

UNITED STATES INTERNATIONAL TRADE COMMISSION

KNITTING MACHINES FOR LADIES' SEAMLESS  
HOSIERY, FROM ITALY

Determination of No Injury or Likelihood Thereof or Prevention of  
Establishment of an Industry in the United States in Investigation No.  
AA1921-160 Under the Antidumping Act, 1921, as Amended, Together  
With the Information Obtained in the Investigation



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# UNITED STATES INTERNATIONAL TRADE COMMISSION

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Note.--Information which would disclose confidential operations of individual concerns may not be published and therefore has been deleted from this report.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

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

[AA1921-160]

KNITTING MACHINES FOR LADIES' SEAMLESS  
HOSIERY FROM ITALY

Determination of No Injury or Likelihood Thereof  
or Prevention of Establishment

On August 25, 1976, the United States International Trade Commission received advice from the Department of the Treasury that knitting machines for ladies' seamless hosiery from Italy are being, or are likely to be, sold in the United States at less than fair value within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160(a)). On September 2, 1976, the Commission instituted investigation No. AA1921-160 under section 201(a) of said act to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such merchandise into the United States. Notice of the institution of the investigation and of the public hearing was published in the Federal Register on September 13, 1976 (41 F.R. 38827).

In arriving at its determination, the Commission gave due consideration to written submissions from interested parties, evidence adduced at the hearing, and all factual information obtained by the Commission's staff from questionnaires, personal interviews, and other sources.

On the basis of its investigation, the Commission has unanimously determined that an industry in the United States is not being and is

not likely to be injured, and is not prevented from being established, by reason of the importation of knitting machines for ladies' seamless hosiery from Italy that are being, or are likely to be, sold at less than fair value within the meaning of the Antidumping Act, 1921, as amended.



## Statement of Reasons

This investigation was made to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation into the United States of knitting machines for ladies' seamless hosiery from Italy which the Department of the Treasury (Treasury) has determined are being, or are likely to be, sold at less than fair value (LTFV). In order to find affirmatively, the Commission must find two conditions satisfied in this investigation. First, there must be injury, or likelihood of injury, to an industry in the United States, or an industry in the United States must be being prevented from being established. Second, such injury, or likelihood of injury, or prevention of establishment of an industry must be "by reason of" the importation into the United States of the class or kind of foreign merchandise which Treasury has determined is being, or is likely to be, sold at LTFV.

On the basis of the information developed in the investigation, we have determined that any injury which a domestic industry may have experienced or may be likely to experience is not by reason of LTFV imports; nor is a domestic industry being prevented from being established by reason of LTFV imports. Therefore, the second condition, that of causation, has not been satisfied, and we have made a negative determination.

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### The product

Knitting machines for ladies' seamless hosiery are circular knitting machines typically having a cylinder of 3-3/4 or 4 inches in diameter. 1/ Current models have 400 needles or more disposed around the cylinder.

Knitting machines for ladies' seamless hosiery make panty hose, full-length stockings, knee-high stockings, and anklets from fine-gage yarn and are distinguished from other circular knitting machines for knitting hosiery which knit hose from coarser yarns; these other machines of necessity have larger and therefore fewer needles, commensurate with the coarser yarns. All circular hosiery-knitting machines are distinguished from so-called large-diameter circular knitting machines, such as single knit, double knit, and sweater strip machines, which have large, slow-moving cylinders.

### The U.S. industry 2/

In making this determination we considered that the industry most likely to be adversely affected by LTFV imports would consist of the manufacturing facilities in the United States that are, or reasonably could be, producing knitting machines such as described above for ladies' seamless hosiery and parts for these machines. No evidence was developed during the investigation which showed that any other industry in the United States was adversely affected by these LTFV imports of knitting machines.

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1/ Ladies' full-fashioned hosiery, which is seamed, is made on noncircular knitting machines.

2/ Commissioner Ablondi does not concur with the definition of the U.S. industry hereinafter set forth.

Textile Machine Works, the dominant U.S. producer of knitting machines for ladies' seamless hosiery during the mid-1960's, was acquired by Rockwell International, the complainant, in late 1968. During the period 1969-70 Rockwell was the largest producer of knitting machines for ladies' seamless hosiery in the world, and after 1970 Rockwell was the only U.S. producer. After 1970, however, the older style Rockwell machines were unable to compete successfully with machines from Italy; therefore, Rockwell sales declined almost 90 percent between 1970 and 1971 and to zero by January 1975. Rockwell shipped its last of the older style machines to the U.S. market in 1974, but it continues to supply replacement parts for machines shipped prior to 1975. Replacement parts for Rockwell machines have been produced throughout the period under consideration.

In 1973 Rockwell introduced a new machine designed to be faster and more versatile than its former models and intended for competition with the Italian machines. This machine, the Quadrasonic, was never perfected, produced in commercial quantities, or sold. For all practical purposes, with the demise of the Quadrasonic project in the summer of 1976, Rockwell ceased attempting to supply complete machines.

#### Impact of LTFV sales on the domestic industry

We have determined that Rockwell's inability to sell knitting machines and parts thereof for ladies' seamless hosiery, as outlined above, did not occur "by reason of" LTFV imports and, therefore, the second criterion, that of causation, is not satisfied. Instead, the industry's rapid decline was caused by its failure to develop, produce,

and market a fast, versatile, and reliable machine competitive with knitting machines offered by Italian manufacturers.

It is unnecessary to consider the questions of injury, likelihood of injury, or prevention of establishment separately with respect to the older U.S. models, the newer Quadrasonic model, or their parts sold or offered for sale. This consideration is unnecessary since the reasons for any adverse impact are the same and are not related to the LTFV aspect of the subject imports.

Repeated testimony that was not contested at the Commission's hearing emphasized the importance of considerations other than price in the selection of a knitting machine. One imported knitting machine produces, on the average, about 68,000 dozen pairs of panty hose over a 10-year period; therefore, the initial cost of a machine priced significantly higher than a competitive machine would add an insignificant amount per dozen to the cost of hosiery. Therefore, it is understandable that the initial cost of a knitting machine, within limits, is not the primary factor determining which machine a mill buys.

Hosiery manufacturers indicated that they would have purchased the Italian machines in preference to Rockwell models had the Italian machines been sold at significantly higher prices. It should be noted, however, that even had the Italian machines been sold at fair value (this would have required adding an average of roughly \$1,200 to the Italian sales price) during the period of LTFV sales (March-October 1975), on the average the imported machine would still have been able to undersell the U.S. product by a substantial margin (more than \$2,000). Furthermore, these

manufacturers stated that they would not have purchased Rockwell machines if their prices had been lower than the prices of Italian machines. The reason for this is simply that the Italian machines greatly outperformed the Rockwell machines, especially with respect to machine speed and ease of changing patterns.

The decline in sales of replacement parts for knitting machines for ladies' seamless hosiery came as a direct result of the drop in and cessation of sales of older model Rockwell machines. Therefore, the adverse effect on that portion of the industry producing and selling replacement parts is unrelated to LTFV imports for the same reasons that the adverse effect on the part of the industry producing machines is not related to such imports.

With respect to Rockwell's attempt to market its Quadrasonic machine, several U.S. hosiery manufacturers that tested the machine testified at the Commission's hearing concerning that machine's unreliability and inefficiency. One major U.S. hosiery manufacturer reported as follows:

After 2-1/2 months of testing the Quadrasonic in 1974 under laboratory conditions, Hanes determined that the machine would not operate reliably and efficiently because of numerous technical and design problems. . . .

In July 1975, Hanes received an "improved" Quadrasonic supposedly incorporating features responding to the problems we had experienced. This 1975 Quadrasonic was, however, essentially unresponsive to these earlier problems. 1/

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1/ Transcript of the proceedings before the U.S. International Trade Commission, p. 33.

In contrast to the above-mentioned experience with respect to cooperative effort between the machine producer and user, Hanes further reported:

Both Italian companies have been very helpful in assisting Hanes to utilize the machines. They have also been very prompt in responding to new engineering modifications suggested by Hanes, and in dealing with any defects that developed. 1/

Other factors besides price that caused U.S. hosiery mills to purchase knitting machines from Italy in preference to the Quadrasonic included Rockwell's terms of sale for the Quadrasonic, which were unacceptable. For example, long delivery schedules were quoted, with no assurance when production of the machine would begin. Furthermore, Quadrasonic machines were not always available for trial use in mills. Testifying to this point, L'eggs Products, Inc., reported at the Commission's hearing as follows:

. . . Rockwell proposed to deliver to L'eggs a test Quadrasonic for its evaluation. Weeks and months went by, but the machine was not delivered. When L'eggs periodically asked why it was taking so long, Rockwell's response was that it was having problems and that the test model would not be delivered until the problems had been corrected. Apparently Rockwell never corrected those problems because Rockwell never delivered a test model Quadrasonic to L'eggs. 2/

Additionally, some customers were asked to place a firm and often large order for a Quadrasonic, either without a trial machine or without a favorable experience with a trial machine. In summary, Rockwell

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1/ Transcript of the proceedings before the U.S. International Trade Commission, p. 30.

2/ Ibid., p. 36.

stopped short of committing the resources, notably for tooling and pilot production, necessary for establishing the efficacy of the Quadrasonic machine.

Lastly, it should be noted that the demand for panty hose declined abruptly and sharply in 1971, primarily because of a shift in fashion toward the pants suit. Accordingly, the demand for knitting machines for ladies' seamless hosiery slackened, adversely affecting Rockwell's opportunities in the market. The declining demand for machines, of course, bears no relationship to the subject LTFV sales.

#### Conclusion

We conclude, therefore, that an industry in the United States is not being and is not likely to be injured, and is not prevented from being established by reason of the importation of knitting machines for ladies' seamless hosiery from Italy that are being, or are likely to be, sold at LTFV within the meaning of the Antidumping Act, 1921, as amended.

This conclusion is based on our finding that various nonprice considerations caused the domestic industry producing knitting machines and parts thereof for ladies' seamless hosiery to decline sharply after 1970 and prevented a reestablishment of this industry in recent years, rather than LTFV aspects of the subject imports. Therefore, the second criterion, that of causation, is not satisfied with respect to injury, likelihood of injury, or prevention of establishment of an industry.

By order of the Commission:

Kenneth R. Mason  
Secretary

Issued: November 26, 1976





## INFORMATION OBTAINED IN THE INVESTIGATION

### Introduction

On August 25, 1976, the United States International Trade Commission received advice from the Department of the Treasury that knitting machines for ladies' seamless hosiery from Italy are being, or are likely to be, sold at less than fair value (LTFV) within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160(a)). Accordingly, on September 2, 1976, the Commission instituted investigation No. AA1921-160, under section 201(a) of said act to determine whether an industry in the United States is being or is likely to be injured, or is prevented from being established, by reason of the importation of such merchandise into the United States. The statute directs the Commission to make its determination within 3 months--in this case, by November 26, 1976.

In connection with the investigation, the Commission conducted a public hearing in Washington, D.C., on October 12, 1976. Notice of the institution of the investigation and of the hearing was duly given by posting copies thereof at the office of the Secretary, U.S. International Trade Commission, Washington, D.C., and at the Commission's New York office, and by publishing the notice in the Federal Register on September 13, 1976 (41 F.R. 38827).

Following the receipt of a complaint in proper form from Rockwell International, Reading, Pa., the Department of the Treasury instituted an antidumping investigation by publication of an "Antidumping Proceeding Notice" in the Federal Register on August 15, 1975 (40 F.R. 34424).

The Assistant Secretary determined that it was inadvisable to take tentative action within the normal 6-month investigatory period. A notice of extension of investigatory period was published in the Federal Register on February 12, 1976 (41 F.R. 6289), announcing an extension of the investigatory period to 9 months. On May 21, 1976, a withholding of appraisement notice was published in the Federal Register (41 F.R. 20899). The determination of sales at less than fair value was published in the Federal Register on August 30, 1976 (41 F.R. 36521).

