.96
Dec—	.68	.50	.18	26.94	.69	.71	-.03	-3.94	.86	.57	.29	33.75
1986:												
Jan—	.86	.95	-.09	-10.12	.64	1.04	-.40	-62.52	.90	2.53	-1.63	-181.42
Feb—	.93	-	-	-	.96	.70	.26	26.96	.90	.76	.14	15.63
Mar—	.85	-	-	-	1.00	1.00	.00	0.00	-	1.35	-	-

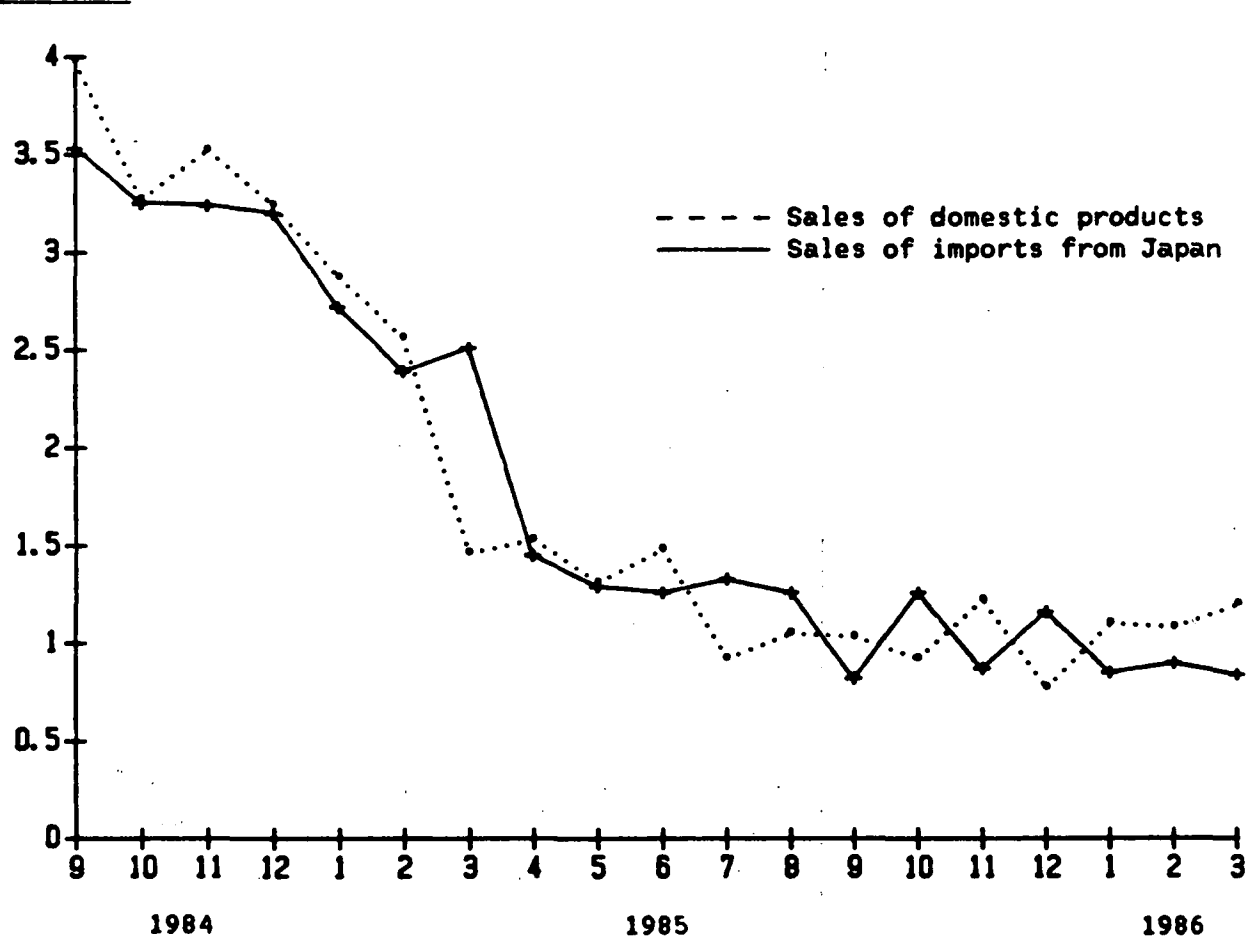
1/ Margins are calculated from unrounded weighted-average prices.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