## The Product

### Description and uses

Knitting is the production of fabric by the formation of loops of yarn and the pulling of each newly formed loop through one that has already been made. These operations are performed by hooked needles. In circular knitting machines, needles are housed individually in slots cut axially in the interior wall of a steel cylinder. As the vertically positioned cylinder rotates, a system of cams at its base engages the needle butts, causing the needles to move up and down in their respective slots. Ends of yarn fed to the top of the cylinder are caught by the needles and formed into loops as each needle makes its descent from the raised position.

Knitting machines for ladies' seamless hosiery are circular knitting machines typically having a cylinder of 3-3/4 or 4 inches in diameter. 1/ Current models have 400 needles or more disposed around the cylinder. The cylinder may rotate at a maximum of 400 to 600 revolutions per minute (rpm), although models capable of speeds up to 850 rpm are being introduced.

Knitting machines for ladies' seamless hosiery make panty hose, full-length stockings, knee-high stockings, and anklets from fine-gage yarn and are distinguished from other circular knitting machines for knitting hosiery which use coarser yarns; these other machines, of necessity, have larger and therefore fewer needles, commensurate with the coarser yarns. All circular hosiery-knitting machines are

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1/ Ladies' full-fashioned hosiery is made on noncircular knitting machines.

distinguished from so-called large-diameter circular knitting machines, such as single knit, double knit, and sweater strip machines, which have large, slow-moving cylinders.

The productivity of a knitting machine for ladies' seamless hosiery is a function mainly of sustainable cylinder speed and number of feeds. The importance of speed is clear. The number of feeds determines the amount of yarn fed to the needles; a separate end of yarn enters at each feed and, for a given rpm, the more ends entering the machine, the faster is the item of hosiery completed. Old models have one or two feeds while newer models usually have four or eight feeds placed at regular intervals around the top of the machine. In the United States four-feed machines have surpassed eight-feed types in popularity since the early 1970's. Productivity is also a function of the type of end product. A stocking with a shaped heel takes longer to knit than one which is essentially a tube (as most products are now). A stocking with a somewhat complicated design is produced more slowly than one with a simple pattern, and machines differ in pattern capabilities. Likewise, hosiery mills differ in their needs for patterning in accordance with the segment of the hosiery market they wish to serve.

Very important in this investigation is the development of a new model called the Quadrasonic, offered by Rockwell International, the complainant. This is a four-feed model with a cylinder 4 inches in diameter, rotating at a maximum speed of 500+ rpm. It has 406 or 434 needles. Rockwell holds that it has unusual ease of pattern change by means of electronic controls.

U.S. tariff treatment

U.S. imports of knitting machines for ladies' seamless hosiery are entered under item 670.16 of the Tariff Schedules of the United States (TSUS), which covers circular knitting machines for hosiery. As a result of a concession granted by the United States in the Kennedy Round of trade negotiations, the column 1 rate of duty applicable to such knitting machines was reduced in five stages commencing January 1, 1968, from 13 percent ad valorem to 6.5 percent ad valorem; the 6.5-percent rate has been in effect since January 1, 1972.

Parts of knitting machines for ladies' seamless hosiery are not included in Treasury's advice as being, or likely to be, sold at LTFV within the meaning of the Antidumping Act, 1921, as amended. These parts are entered under item 670.74 of the TSUS, which covers parts of textile machines not specially provided for. The rate of duty applicable to parts of knitting machines for ladies' seamless hosiery under item 670.74 is the same as the rate for the machines of which they are parts.

Treasury Finding of Sales at Less Than Fair Value

Summary

The U.S. Department of the Treasury investigated U.S. imports of knitting machines for ladies' seamless hosiery from Italy and found such imports were sold at less than fair value (LTFV) during the period of investigation, March 1-October 31, 1975. Since it appeared that about 95 percent of imports of the subject merchandise from Italy were manufactured either by Billi-Matec, S.p.A., Florence, Italy (Billi), or by DiLonati Francesco & Figli, S.N.C., Brescia, Italy (Lonati), the investigation was limited to these two manufacturers.

Virtually all of the sales of the subject machines to the United States during the period were examined. For Lonati, the proper basis for comparison was found to be between the purchase price and the home-market price. For Billi, it was necessary to make the comparison between the purchase price and the constructed value of such or similar merchandise since all sales of the merchandise in the home market and to third countries were at less than the cost of production.

For 100 percent of the comparisons made on sales by Billi, margins of sales at LTFV were found to range from 45.6 percent to 93.3 percent, with a weighted-average margin of 61.78 percent. 1/ For 95 percent of the comparisons made on sales by Lonati, margins ranged from 3 percent to 25 percent, with a weighted-average margin of 17 percent. The U.S. Department of the Treasury determined the aggregate value of the margins of sales at LTFV during the period March 1-October 31, 1975, to be approximately \* \* \* ; however, none of this amount is collectible because Treasury did not withhold appraisement until May 21, 1976.

Purchase price, home-market price,  
and constructed value

The adjusted purchase price was used by Treasury in the determination of the percentage dumping margins since all export sales to the United States were made to nonrelated customers. The purchase price

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1/ The Department of the Treasury calculates dumping margin percentages by the following formula:

$$\frac{\text{Home-market price (or constructed value)} - \text{purchase price (or exporters' sales price)}}{\text{Purchase price (or exporters' sales price)}}$$

while the U.S. International Trade Commission calculates dumping margin percentages as follows:

$$\frac{\text{Home-market price (or constructed value)} - \text{purchase price (or exporters' sales price)}}{\text{Home-market price (or constructed value)}}$$

Margins for knitting machines for ladies' seamless hosiery from Italy based on the U.S. International Trade Commission formula would range from 31.3 percent to 48.3 percent on sales by Billi and from 2.9 percent to 20.0 percent on sales by Lonati.

was calculated on the basis of the c.i.f. 1/ duty-paid price to U.S. purchasers. Deductions were made for transportation expenses, including Italian inland freight, U.S. import duties, insurance, and installation and interest expenses, where applicable. An addition was made for rebates of indirect taxes on the exportation of the product, where appropriate.

The following are sample transactions:

\* \* \* \* \*

The home-market price for Lonati was calculated on the basis of the delivered price in the home market to unrelated purchasers. Adjustments were made for installation expenses, for discounts, and for differences in commissions in the two markets (U.S. and Italian), as appropriate.

The following example is the weighted-average home-market price for sales by Lonati during the period of the Treasury investigation:

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1/ Cost, insurance, and freight.



\* \* \* \* \*

The fair value for Billi was calculated on the basis of constructed value, which is the sum of the costs of materials and of fabrication or other processing, plus an amount for general expenses, plus an amount for profit, plus the cost of all containers and all other expenses incidental to placing the merchandise in condition, packed, ready for shipment to the United States.

The final calculation made during the investigation by Treasury for Billi is as follows:

\* \* \* \* \*

A comparison of these sample and final calculations drawn from various stages of the Treasury investigation, with the Rockwell price for its newest model, the Quadrasonic (given in its petition as \* \* \* , with little chance to reduce the price below \* \* \* ), reveals that Rockwell's new machine was to be sold at a considerably higher price than either Italian machine.

## The Domestic Industry

Textile Machine Works (TMW), with a large plant in Reading, Pa., was the dominant U.S. producer of knitting machines for ladies' seamless hosiery during the mid-1960's. In late 1968, TMW was acquired by Rockwell International, the complainant, and the Reading operation continued its dominance. Indeed, it was the largest producer of ladies' seamless hosiery knitting machines in the world during 1967-70. Shipments fell sharply after 1970, however, reaching zero by January 1975. Another firm, Scott & Williams of Laconia, N.H., formerly an important manufacturer of ladies' seamless hosiery knitting machines and now a builder of large-diameter knitters only, ceased production of ladies' seamless hosiery machines prior to 1971, although it shipped \* \* \* such machines from inventory in 1971 and \* \* \* in 1974. The Singer Co. also ceased production of knitting machines for ladies' seamless hosiery before 1971 but shipped \* \* \* machines from inventory after 1971.

TMW started production of ladies' seamless hosiery knitting machines in the late 1950's and by the mid-1960's had essentially conquered the field. The firm earned a reputation for high engineering quality, innovative design, and reliability of machine performance. Indeed, according to an official of Hanes Hosiery, Inc., in "the opinion of Hanes personnel, TMW then had the finest quality technical people in the business." TMW's machines (and those of Rockwell International) presently standing in U.S. mills considerably outnumber those of its two U.S. rivals combined, and in 1975 constituted 45 percent of the ladies' seamless hosiery knitting machines operating in the United States.

Although Rockwell International rates its 1971 capacity at 550 to 600 machines a month, it attained a production rate of more than 650 machines a month for a brief period, probably in 1969 or 1970, or an annual rate of almost 8,000 machines. Its highest actual shipments in any year since 1967, however, amounted to 5,439 machines in 1970 (valued at \$26 million).

From this peak level, shipments fell steeply in 1971, and by January 1975 had declined to zero. Rockwell continued efforts to develop and sell new models, however, putting its main emphasis on the Quadrasonic, of which it built 12 altogether (during 1974-75). No Quadrasonics were sold. By mid-1976, all efforts to sell knitting machines for ladies' seamless hosiery had stopped. The sale of parts for such machines continues, however. 1/

While production of ladies' seamless hosiery knitting machines fell in 1971 and continued to fall thereafter, Rockwell turned to a new line--double knit machines--on which production started in 1971. Demand for double knit machines peaked in 1972 and fell steeply in 1973. Meanwhile, production of warp knitting machines, a line of some years' standing, continued, but that also fell off after 1971. Production of both double knit and warp knit machinery was discontinued in 1975. In 1976 the production of printing presses by Rockwell was moved from another location to Reading and now constitutes \* \* \* percent of production there, according to a company official. Other continuing production

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1/ App. B contains communications from Rockwell International on the subject of its continuation in the business of manufacturing knitting machines for ladies' seamless hosiery.

at Reading is as follows: Parts for ladies' seamless hosiery knitting machines, parts for warp knitting machines, a single knit machine, braiding machinery, knit-de-knit machines for yarn texturing, and certain custom manufacturing.

U.S. Importers

During the period January 1971-August 1976, knitting machines for ladies' seamless hosiery were imported principally by two distributors of Italian machines then resold to hosiery mills. Such a distributor pattern was in contrast to that utilized by Rockwell International, which sold all of its hosiery machines direct to the mills.

\* \* \*

The two major distributor/agents of these machines were Speizman Industries, Inc. of Charlotte, N.C., and Henderson Machinery, Inc., of Greensboro, N.C. Speizman Industries was the distributor for Lonati from January 1967 to January 1973, the distributor for Billi 1/ from January 1973 to late 1973, and thereafter the agent for Billi. Henderson Machinery became Lonati's distributor in February 1973 and continues in that capacity.

In addition to these two major importers of this machinery, there have been three small importers of West German machines and one small importer of Italian machines during the period 1971-76.

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1/ During the period January 1971-December 1972, Billi America, an affiliate of Billi, distributed Billi machines in the United States.

Comparison of Certain Marketing Practices

The product

Billi and Lonati build ladies' seamless hosiery knitting machines to order, as Rockwell did prior to 1975; Billi does not maintain an inventory but collects orders worldwide and produces 50 or more machines at one time. Lonati carries no inventory but normally manufactures to customers' specifications. For some parts requiring a long production period, Rockwell produced for inventory. After 1970, Rockwell assembled machines largely from a spare parts inventory, on the basis of orders received. \* \* \* reported that Lonati, unlike Rockwell, worked with \* \* \* in the early 1970's to design a machine to meet their requirements for speed and versatility at a cost savings.