APPENDIX D

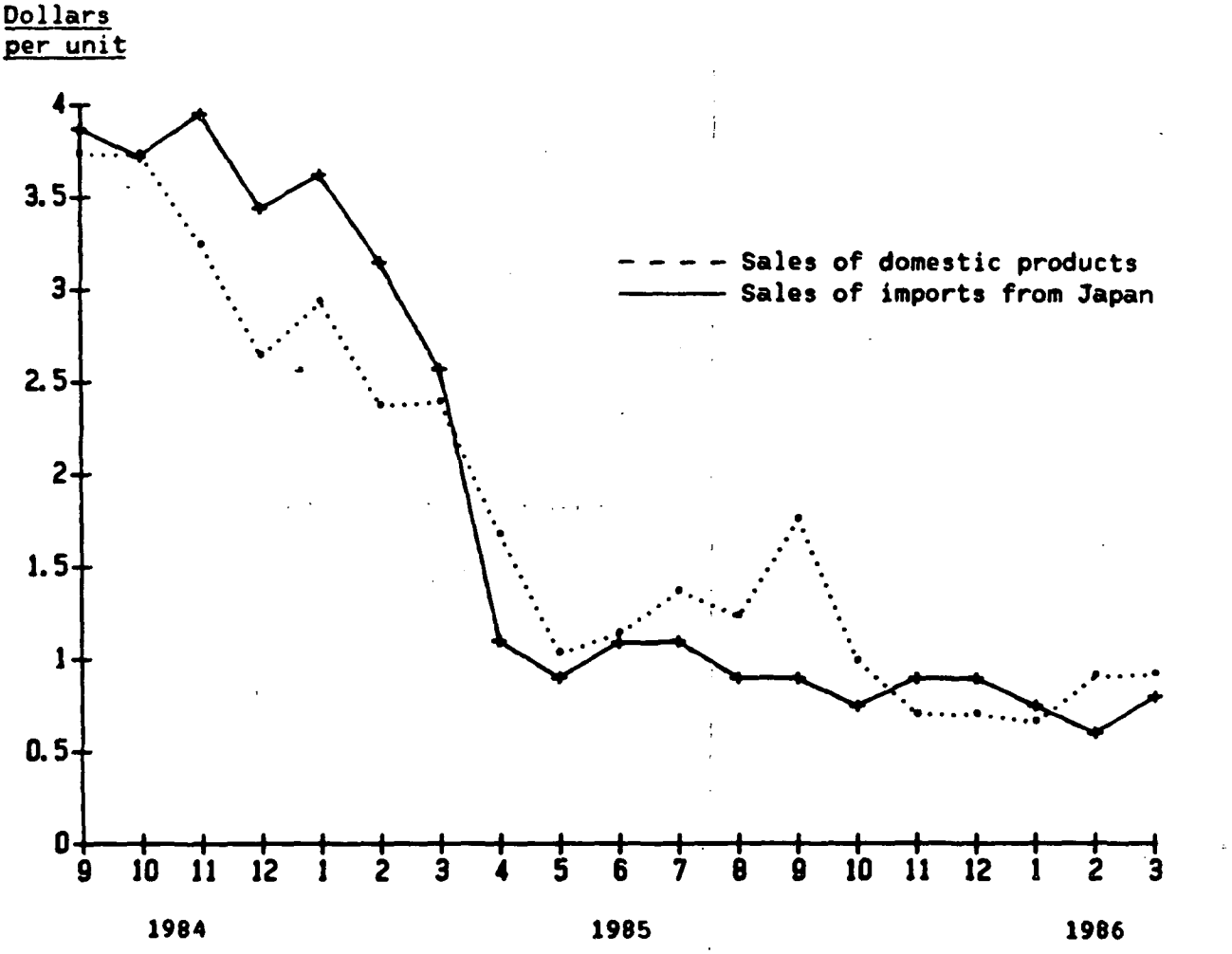
GRAPHS OF SELLING PRICES REPORTED BY U.S. PRODUCERS AND IMPORTERS

Figure D-1.—64K DRAM's (150 ns) sold to office automation OEM's: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