Channels of distribution, inventories, and service

Rockwell distributed all machines directly to its customers; its manufacturing plant and inventory were in Reading, Pa., except for certain most needed parts that were stocked in Ashboro, N.C. In 1975 the parts were returned to Reading.

Henderson Machinery either purchases machines from Italy or purchases them delivered, installed, and invoiced to the customer.

\* \* \*

As an agent, Speizman Industries buys and stocks the same spare parts as when the firm was a distributor, but fewer service engineers are provided. Currently, Billi furnishes more of these service engineers to provide trial installations and after-sale service. Speizman never has inventoried machines, which normally are shipped direct to the mill from Italy. Occasionally, Speizman, both as a distributor and an agent, has received a machine and added parts or attachments. Speizman Industries has never provided any service to customers on sales made direct by either Billi or Lonati.

Delivery time

For Rockwell, delivery time ranged from 3 months to more than a year during 1967-75, depending on market conditions. The longest lead times occurred during 1967-69, the period of peak demand. From 1970 to 1972, lead times were somewhat shorter. During the years 1973-74, lead times were extended because Rockwell was making parts in smaller quantities or assembling machines from inventory. The Quadrasonic model, shown first at the Knitting Arts Exhibition (KAE) in Atlantic City in 1973, was offered for sale at another exposition in 1974. Beginning in January 1975, the Quadrasonic was offered with promised delivery dates ranging from 6 months to 1 year from date of order.

Henderson Industries reports that on large orders of 400 or more machines, Lonati shipments might spread over a year. For a more usual order of 60 machines, the first delivery of about 24 machines would occur from 3 to 4 months after the contract was signed, with the remainder being delivered within the next 3 months.

Speizman Industries indicated that delivery would vary with world-wide demand for Italian machines, ranging normally from 3 to 6 months or occasionally up to 9 months.

Direct and indirect selling

The principal method of selling knitting machines has been personal selling presentations, either in person or by telephone, to the many hosiery firms by executives or salesmen of the various machine suppliers. In 1968 Rockwell employed eight full-time salesmen handling warp knitting, seamless hosiery, and texturing machinery. By 1975, Rockwell's sales force had declined to two, and in January-July 1976 only one salesman remained to attempt to sell the Quadrasonic model.

Sales by Henderson Machinery are handled by Mr. Henderson and one other salesman. Speizman Industries employs two salesmen, one in-house man (soliciting and taking orders from the office) and Mr. Robert Speizman. Each handles sales of all hosiery equipment. The time that these four individuals devoted to seamless hosiery machinery sales was about 10 to 15 percent of their total time.

Advertising, sales promotion, and publicity

During 1968-75, Rockwell's advertising program cost the firm about \* \* \* annually, with a concentration on direct mail advertising. In addition, ads were placed in hosiery and underwear trade journals, and the firm exhibited at trade shows such as the KAE at Atlantic City, N.J., the Catawba Valley Hosiery Exposition at Hickory, N.C., and the textile machinery shows at Greenville, S.C.



Henderson Machinery appeared at the KAE show in May 1973, with Lonati incurring the expense. Subsequently, Henderson has paid for such shows as well as ads in trade journals. Speizman Industries reports that expenses for advertising and sales promotion are nominal in this industry in comparison with the cost of personal selling. Speizman estimates that the most it has spent annually was \* \* \* . As an agent, Speizman does less advertising and sales promotion than it did as a distributor.

Rockwell, Henderson, and Speizman each indicated that trade journals had carried articles providing publicity for their knitting machines.

## Factors Influencing Consumption

U.S. consumption of ladies' seamless  
hosiery (including panty hose)

Table 1 gives U.S. shipments, exports, imports, and consumption of all ladies' seamless hosiery during 1965-75, January-June 1975, and January-June 1976. The 38-percent increase in shipments from nearly 86 million dozen pairs in 1965 to almost 119 million dozen pairs in 1969 reflects the introduction, and rapid increase in the popularity, of panty hose. The same trend is reflected in apparent consumption, which came to a peak in 1970.

Shipments and consumption of ladies' seamless hosiery dropped abruptly and sharply from 1970 to 1971--shipments by 17 percent and apparent consumption by 19 percent. The drop was the result primarily of a shift in fashion toward the pants suit, which diminished the need for frequent replacement of panty hose in the wardrobe. The market for hosiery has not returned to the volume attained during 1967-70 although some recovery occurred during 1972-73.

The increase in shipments and consumption of ladies' seamless hosiery during 1965-70 inflated expectations of both hosiery producers and manufacturers of knitting machines for ladies' seamless hosiery and resulted in a sustained upsurge in sales of such machines. The result, enhanced greatly by technological changes described below, was severe overcapacity in the hosiery industry by 1971, when shipments of ladies' seamless hosiery fell.

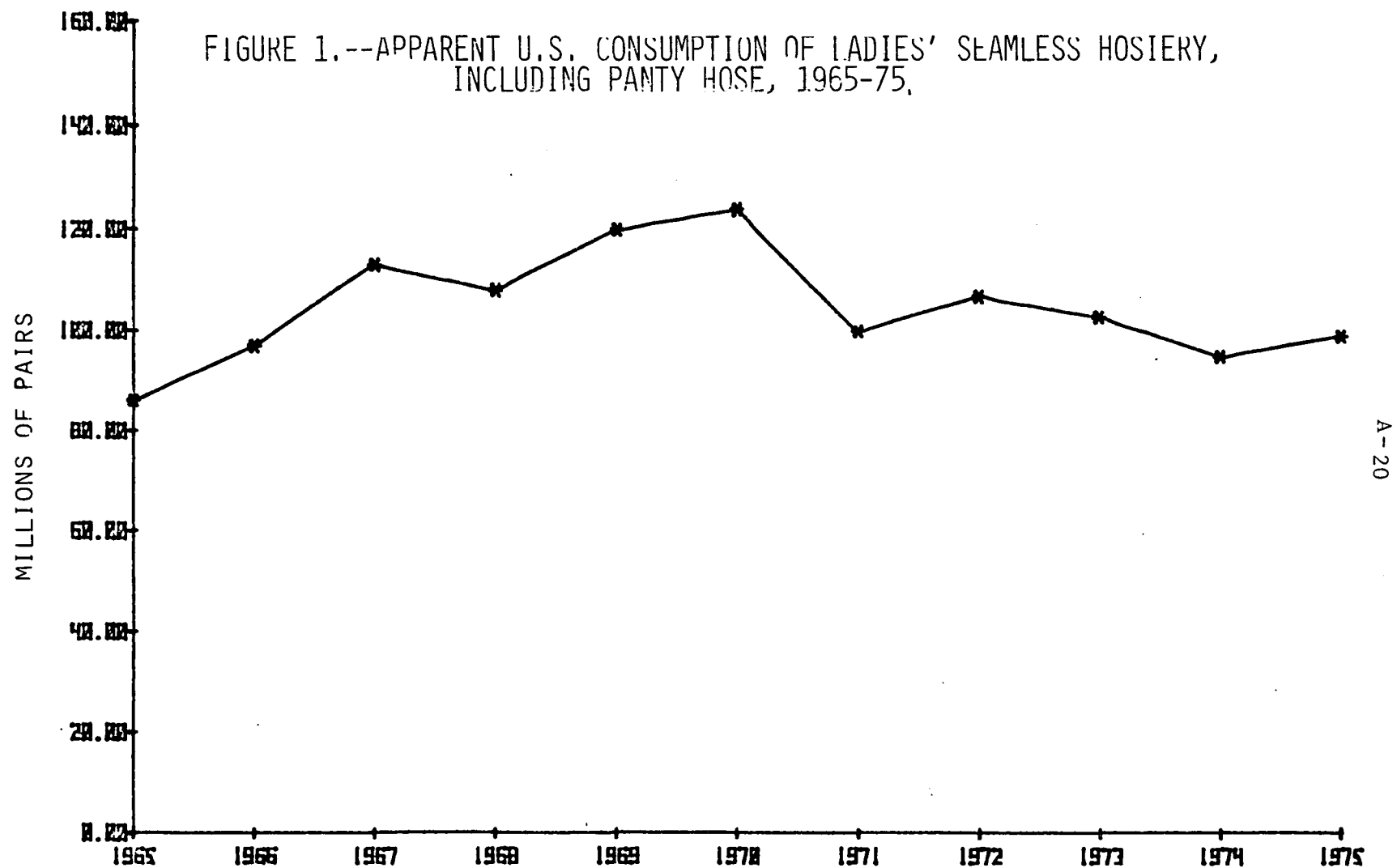
Table 1.--Ladies' seamless hosiery, including panty hose: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1965-75, January-June 1975, and January-June 1976

Period	Producers' shipments	Exports <sup>1/</sup>	Imports <sup>1/</sup>	Apparent consumption	Ratio of imports to consumption
	<u>1,000 dozen:</u> <u>pairs</u>	<u>1,000 dozen:</u> <u>pairs</u>	<u>1,000 dozen:</u> <u>pairs</u>	<u>1,000 dozen:</u> <u>pairs</u>	<u>Percent</u>
1965-----	85,594	326	558	85,826	1.0
1966-----	96,867	343	584	97,108	1.0
1967-----	112,873	456	770	113,187	1.0
1968-----	107,538	449	1,049	108,138	1.0
1969-----	118,913	495	1,290	119,708	1.1
1970-----	116,602	350	<sup>2/</sup> 7,759	124,011	6.3
1971-----	96,207	171	3,842	99,878	3.8
1972-----	104,642	156	2,828	107,314	2.6
1973-----	100,480	232	2,609	102,857	2.5
1974-----	92,222	437	3,487	95,272	3.7
1975-----	97,100	515	1,978	98,563	2.0
Jan. June--					
1975-----	46,960	224	1,331	48,067	2.8
1976-----	55,299	439	1,404	56,264	2.5

<sup>1/</sup> Estimated because data are not reported separately.

<sup>2/</sup> Import figures for years prior to 1970 do not include statistics on panty hose since they were not reported separately. Import statistics are slightly overstated for 1970 and 1971 because tights and body stockings were reported with panty hose.

Source: Data on production are partly estimated from data of the National Association of Hosiery Manufacturers; data on imports and exports are estimated on the basis of official statistics of the U.S. Department of Commerce.



SOURCE: ESTIMATED BY THE STAFF OF THE U.S. INTERNATIONAL TRADE COMMISSION ON THE BASIS OF DATA FROM THE NATIONAL ASSOCIATION OF HOSIERY MANUFACTURERS AND FROM THE U.S. DEPARTMENT OF COMMERCE.