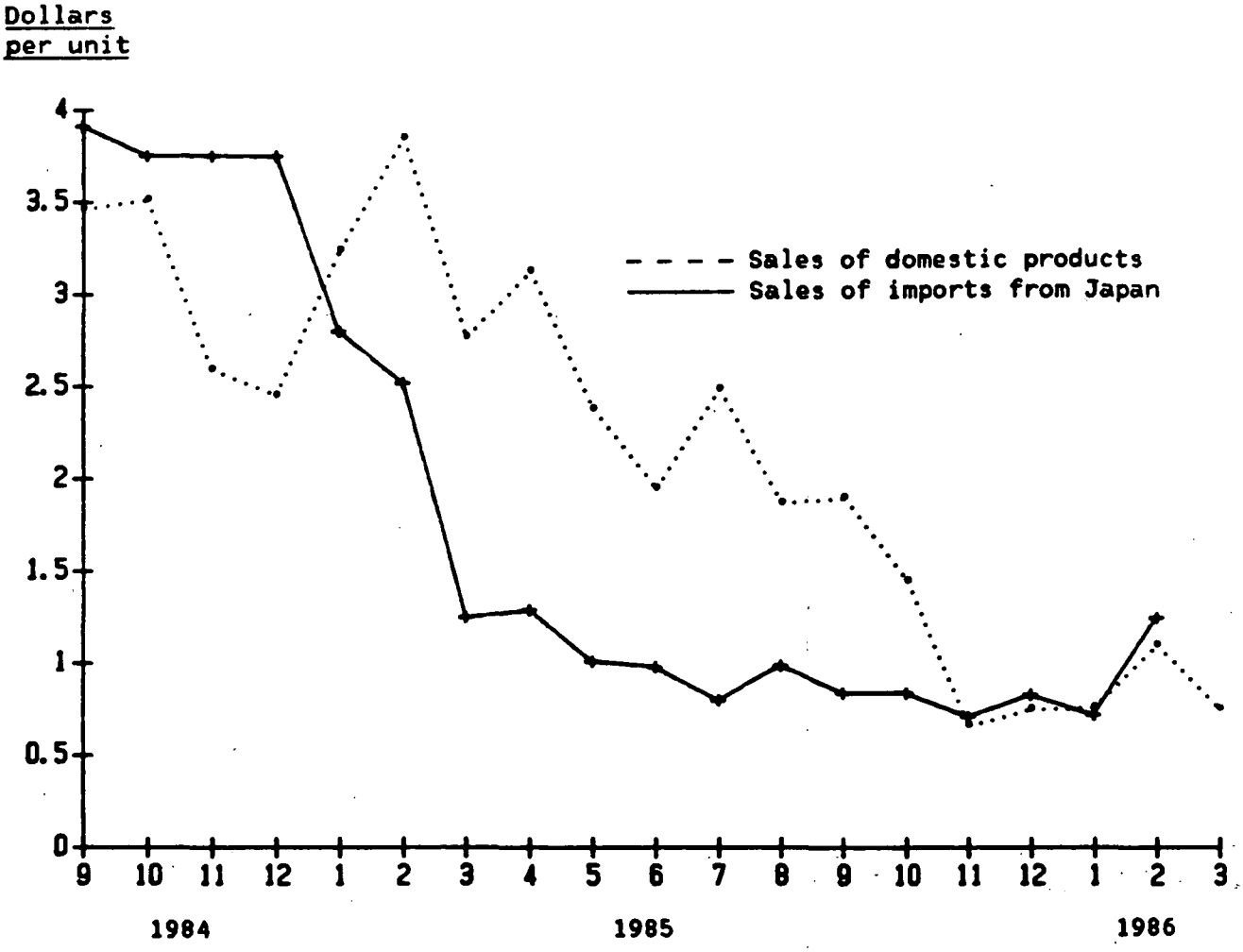
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-2.—64K DRAM's (150 ns) sold to telecommunication OEM's: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



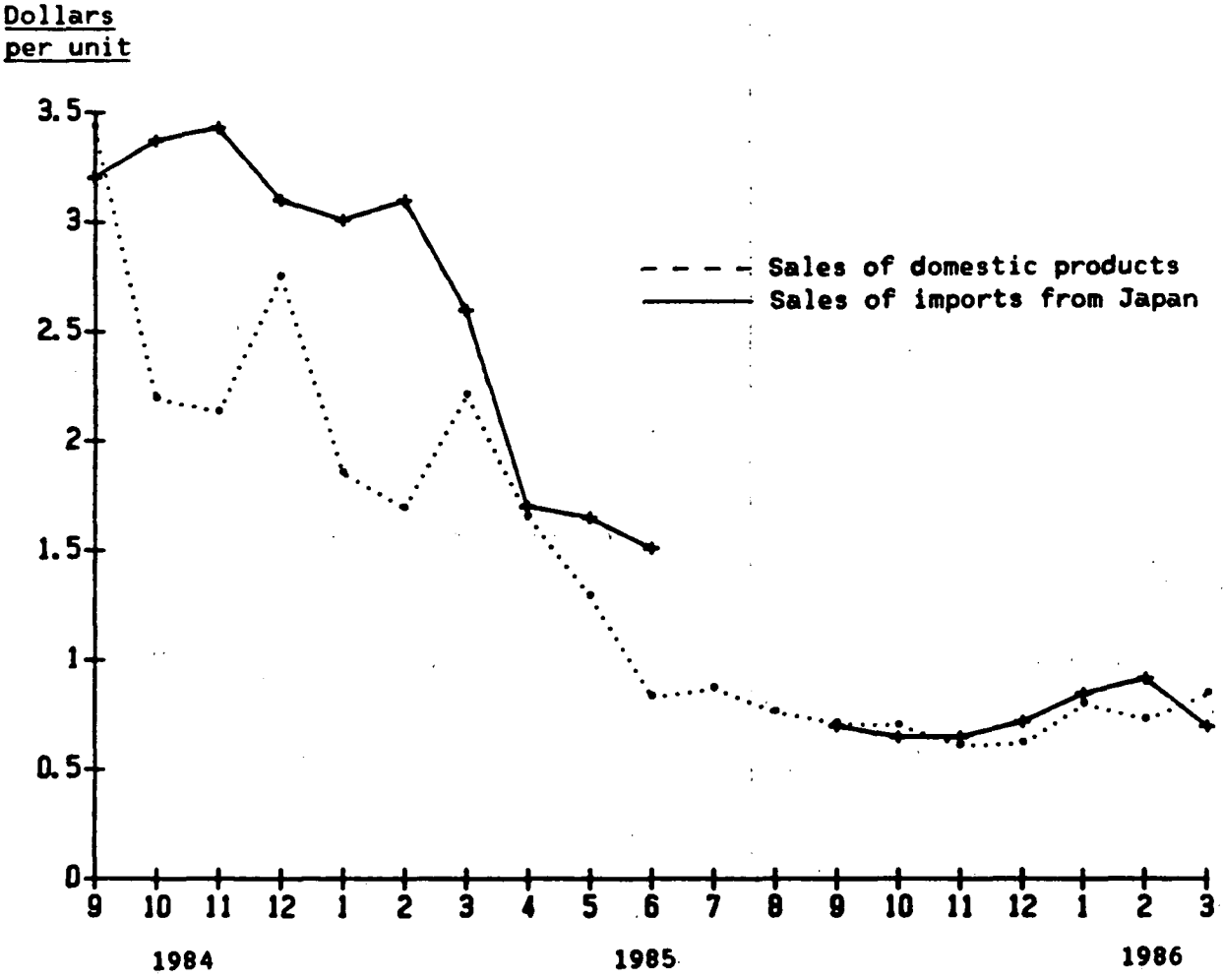
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-3.—64K DRAM's (150 ns) sold to industrial automation OEM's: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