The influence of technological changes

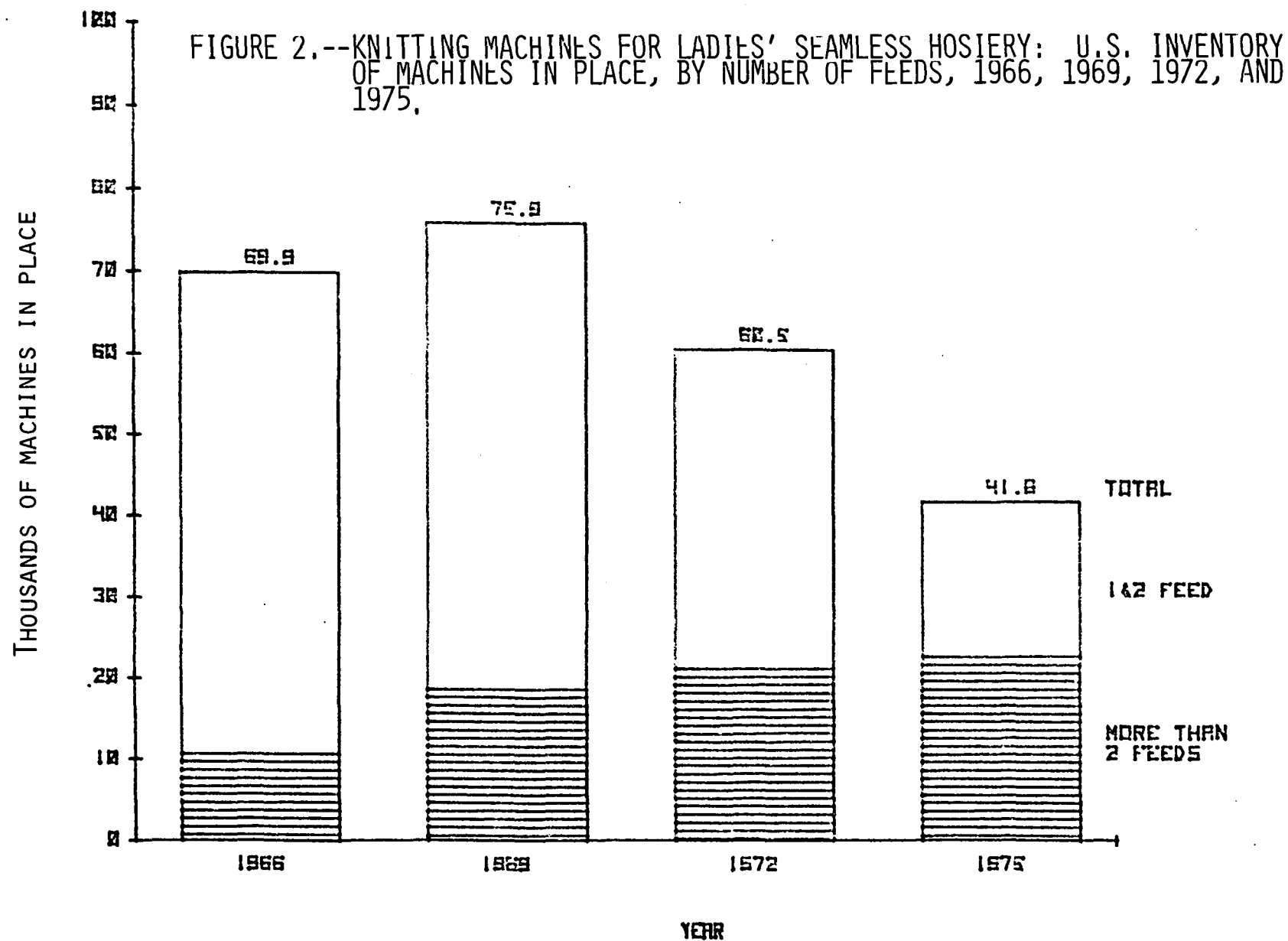
The inventory of ladies' seamless hosiery knitting machines standing in U.S. hosiery mills rose from about 22,300 units in 1957 to a peak of 75,940 machines in 1969 and then rapidly declined to 41,795 by 1975. The rise was, of course, due to the rising popularity of ladies' seamless hosiery as opposed to the full-fashioned style which it replaced (and which was made on another kind of machine). The decline following 1969 was due mainly to the retirement of old one- and two-feed machines and to the increasing proportion of machines having more than one or two feeds and higher cylinder speeds. The composition of the U.S. inventory of ladies' seamless hosiery knitting machines in terms of feeds at the beginning of each triennium during 1966-75, according to a publication of Speizman Industries, Inc., 1/ was as follows:

Mid-year--	: Number of : 1- and 2- : feed machines	: Number of : 3- to 8- feed: : machines <u>1/</u>	: Total
1966-----	59,190	10,731	69,921
1969-----	57,386	18,554	75,940
1972-----	39,310	21,185	60,495
1975-----	19,235	22,560	41,795

1/ Mostly 4- and 8-feed machines.

As indicated in the tabulation, the number of one- and two-feed machines--which by 1975 were 20 to 25 years old--dropped, as a share of total number of machines in use, from 85 percent in 1966 to 46 percent in 1975.

1/ Survey and Analysis of Circular Hosiery Machinery in the United States, 1966, 1969, 1972, and 1975.



SOURCE: SPEIZMAN INDUSTRIES INC., SURVEY AND ANALYSIS OF CIRCULAR HOSIERY MACHINERY IN THE UNITED STATES, 1966, 1969, 1972, AND 1975.

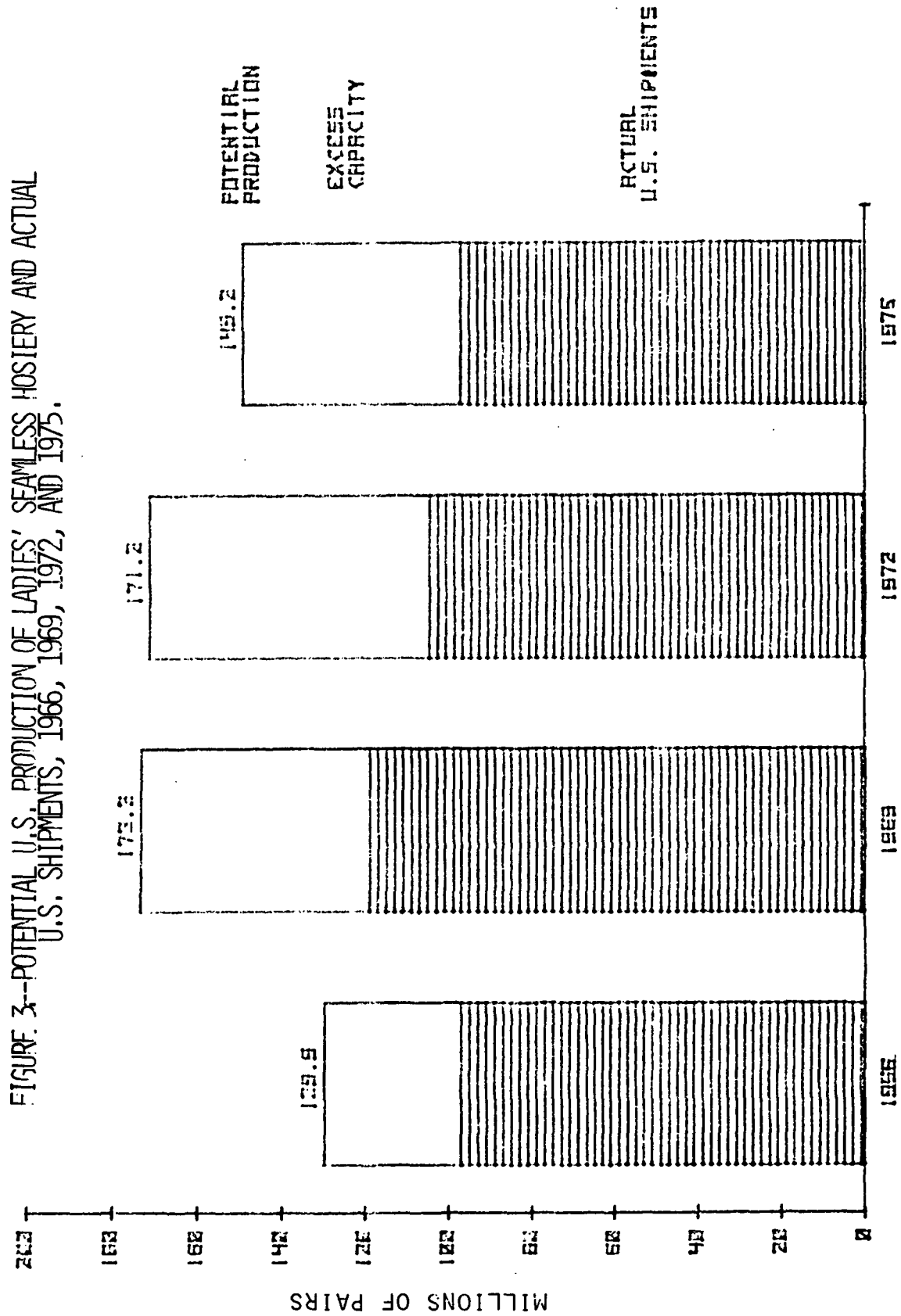
Because of the increasing use of machines of higher productivity, the decrease in the capacity of the ladies' seamless hosiery industry was not proportional to the decrease in the number of machines standing in mills. The reduction in the total number of machines from the peak year 1969 to 1975 was 45 percent, while the decrease in theoretical capacity during the same period was but 14 percent. The following tabulation, based on data from Speizman Industries, Inc., 1/ shows the potential production at the beginning of each triennium during 1966-75, in view of the inventory mix at each time of measurement:

Mid-year	:	Number of	:	Potential	:	Producers'
	:	machines	:	production	:	shipments
	:		:	<u>:Million dozen</u>	:	<u>:Million dozen</u>
	:		:	<u>pairs</u>	:	<u>pairs</u>
	:		:		:	
1966-----	:	69,921	:	129.9	:	96.9
1969-----	:	75,940	:	173.2	:	118.9
1972-----	:	60,495	:	171.2	:	104.6
1975-----	:	41,795	:	149.2	:	97.1
	:		:		:	

The figures tabulated above showing potential production are theoretical and should be reduced by about 20 percent in recognition of the fact that sustained production at theoretical potential does not occur. Even adjusted to this degree, the figures would show that by 1972 the hosiery boom induced by the introduction of panty hose in the late 1960's had resulted in severe overcapacity in the hosiery industry to the detriment of the market for new knitting machines for ladies' seamless hosiery.

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1/ Survey and Analysis of Circular Hosiery Machinery in the United States, 1966, 1969, 1972, and 1975.



SOURCE: SPEIZMAN INDUSTRIES INC., SURVEY AND ANALYSIS OF CIRCULAR HOSIERY MACHINERY IN THE UNITED STATES, 1966, 1969, 1972, AND 1975.



## Consideration of Injury or Likelihood Thereof

U.S. shipments

Shipments (including exports) of knitting machines for ladies' seamless hosiery by Rockwell International are tabulated below for the period 1967-75 and January-August 1976. Rockwell International (and its predecessor, TMW) dominated the U.S. industry during this period; shipments by its two U.S. competitors were considerably smaller.

Table 2.--Knitting machines for ladies' seamless hosiery: Total shipments, exports, and shipments to the U.S. market by Rockwell International, 1967-75 and January-August 1976

(In units)				
Period	: Total	:	Exports	: Shipments to
	: shipments	:		: the U.S. market
	:	:	:	:
1967-----	2,313	:	497	: 1,816
1968-----	3,716	:	418	: 3,298
1969-----	5,042	:	583	: 4,459
1970-----	5,439	:	1,275	: 4,164
1971-----	1,867	:	1,411	: 456
1972-----	235	:	65	: 170
1973-----	142	:	18	: 124
1974-----	22	:	3	: 19
1975-----	0	:	0	: 0
January-August 1976-----	0	:	0	: 0
	:	:	:	:

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

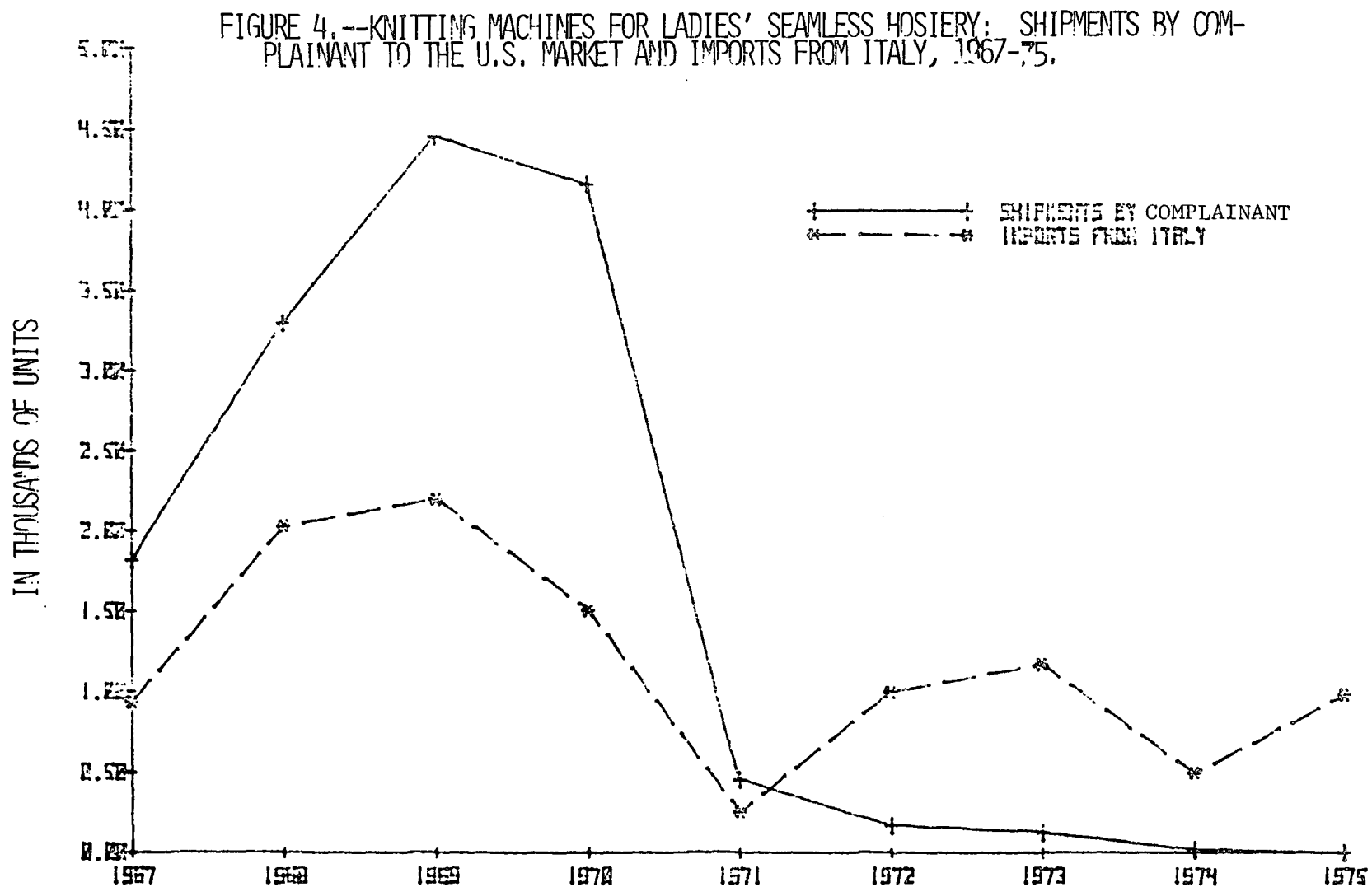
Rockwell International's shipments to the U.S. market, rising from 1,816 machines in 1967 to 4,459 machines in 1969 and amounting to 4,164 machines in 1970, fell steeply to 456 machines in 1971. Thereafter they dwindled rapidly to zero. No shipments were made in 1975 or in January-August 1976. Rockwell, having responded to the rise in the market for ladies' seamless hosiery, responded also to its decline and to the

buildup of excess capacity in the industry which manufactures ladies' seamless hosiery. In addition, the period 1967-76 was one of strong Italian competition for an important share of the U.S. market.

#### U.S. imports

Most imported knitting machines for ladies' seamless hosiery come from Italy; a much smaller volume originates in West Germany. Although official statistics covering imports of circular knitting machines for hosiery (TSUS item 670.16) include knitting machines other than for ladies' seamless hosiery, most imports from Italy under item 670.16 are, in fact, knitting machines for ladies' seamless hosiery. For that reason, imports under item 670.16 are a rough measure of the volume, and a good index of the trend, of imports of such machines from Italy. The following tabulation, based on official statistics of the U.S. Department of Commerce, shows the number of circular hosiery knitting machines imported from Italy during 1967-75, January-August 1975, and January-August 1976:

<u>Period</u>	<u>Imports from Italy</u>
1967-----	933
1968-----	2,030
1969-----	2,197
1970-----	1,508
1971-----	256
1972-----	999
1973-----	1,174
1974-----	496
1975-----	982
January-August--	
1975-----	534
1976-----	715



A-27

SOURCE: COMPILED FROM DATA SUBMITTED BY ROCKWELL INTERNATIONAL IN RESPONSE TO QUESTIONNAIRE OF THE U.S. INTERNATIONAL TRADE COMMISSION AND FROM OFFICIAL STATISTICS OF THE U.S. DEPARTMENT OF COMMERCE.

NOTE.--IMPORTS CONSIST OF ALL CIRCULAR KNITTING MACHINES FOR HOSIERY (TSUS ITEM 670.16) FROM ITALY. THE BULK OF THESE MACHINES FROM ITALY ARE KNITTING MACHINES FOR LADIES' SEAMLESS HOSIERY.

Like the data on Rockwell's shipments to the U.S. market, these figures show a large increase after 1967 in response to the panty hose boom and a precipitate drop in 1971 when that boom ended. Although imports from Italy recovered somewhat after 1971, their reduced level reflects the contracted market.

#### U.S. consumption

Table 3 shows U.S. shipments, exports, imports, and apparent consumption of knitting machines for ladies' seamless hosiery during the period 1971-75, and January-August 1976. Almost all of the shipments were those of Rockwell International, 1/ and of all the imported machines recorded in table 3, 96 percent came from Italy. Consumption of knitting machines for ladies' seamless hosiery in 1971 amounted to \* \* \* units and, as suggested by figures shown for U.S. imports and U.S. shipments, was at a low point following large domestic shipments and imports during 1967-70. Consumption rose in 1972 to \* \* \* machines and, except in 1974, held at a little over \* \* \* units a year through 1975. However, as compared with domestic shipments plus imports during 1967-70, U.S. consumption from January 1971 to August 1976 was very much reduced--by as much as 75 percent in terms of units. 2/

Within this smaller U.S. market, foreign machines, mostly from Italy, rose swiftly from a penetration ratio (based on quantity) of

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1/ Scott & Williams, Inc., shipped \* \* \* machines in 1971 and \* \* \* in 1974; all \* \* \* machines were from inventory. The Singer Co. shipped \* \* \* machines after 1971.

2/ An exact comparison cannot be made because data for 1967-70 are not strictly comparable with the data in table 3.

Table 3.--Knitting machines for ladies' seamless hosiery: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1971-75, January-August 1975, and January-August 1976

(Quantity in units; value in thousands of dollars)					
Period	Producers' shipments	Exports	Imports <sup>1/</sup>	Apparent consumption	Ratio (percent) of imports to consumption
Quantity					
1971-----	* * *	* * *	* * *	* * *	* * *
1972-----	* * *	* * *	* * *	* * *	* * *
1973-----	* * *	* * *	* * *	* * *	* * *
1974-----	* * *	* * *	* * *	* * *	* * *
1975-----	* * *	* * *	* * *	* * *	* * *
Jan.-Aug.--					
1975-----	* * *	* * *	* * *	* * *	* * *
1976-----	* * *	* * *	* * *	* * *	* * *
Value					
1971-----	* * *	* * *	* * *	* * *	* * *
1972-----	* * *	* * *	* * *	* * *	* * *
1973-----	* * *	* * *	* * *	* * *	* * *
1974-----	* * *	* * *	* * *	* * *	* * *
1975-----	* * *	* * *	* * *	* * *	* * *
Jan.-Aug.--					
1975-----	* * *	* * *	* * *	* * *	* * *
1976-----	* * *	* * *	* * *	* * *	* * *

<sup>1/</sup> 96 percent of the machines are from Italy.

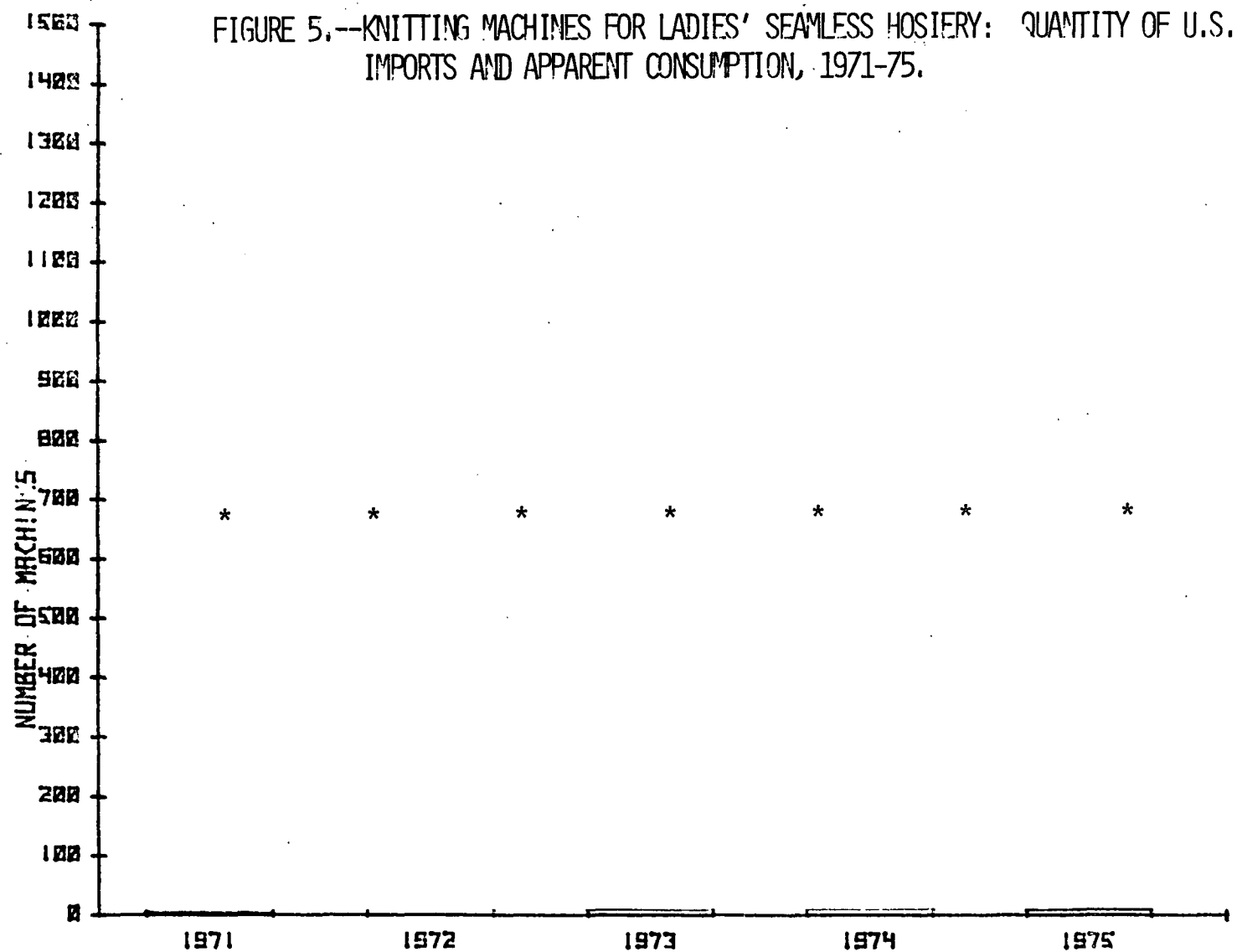
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 4.--4-feed knitting machines for ladies' seamless hosiery: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, 1971-75, January-August 1975, and January-August 1976