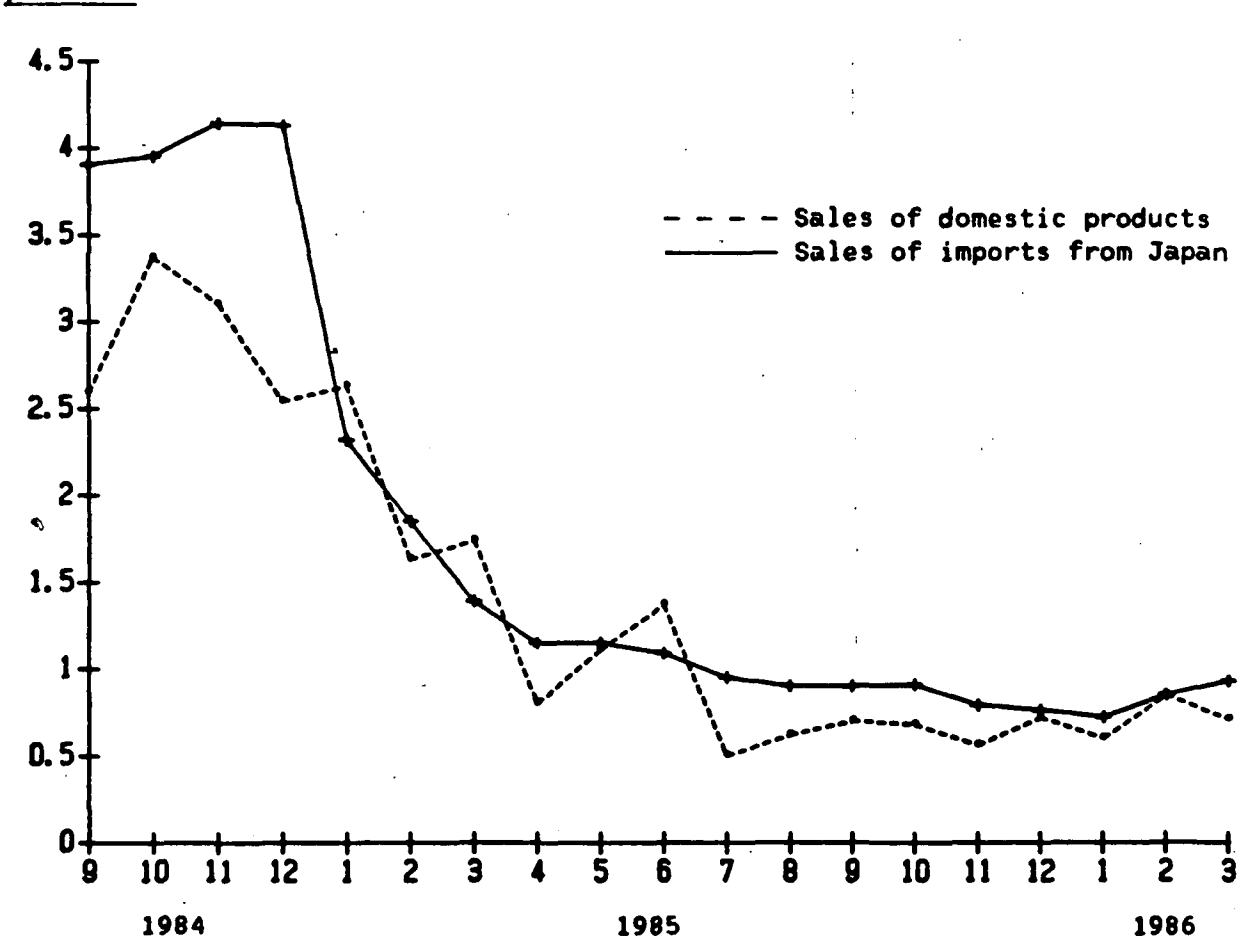
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-4.—64K DRAM's (150 ns) sold to consumer products OEM's: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