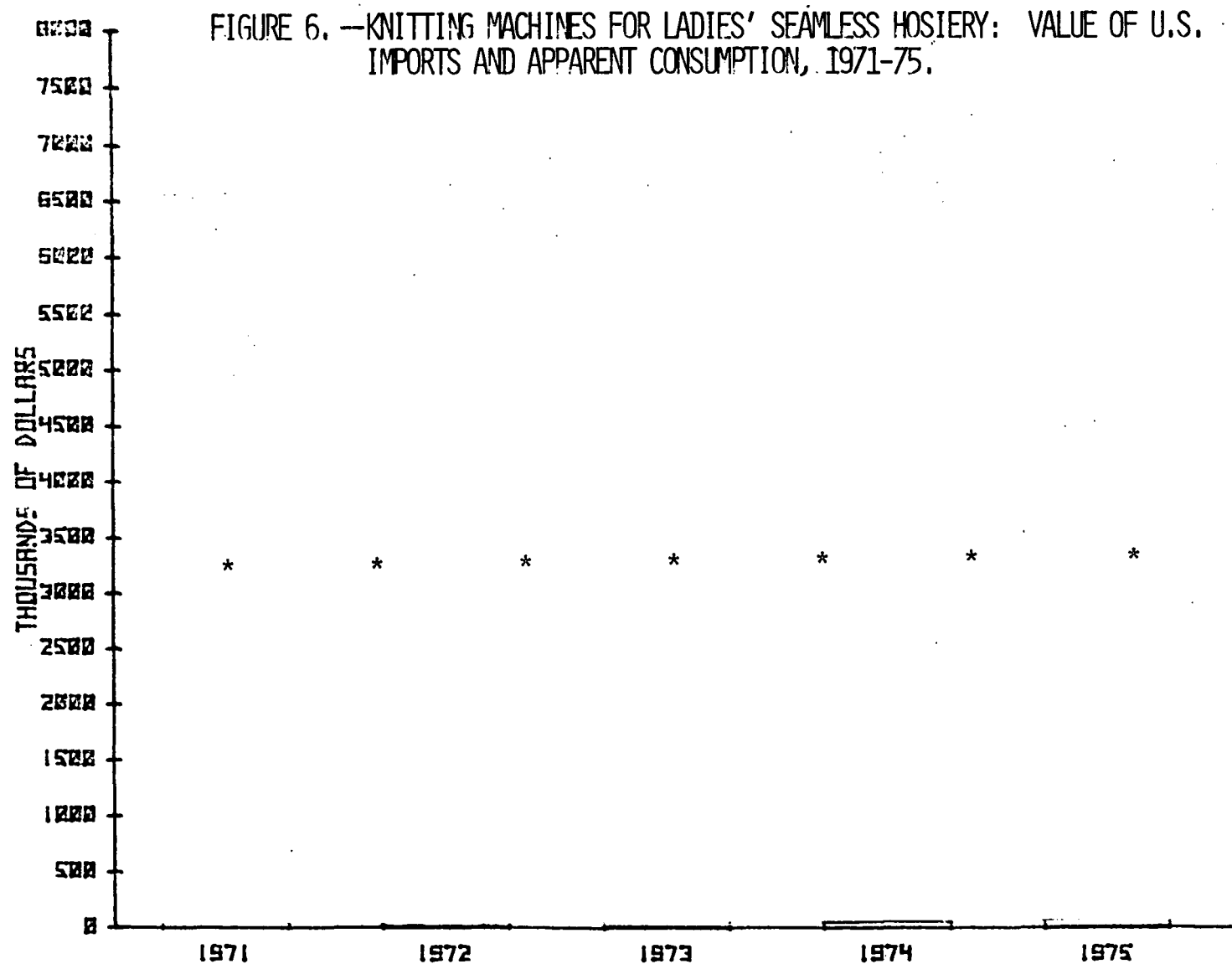
(Quantity in units; value in thousands of dollars)					
Period	Producers' shipments	Exports	Imports <sup>1/</sup>	Apparent consumption	Ratio (percent) of imports to consumption
Quantity					
1971-----	* * *	* * *	* * *	* * *	* * *
1972-----	* * *	* * *	* * *	* * *	* * *
1973-----	* * *	* * *	* * *	* * *	* * *
1974-----	* * *	* * *	* * *	* * *	* * *
1975-----	* * *	* * *	* * *	* * *	* * *
Jan.-Aug.--	:	:	:	:	:
1975-----	* * *	* * *	* * *	* * *	* * *
1976-----	* * *	* * *	* * *	* * *	* * *
Value					
1971-----	* * *	* * *	* * *	* * *	* * *
1972-----	* * *	* * *	* * *	* * *	* * *
1973-----	* * *	* * *	* * *	* * *	* * *
1974-----	* * *	* * *	* * *	* * *	* * *
1975-----	* * *	* * *	* * *	* * *	* * *
Jan.-Aug.--	:	:	:	:	:
1975-----	* * *	* * *	* * *	* * *	* * *
1976-----	* * *	* * *	* * *	* * *	* * *

<sup>1/</sup> 97 percent of the machines are from Italy.

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



SOURCE: COMPILED FROM DATA SUBMITTED IN RESPONSE TO QUESTIONNAIRES OF THE U.S. INTERNATIONAL TRADE COMMISSION.



SOURCE: COMPILED FROM DATA SUBMITTED IN RESPONSE TO QUESTIONNAIRES OF THE U.S. INTERNATIONAL TRADE COMMISSION.



\* \* \* percent in 1971 to nearly \* \* \* percent in 1974 and reached 100 percent for the period January 1975-August 1976.

Table 4 shows shipments, exports, imports, and consumption of four-feed knitting machines for ladies' seamless hosiery, which make up the bulk of the machines covered in table 3. In the late 1960's and by 1972, the interest of U.S. hosiery mills shifted from eight-feed to four-feed machines because the four-feed machines, although less productive than eight-feed units, produce a better quality of hose in terms of both pattern scope and relative freedom from undesirable lines in the fabric. The four-feed sphere is the main area of competition in the U.S. market among knitting machine manufacturers. Penetration by foreign machines, mostly from Italy, rose in terms of quantity from nearly \* \* \* percent in 1972 to more than \* \* \* percent in 1974 and to 100 percent in 1975.

#### Used machines

There has long been a market for used knitting machines for ladies' seamless hosiery in the United States. During 1971-75, sales of such machines by the dealer who is believed to account for the bulk of U.S. sales amounted to almost \* \* \* machines, compared with a total of \* \* \* new machines sold in this country. The dollar volume of these sales of used machines was only \* \* \*, compared with \* \* \* for new machines. The average unit value of the used items was \* \* \* .

Most used machines are TMW models which, when in good condition, do a good job although their productivity is low in comparison with current Italian models. Firms large and small purchase used machines for special

purposes to supplement their more productive equipment, perhaps to meet a temporary and limited demand for a special style or to meet demand for a style selling at a price too low to justify purchase of expensive new equipment. These same firms purchase for their basic ongoing, large-volume business new machines of current design combining high productivity with adequate pattern scope. Although new and used machines do compete with one another to an extent, they largely serve in different markets. In any case, the various motivations for purchases of used machines have been stable over the years and no new considerations for such purchases have developed during 1971-76.

#### Rockwell International's inventories

Rockwell International's inventories consisted of raw materials, work in process, and completed parts, but no finished machines. It is probable that production of complete machines by Rockwell after 1970 was based largely on parts from inventory. This is suggested by Rockwell's report of net inventories at the end of its fiscal years 1970-75 and on August 31, 1976, as follows:

<u>Date</u>	<u>1,000 dollars</u>
Sept. 30, 1970-----	* * *
Sept. 30, 1971-----	* * *
Sept. 30, 1972-----	* * *
Sept. 30, 1973-----	* * *
Sept. 30, 1974-----	* * *
Sept. 30, 1975-----	* * *
Aug. 31, 1976-----	* * *

Rockwell International's capacity utilization

Rockwell International rates its beginning-of-the-year capacity at 550 to 600 machines a month for the years 1971-75, on the basis of manufacturing accomplishments in the years just prior to 1971. For certain periods during peak production a rate of more than 650 machines a month was claimed for those prior years. For 1976, Rockwell rates its capacity at 100 machines a month on the basis of "dedicated machine tools" available. This is a reflection of changed production tasks at Reading with the introduction of printing press manufacture there. Some capacity must remain intact for manufacture of seamless knitting machine parts, which should remain important at least until the present large number of Rockwell (and TMW) machines operating in the ladies' seamless hosiery industry is finally retired.

To approach former seamless machine manufacturing levels to an important degree, reallocation of the very considerable metalworking capacity existing at Reading would be necessary. In addition, however, and especially for producing newly-designed knitting machines, an engineering staff comparable to that which created TMW's former reputation would have to be reconstituted, and a considerable investment in specific tooling--jigs, fixtures, and gages--would have to be made.

Rockwell International's Quadrasonic project

Introduction.--Rockwell International (and its predecessor, TMW) maintained a strong research and development program in ladies' seamless hosiery knitting machines during the 1960's. During the late

1960's, developmental work on a machine later named the Quadrasonic was started and maintained concurrently with development of other models. It is understood that, in response to the downturn in the market for knitting machines for ladies' seamless hosiery, in the early 1970's and to an upsurge of demand for double knit machinery, some engineering talent was diverted from research on ladies' seamless hosiery knitters to development of double knit machines. Indeed, Rockwell International started significant production of double knit machines in 1971 while its production of the articles covered by this investigation was declining in volume.

Research and development of ladies' seamless knitting machines continued, however, on a more limited scale than formerly, and a prototype of the Quadrasonic was displayed at the KAE in Atlantic City, N.J., in the spring of 1973. A model for sale was displayed at the Catawba Valley Hosiery Exposition in Hickory, N.C., in 1974 and again at the KAE in the spring of 1975.

Altogether, 12 Quadrasonic machines were completed, exclusive of a few prototypes, of which 10 were sent to hosiery mills for trial and evaluation. These 12 machines were produced under laboratory conditions rather than on an established production line with specialized tooling. No Quadrasonic machine was ever sold.

Rockwell International reports that expenses for the developmental work on the Quadrasonic, including trial machine writeoff, inventory writeoff, and engineering and experimental work, amounted to \* \* \* for the years 1972-76. Had tooling for production ever been undertaken, the cost of such tooling would have exceeded that amount considerably.

The Quadrasonic was Rockwell International's bid to reestablish itself in the market in which it had formerly been so important. The firm anticipated that the market, while not expected to be as large as in the late 1960's, would have need of machines of advanced capabilities as replacements for old machines still abundant in the U.S. hosiery industry. Rockwell International maintains that just as its new model was becoming known, and just as serious negotiations for sales of the Quadrasonic were underway, its marketing effort was undercut by Italian offers of machines at very low prices. Indeed, Rockwell International's complaint of Italian dumping was in direct response to the foregoing.

The Quadrasonic program consisted, in addition to the developmental work discussed above, of direct sales efforts and offers and a testing program consisting of the placement of trial machines in interested hosiery mills where they underwent testing and observation.

Quadrasonic field testing program.---Rockwell International's field testing program lasted a little over 2 years, mid-1974 to mid-1976, during which it sent the Quadrasonic to \* \* \* hosiery firms for evaluation. The \* \* \* firms subjected the test machines to procedures which they typically employed for all machines presented for purchase. Responses to Commission questionnaires have been received from all of the evaluating firms. At least one of the \* \* \* evaluated two machines successively. The total of \* \* \* firms include large companies such as \* \* \* as well as smaller firms. Machines remained in these mills for periods varying from 3 months to 7 or 8 months, although one mill worked with a test machine for 6 weeks and sent it back to

Rockwell. Tests were under the joint supervision of Rockwell and in-house technicians and were designed to test operation of the machine when making the local mills' styles of hose. \* \* \* has described its procedure as a 40-hour test in which, after adjustment by Rockwell's and \* \* \* personnel, the machine was run for 5 successive 8-hour days in a laboratory and observed carefully during the period. Other tests were run for varying periods. In the case of \* \* \*, had the Quadrasonic been in regular production, the firm would have purchased four or five machines and placed them on the mill floor for actual operation before contracting to make purchases of large numbers of machines.