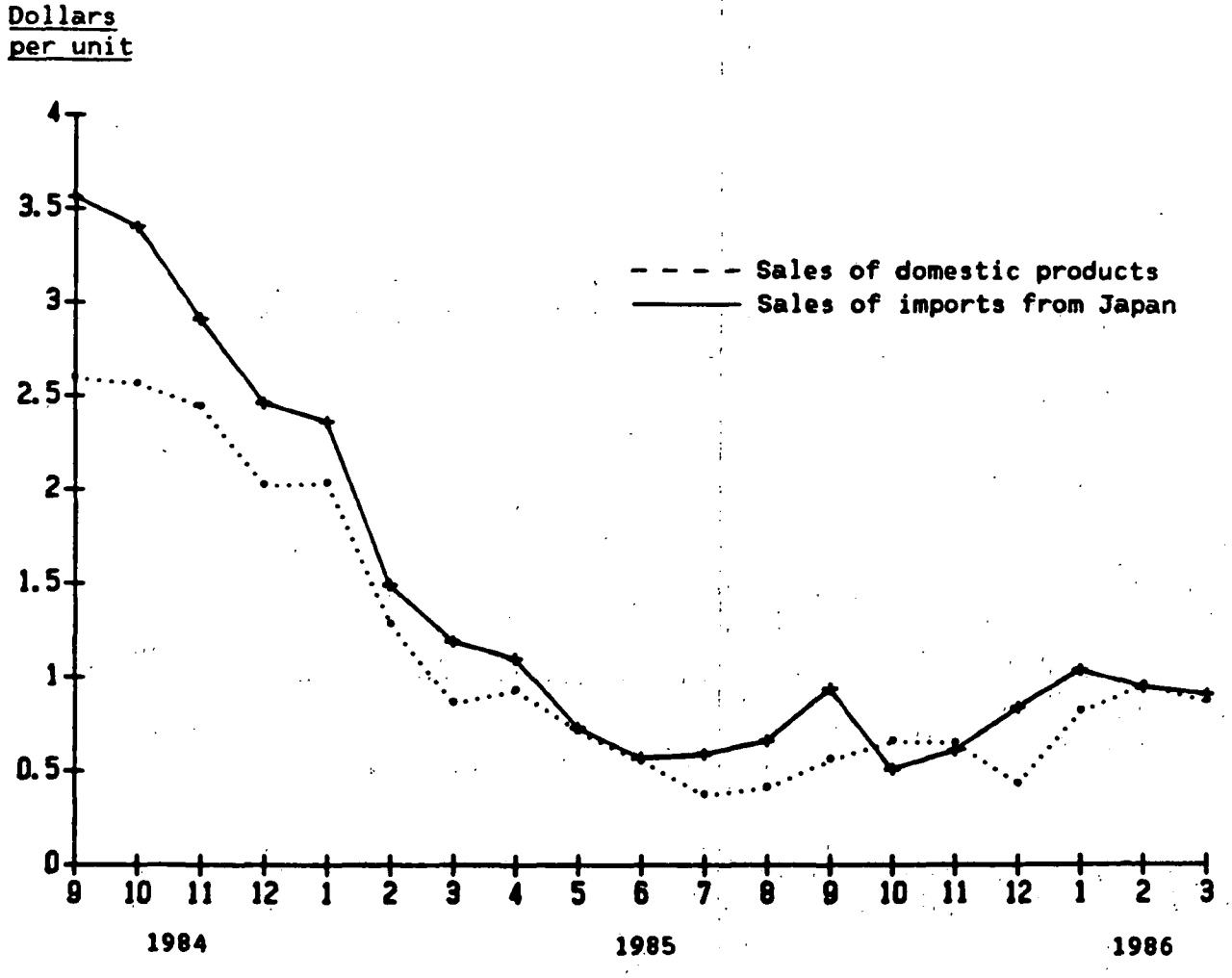
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-5.—64K DRAM's (150 ns) sold to subcontractors (board stuffers): Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