The Quadrasonic was not judged to have passed its test at any of the \* \* \* evaluating firms. The testing firms severely criticized the machine's design and all agreed that operationally it was far from ready to be put into a hosiery production line. The machine was found to require the very frequent attention of Rockwell technicians during the testing period. In addition, Hanes Hosiery Division, which tested a second machine a year after testing the first and after offering a critique of the first, reported that none of the points of criticism which it had raised had been addressed in the second machine.

The following list summarizes the findings of the \* \* \* firms which evaluated the Quadrasonic:

Aladdin Knit Mills, Inc. (Kellwood Co.).--Machine did not function properly. Problems: Electrical malfunctioning, dropped stitches, needle breakage, poor quality hose (59 percent to 85 percent first quality from Quadrasonic versus 96 percent to 100 percent for an

Italian machine), continual malfunctioning of tape (for pattern control). Machine needed constant attention by one to three Rockwell technicians during test.

\* \* \* \* \*

Hanes Hosiery Division.--In two test periods of about 3 months each, Hanes found design problems as follows: Poor stitch control resulting in lines in finished hose; poor safety features involving potential damage to the machine during routine maintenance; lack of certain components (binders) required for knitting support hose from spandex yarn; speed problems, including (a) slow-down at various stages of the knitting cycle resulting in reduction of overall speed far below rated speed and below actual speed of Italian machines having a slower rated speed and (b) long warm-up time as compared with Billi and Lonati machines; other problems, including malfunctioning of the tape control.

Holt Hosiery Mills, Inc.--Neither the Holt nor the Rockwell mechanics could make the test machine operate properly. Gave up after 6 weeks. Specific problems: Dropped stitches, extensive yarn breakage, trouble with tape (falling out of sequence and breakage).

\* \* \* \* \*

Sheffield Industries, Inc., Subsidiary of J. P. Stevens & Co., Inc.--The Quadrasonic was not ready for hosiery production line. Too much down time. Required major adjustments.

\* \* \* \* \*

\* \* \* \* \*

Sales offers and reactions thereto.--The two features of Rockwell's sales offers which most impressed prospective customers appear to have been the contingent nature of the offers and the length of proposed delivery times. Among those respondents to the Commission's questionnaire that received more than casual sales approaches, most were told that Rockwell's acceptance of an order for machines was conditional upon the accumulation of enough orders to justify Rockwell's tooling up for production. Measures of such accumulation varied among respondents, some reporting that Rockwell had indicated that 500 orders would be enough to get production started, while others said that sufficient orders to make it pay would have to accumulate. \* \* \* further understanding was that upon the accumulation of 500 orders, the division at Reading would have to seek permission of the parent firm to tool up for production.

Proposed delivery schedules, from date of order, were only vaguely remembered by respondents, probably because production was not underway and was, in any case, conditional. Two definite offers have been



reported. Hanes Hosiery said that in 1974 Rockwell offered the following schedules for an order of 760 machines: After 8 to 10 months from date of order, 10 machines would be delivered, and thereafter \* \* \* machines would be delivered each month until the last machine was delivered in April 1976. \* \* \*

Neither offer was accepted. Hanes Hosiery reports that the schedule proposed in 1974 far exceeded the length of time it could wait for delivery from any machine builder.

In addition to these two offers, another firm, \* \* \* , reports that in the summer of 1975 a Rockwell representative estimated that tooling for production for the Quadrasonic would require 8 months after corporate approval had been obtained for going into production.

Contingent offers, as described above, and long delivery schedules were unacceptable, and no hosiery machine was ordered. Not only could no prospective customer be assured of firm delivery, but all firms which had tested the machine knew how far it had to go before being acceptable. \* \* \*

#### Other Rockwell International developmental models

Rockwell International produced two other developmental models during 1971-74: the R-4-S, a four-feed, 400 rpm model (a speeded-up version of an earlier model, the R-4) and the Styl-Knit, a four-feed, 375 rpm model. Of these, none of the model R-4-S were sold, while only 11 of the Styl-Knits were sold. Three questionnaire respondents reported unfavorable evaluations of the R-4-S, while one respondent, \* \* \* , reported as follows on the Styl-Knit:

Machine (Styl-Knit) embodied many useful concepts and productivity which was potentially competitive at that time. However, "debugging" in many areas was needed. This "debugging" might well have occurred had the machinery builder gone into production.

### Employment

The employment and man-hour data to be discussed below relate solely to the complainant because no other firm produced knitting machines for ladies' seamless hosiery during the period 1971 to the present.

The yearly average number of employees producing knitting machines for ladies' seamless hosiery fell 95 percent from 1971 to 1975, both for all employees and for production and related workers. By contrast, there was a 50-percent decline from 1971 to 1975 for all employees and for production and related workers producing all products at the plant. Similarly, when the first 8 months of 1975 are compared with the first 8 months of 1976, employment on hosiery machines only (both in total and for production and related workers) fell nearly 30 percent, whereas employment on all products of the complainant fell 14 percent for total employees and 12 percent for production and related workers.

The employment averages reported for the period 1971-75, and January-August 1976 are shown in table 5, on the following page.

Table 5.--Average number of employees in Rockwell International's establishment where knitting machines for ladies' seamless hosiery were produced, total and production and related workers, 1971-75, January-August 1975, and January-August 1976 1/

Period	: Total employees engaged		: Production and related	
	: in making--		: workers employed on--	
	All products <u>2/</u>	: Knitting	All products <u>2/</u>	: Knitting
		: machines		: machines
		: for ladies'		: for ladies'
: seamless		: seamless		
	: hosiery		: hosiery	
1971-----	2,735	: <u>3/</u> 449	2,111	: <u>3/</u> 346
1972-----	2,167	: 115	1,664	: 88
1973-----	2,258	: 108	1,766	: 85
1974-----	2,041	: 78	1,568	: 59
1975-----	1,384	: 21	1,033	: 16
January-August--	:	:	:	:
1975-----	1,490	: 24	1,115	: 18
1976-----	1,275	: 17	976	: 13
	:	:	:	:

1/ No production of complete machines took place after 1975.

2/ Includes foundry.

3/ Estimated by Rockwell International.

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

Man-hours worked producing knitting machines for ladies' seamless hosiery fell 95 percent from 1971 to 1975 for all employees and for production and related workers. During the same period, man-hours worked producing all products at the subject establishment fell 52 percent for all employees and 54 percent for production and related workers.

When the first 8 months of 1975 are compared with the first 8 months of 1976, the declines in man-hours worked are as follows: All employees, all products, 7 percent; production and related workers, all products, 0 percent; all employees, ladies' hosiery machines, 25 percent; and production and related workers, ladies' hosiery machines, 28 percent.

The man-hours worked at Rockwell's plant where the subject machines were produced are shown in table 6, below.

Table 6.--Man-hours worked by all employees and by production and related workers in Rockwell International's establishment where knitting machines for ladies' seamless hosiery were produced, 1971-75, January-August 1975, and January-August 1976 1/

(In thousands of man-hours)					
Period	Man-hours worked by--				
	All employees		Production and related		
	employed on--		workers employed on--		
	All	Knitting	All	Knitting	
	products <u>2/</u>	machines	products <u>2/</u>	machines	
		for ladies'		for ladies'	
		seamless		seamless	
		hosiery		hosiery	
1971-----	5,752	<u>3/</u> 943	4,454	<u>3/</u> 719	
1972 <u>4/</u> -----	4,104	218	3,058	183	
1973-----	4,561	219	3,537	177	
1974-----	3,945	150	2,961	122	
1975-----	2,778	42	2,048	33	
January-August--					
1975-----	2,245	36	1,465	25	
1976-----	2,087	27	1,465	18	

1/ No production of complete machines took place after 1975.

2/ Includes foundry.

3/ Estimated by Rockwell International.

4/ There was a strike for 1 month (September).

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

No workers are presently engaged in making knitting machines for ladies' seamless hosiery. Rockwell does continue to produce parts for such machines.

On December 17, 1975, the Department of Labor certified that approximately 300 workers engaged in the production of knitting machines for ladies' seamless hosiery at Rockwell International's plant in Reading "who became totally or partially separated from employment on or after January 1, 1975, and before May 1, 1975, are eligible to apply for adjustment assistance under the Trade Act of 1974." Rockwell International reports that these workers were engaged in manufacturing parts and in completing \* \* \* trial Quadrasonic machines.

Profit-and-loss experience of U.S. producers

Rockwell International.--Rockwell International submitted profit-and-loss data on its operations producing ladies' seamless hosiery knitting machinery and total establishment operations for 1971-76.

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Table 7.--Profit-and-loss experience of Rockwell International on its operations producing knitting machinery for ladies' seamless hosiery and the establishment in which such knitting machinery is produced, 1971-76 <sup>1/</sup>

Item	Accounting year ended Sept. 30--					11 months ended					
	1971	1972	1973	1974	1975	Aug. 31, 1976	Oct. 1974- Mar. 1975	Apr. 1975- Sept. 1975	Oct. 1975- Mar. 1976	Apr. 1976- Aug. 1976	

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<sup>1/</sup> No production of complete machines took place after fiscal year 1975.

Source: Compiled from data submitted to the U.S. International Trade Commission by Rockwell International.

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Causal Relation Between LTFV Sales and Alleged Injury, Likelihood  
Thereof or Prevention of Establishment of an Industry

Market penetration

As shown earlier in the section on U.S. consumption (see Tables 3 and 4, pp. 29 and 30), foreign-made knitting machines for ladies' seamless hosiery rapidly attained a high ratio of market penetration in the United States, rising from \* \* \* percent in 1971 to \* \* \* percent in 1974 and to 100 percent for the period January 1975-August 1976 (in terms of units). For four-feed knitting machines for ladies' seamless hosiery, which make up the bulk of the total and are of chief interest to U.S. hosiery firms, the penetration ratio rose from \* \* \* percent in 1972 to \* \* \* percent in 1974 and to 100 percent for the period January 1975-August 1976. Most of the imported machines were Italian. All of the machines found to have been sold at LTFV were four-feed machines.

Prices of four-feed machines 1/

Introduction.--The following price section details two competitive situations. The first competition existed between Rockwell machines that had been popular in the U.S. market in the 1960's and the faster, more versatile Italian machines that entered the U.S. market beginning in 1972.

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1/ All prices referred to in this section, unless a specific transaction is detailed, are weighted averages.

Installation charges are included with all prices in those instances in which the supplier performed the installation. Exact information on the frequency of installations by suppliers is not available, but it is estimated that Rockwell installed between 5 and 10 percent of its total machines sold, whereas Lonati and Billi installed a higher percentage of the machines they supplied. Installation charges were approximately \* \* \* a machine. Omission of exact data in this instance does not significantly distort the price relationship between the Rockwell and the Italian machines.

Rockwell did not compete successfully against these machines in either price or machine performance, and, therefore, it rapidly lost the major share of the market that it had held in the 1960's. The faster Italian machines sold in the U.S. market in 1972 for \* \* \* , compared with the earlier model TMW (Rockwell) machines that sold during 1967-70 for an average unit value of \* \* \* and for varying weighted-average prices ranging from \* \* \* to \* \* \* during 1971-74 (see table 8). Moreover, the Italian machines were nearly twice as productive as the Rockwell machines.

The second competition began in 1973, at which time Rockwell introduced a new, faster, and more versatile machine designed to compete with the Lonati and Billi machines from Italy. Again, the Rockwell machine, the Quadrasonic, was unable to compete either in price or performance with these Italian machines; indeed, the speed (productivity) of the Italian machines was further increased in the latter half of 1975 and again in late 1976. 1/ The new Rockwell machine was never perfected or produced in commercial quantities. However, even if perfected the Quadrasonic would have been no more productive than the Italian machines, and it was offered at a considerably higher price.