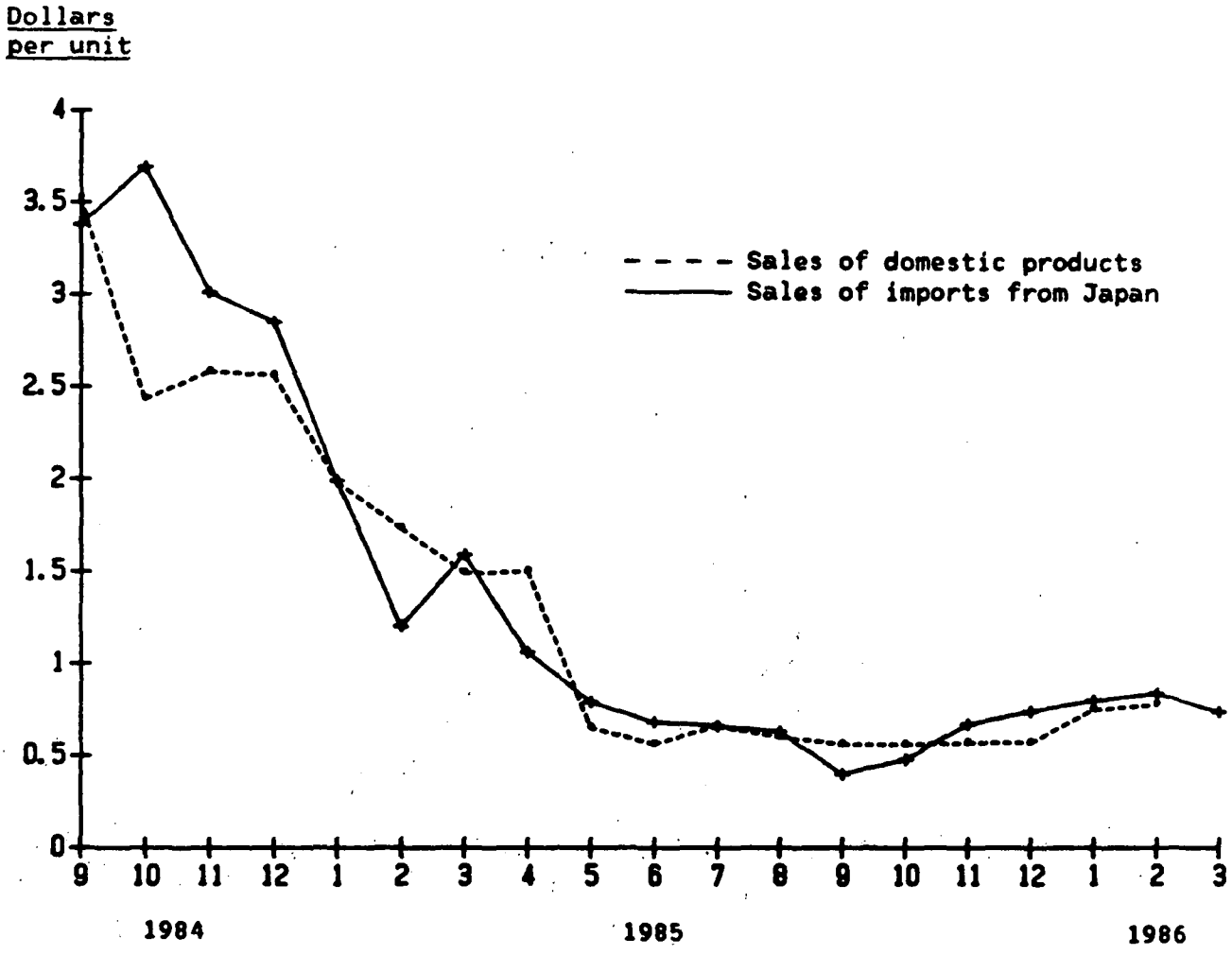
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-6.—64K DRAM's (150 ns) sold to distributors: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Figure D-7.—64K DRAM's (150 ns) sold on the spot market: Weighted-average selling prices for domestic products and for imports from Japan, by months, September 1984-March 1986.



Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

APPENDIX E

BRAND-NAME PURCHASE PRICES

Table E-1.—64K DRAM's (150 ns) purchased by office automation OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-2.—64K DRAM's (150 ns) purchased by telecommunication OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-3.—64K DRAM's (150 ns) purchased by industrial automation OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-4.—64K DRAM's (150 ns) purchased by consumer products OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-5.—64K DRAM's (200 ns) purchased by office automation OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-6.—64K DRAM's (200 ns) purchased by telecommunication OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-7.—64K DRAM's (200 ns) purchased by industrial automation OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-8.—64K DRAM's (200 ns) purchased by consumer products OEM's: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-9.—* * *: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-10.—64K DRAM's (150 ns) purchased by all distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-11.—64K DRAM's (150 ns) purchased by authorized distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-12.—64K DRAM's (150 ns) purchased by independent distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-13.—64K DRAM's (200 ns) purchased by all distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-14.—64K DRAM's (200 ns) purchased by authorized distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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Table E-15.—64K DRAM's (200 ns) purchased by independent distributors: Weighted-average purchase prices, by brand names and by months, September 1984-April 1986

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