Trends in prices of Rockwell International four-feed machines.--

Rockwell machines were shipped in 1974 for the last time. During 1971-74, prices of the three major four-feed models shipped \* \* \* . 2/

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1/ For the Billi machine only in 1976.

2/ These three models accounted for about 85 percent, by volume, of total sales by Rockwell of ladies' seamless hosiery machines during 1971-74.

Table 8.--Knitting machines for ladies' seamless hosiery: Weighted-average prices of major 4-feed models shipped to U.S. customers, 1971-75 and, by quarters, 1975 and January-September 1976

\* \* \* \* \*

2/ Major ratings for the models covered in this table are as follows:

Rating	Rockwell			Lonati			Billi	
	Mark IV-S	R-4	R-4-26	L4V	L4VS	L4HS	Z4F	Z4F (Super fast)
Rpm rating-----	250	300	300	450	600	420	400	550
Patterning capa-	:	:	:	:	:	:	:	:
bility (steps):	:	:	:	:	:	:	:	:
of selection)--	52	8	26	16	16	31	23	23

Source: Responses to questionnaires of the U.S. International Trade Commission and field work by the staff of the U.S. International Trade Commission.

\* \* \* \* \*

During 1974-75 most older models of Rockwell machines were available for sale, but there was no interest in them nor did Rockwell do very much to stimulate such interest. Instead, Rockwell attempted to develop and sell the Quadrasonic model (performance rating: 500+ rpm and 50-step patterning capability) that was never produced in commercial quantities but was offered for sale to the following customers at the indicated prices, according to data received from Rockwell, during the period May 1973-November 1975:

\* \* \* \* \*

Trends in prices of major Italian four-feed machines. 1/--In 1972

Lonati and Billi began selling significant quantities of four-feed

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1/ During January 1972-August 1976, prices for the four models of Italian machines referred to in this section related to more than 90 percent of total imports, by volume, of Italian four-feed machines; the bulk of the remaining machines were Lonati L4VS models (\* \* \* units) for which prices appear in table 8, p. 52.

machines in the U.S. market. During January 1972-March 1975, Lonati chiefly sold the L4V and the L4HS, whereas in 1972-74 Billi exclusively sold the Z4F.

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Costs and prices of certain Rockwell International machines compared with prices of certain Italian machines.--Rockwell supplied the Commission with its estimated costs to manufacture the Quadrasonic model during March-October 1975, the Treasury's period of investigation. Table 9 compares these costs with various prices at which the Quadrasonic was offered during 1975. Furthermore, these costs and prices are compared with the weighted-average sales prices of the Lonati model L4VS and Billi model Z4F super fast during 1975. In addition, the ranges of margins are added to these prices of Italian machines and, assuming certain conditions, fair-value prices are indicated.

Table 9.--Knitting machines for ladies' seamless hosiery: Cost of manufacture of Rockwell's Quadrasonic model, offer prices for the Quadrasonic, prices of certain imported Italian machines, and ranges of margins relating to these Italian machines, 1975

\* \* \* \* \*

Source: Compiled from data submitted by Rockwell and Henderson in response to questionnaires of the U.S. International Trade Commission, field work by the staff of the U.S. International Trade Commission, oral information supplied by Rockwell, and the Department of the Treasury file.

\* \* \* \* \*

Loss of sales

Information received from Rockwell and several customers of Rockwell is illustrative of the price and nonprice factors that influenced purchases of ladies' seamless hosiery machines during the 1970's. In 1971-72, Italian machines such as the Lonati L4V, with performance ratings of 450 rpm and 16-step patterning capability, were competing with Rockwell production-run models such as the Mark IV-S, with performance ratings of 250 rpm and 52-step patterning capability, and the R-4, with ratings of 300 rpm and 8-step patterning



capability, and the R-4, with ratings of 300 rpm and 8-step patterning capability. 1/ The better performing Italian machines were usually sold at prices lower than those for which the Rockwell machines were sold during 1971-72; furthermore, these Italian machines were priced lower in 1972 than the Rockwell machines had been during the late 1960's, when demand was strong and Rockwell was experiencing brisk business.

Rockwell attempted to develop improved machines such as the R-4-S, with performance ratings of 400 rpm and 8-step patterning capability, the Styl-Knit, rated 375 rpm, with 26-step patterning capability, and the Quadrasonic, rated 500+ rpm with 50-step patterning capability, but none of these machines was able to compete against the new Italian machines, which have continued to improve during this decade.

Rockwell's experience with hosiery firms such as \* \* \* explains these developments in greater detail.

\* \* \* \* \*

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1/ Although output does not increase in exact proportion to the increase in rpm ratings and varies with the mix of patterns produced, output is closely related to rpm.

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\* \* \* gave a relatively high performance rating to the Styl-Knit and Quadrasonic models of Rockwell with the important qualification that such machines needed to be perfected and made available, ready for a hosiery production line. \* \* \* felt that the Styl-Knit model embodied many useful concepts and offered productivity that was potentially competitive at that time. Furthermore, \* \* \* stated that the problems with this machine might have been eliminated if Rockwell had committed itself to go into production of the machine.

\* \* \* \* \*

\* \* \* \* \*

### The Italian industry

In 1975, foreign penetration of the U.S. market attained 100 percent, having risen to that point from very high levels in the preceding 3 years (see table 3, p. 29). Of all knitting machines for ladies' seamless hosiery imported during the period January 1971-August 1976, 96 percent came from Italy. Of all 4-feed machines, which are of chief interest to U.S. hosiery manufacturers, those imported from Italy during the period January 1971-August 1976 constituted 97 percent (see table 4, p. 30). Of total machines imported from Italy during this period, four-feed machines made up 92 percent, while the remainder were eight-feed units.

Italy is currently the world's largest producer of knitting machines for ladies' seamless hosiery. Five firms make up the Italian industry. In addition to Billi and Lonati, which were the objects of the Treasury Department's investigation, the other firms are Samo S.p.A, Santoni and C, and Moretta. Of the five, Billi and Lonati far outweigh the other three in the U.S. market, and, of machines imported since 1971, \* \* \* (although Lonati, with 500 to 600 workers, is believed to be a smaller firm than Billi).

Billi is probably the largest Italian producer. Its plant near Florence was newly completed in 1971 on a 19-acre tract, 4 acres of which were built over, and at that time had a rated capacity of 1,000 ladies' seamless hosiery machines a month. In the spring of 1972 it had 830 workers. Basic machine parts are subcontracted, but precision components are made at the Billi plant, which also assembles and tests the machines. Giorgio Billi, formerly the head of the firm, is widely respected as a gifted designer; research and development have a large place at Billi and include facilities where models are tested under production conditions.

Billi experienced the contraction of the market for knitting machines for ladies' seamless hosiery during the early 1970's and branched out into production of large-diameter knitting machines. Probably because of this diversification, Billi's capacity was said to have dropped by late 1973 to 4,800 ladies' seamless hosiery machines a year. The downturn in the hosiery market, and probably financial mismanagement at Billi, resulted in bankruptcy for the firm and a temporary shutdown. The Italian Government intervened to restore production and in 1974 acquired control of the company, which it renamed Billi-Matec.

Billi, Lonati, and the other three producers have continued to experience the contraction of demand for ladies' seamless hosiery machines. Moretta, for example, was reported as of late 1975 to have reduced productive activities by about two thirds from what they had been in 1973-74. Samo was closed for 14 months by labor troubles during the 3 years since late 1973.

Billi, Lonati, and probably the other three producers are oriented toward exports. It was reported that as of late 1973 only 10 percent of Billi's output of ladies' seamless hosiery machines was sold in Italy. Of the 90 percent exported, one-third was said to have been imported by the United States.

Italian machines, especially those from Billi, Lonati, and Samo, enjoy a very high reputation in the U.S. hosiery industry. Improvements in design and performance have continued despite contraction of the market. Italian firms have cooperated closely with U.S. mills in ascertaining mill needs for specific design attributes. Lonati, for example, recently worked very closely with a large U.S. hosiery manufacturer to design a model tailored to that company's needs. This procedure was followed by a large sale of Lonati machines.

Comparison of U.S. and Italian knitting machines for  
ladies' seamless hosiery

Although a large proportion of ladies' seamless hosiery knitting machines now operating in U.S. hosiery mills were made by Rockwell International and TMW, its predecessor, the mills that found a need for more productive machines during the 1970's have had to turn to foreign, mostly Italian, models. Among the units being shipped by Rockwell during 1971-74, the models that had made and sustained Rockwell's reputation for excellence were obsolete by the early 1970's, while the only Rockwell models for which both high speed and pattern versatility were claimed were developmental machines (such as the Quadrasonic), which found no acceptance in the hosiery industry.

Italian manufacturers, however, including Billi and Lonati, have successfully produced improved machines even within the contracted market of the last few years. For example, in addition to the increases in cylinder speeds indicated in previous sections of this report, a rated speed of 850 rpm was achieved in a new Z4F model displayed by Billi at the Catawba Valley Hosiery Exposition held in September 1976.

The following excerpts from questionnaire responses typify opinions of hosiery machine purchasers regarding the period 1971-76:

From \* \* \* :

Up until 1972, \* \* \* was a 100% North American Rockwell plant, meaning, we owned all North American Rockwell knitting machines: Mark III S machines, March IV S machines, and R-4-26 machines.

The Mark III S machine was a two-feed with reciprocation capabilities, capable of making heel and toe hosiery styles. This machine had a speed of 300 RPM's, but only two feeds. These machines are still in production and are used on styles that require the reciprocation aspects.

The R-4-26 is a run-down machine, four-feed with very limited versatility. It could only make micro with a float at every other feed. These machines were only used on promotional-type merchandise. The R-4-26 had a speed of 300 RPM's.

The Mark IV S was a rather versatile machine with many capabilities as far as styling, but from a production standpoint, it became antiquated by 1972. The maximum speed was 250 RPM's.

So, beginning in 1973, even though these machines were only three years old, we began replacing them with higher speed equipment. We evaluated two types of Italian machines, the Lonati and the Billi. Both machines were in the 400 RPM range. At that time, to the best of my knowledge, no American-made machine was available with these speeds. As aforementioned, we had everything North American Rockwell

had available. After several months of evaluation between Lonati and Billi, we selected the Billi machine. This was mainly because of the performance during the test period and because we felt the Billi was slightly more versatile, lending itself better to our styles.

During 1973, we purchased quite a number of Billi 4-F 400's, both for an expanded operation and for replacements of the slower Mark IV North American Rockwell machines.

From \* \* \* :

We performed rather complete evaluations on the Zodiac 4-F, Lonati L4/V, and Textile 1/ model R-4-S in late 1971. We had no preference at the time of this evaluation because any of the 3 machines we were evaluating would be new to our knitting rooms. We eliminated the Textile model R-4-S from our consideration first because of an unacceptable evaluation as compared to the Zodiac. Price was not a factor. A final decision was then made to purchase the Zodiac 4-F because of a superior evaluation, even though the price per machine was higher than the Lonati.

From \* \* \* :

Due to the production requirement stated above, we tested the Zodiac 4 feed machine, different models of Textile Machine Works (Rockwell International), and Lonati. The Lonati machine (4 feed) was by far the most versatile and simplest to change from style A to style B, etc. (our opinion); therefore, we purchased the Lonati 4 feed machine.

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1/ Textile is equivalent to TMW (or Rockwell International).



APPENDIX A  
TREASURY MEMORANDA

A-67 - A-83

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APPENDIX B

COMMUNICATIONS FROM ROCKWELL INTERNATIONAL

Memorandum to the Commission Reporting a Telephone  
Conversation of October 7, 1976

Letter from Rockwell International, dated October 31, 1976

Rockwell International's Responses to Section K and  
Subsection L-2 of the Commission's Questionnaire

A-85 - A-89

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