BOLTS, NUTS, AND LARGE SCREWS OF IRON OR STEEL

Report to the President on
Investigation No. TA-201-27
Under Section 201 of the Trade Act
of 1974

USITC Publication 847
December 1977

United States International Trade Commission / Washington, D.C. 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

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REPORT TO THE PRESIDENT

United States International Trade Commission
December 8, 1977

To the President:

In accordance with section 201(d)(1) of the Trade Act of 1974 (88 Stat. 1978), the United States International Trade Commission herein reports the results of an investigation relating to bolts, nuts, and large screws of iron or steel.

The investigation to which this report relates (investigation No. TA-201-27) was undertaken to determine whether --

> lag screws or bolts, bolts (except mine-roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.63 and 646.79 of the Tariff Schedules of the United States (TSUS),

are being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

The Commission instituted the investigation under the authority of section 201(b)(1) of the Trade Act on June 22, 1977, following receipt, on June 10, 1977, of a petition for import relief under section 201 filed by the United States Fastener Manufacturing Group, the United Steel Workers of America, and the International Association of Machinists and Aerospace Workers.

The Commission held a public hearing on this matter in Washington, D.C., on September 29 and 30, 1977. All interested persons were given an opportunity to be present, to present evidence, and to be heard.

Notice of the institution of the investigation and hearing was published in the Federal Register of June 28, 1977 (42 F.R. 32852), and notice of the rescheduling of the public hearing from October 11, 1977, to September 29, 1977, was published in the Federal Register of July 18, 1977 (42 F.R. 36896).

The information for this report was obtained from field work and interviews by members of the Commission's staff, from other Federal agencies, from responses to the Commission's questionnaires, from information presented at the public hearings, from briefs submitted by interested parties, and from the Commission's files.

A transcript of the hearings and copies of briefs submitted by interested parties in connection with the investigation are attached. 1/

There were no significant imports of bolts, nuts, and large screws from countries whose imports are presently subject to the rates of duty set forth in column 2 of the TSUS. The import relief recommended herein, therefore, is not addressed to imports from such countries. Certain recommended relief measures would involve the imposition of rates of duty on imports from countries whose imports are currently subject to rates of duties in column 1 which are higher than the rates set forth in column 2. Should such recommended, or any other, rates of duty higher than the column 2 rates be proclaimed by the President, it would be necessary for him to conform column 2 by proclaiming rates thereof that are the same as those proclaimed in column 1. 2/

1/ Attached to the original report sent to the President, and available for inspection at the U.S. International Trade Commission, except for material submitted in confidence.

2/ See Article I, General Agreement on Tariffs and Trade (Basic Instruments and Selected Documents, vol. IV, March 1969), and General Headnote 4, Tariff Schedules of the United States (19 U.S.C. 1202).

DETERMINATIONS, FINDINGS, AND RECOMMENDATIONS OF THE COMMISSION

Determinations

On the basis of the investigation, the Commission determines (Commissioner Ablondi dissenting, Vice Chairman Parker and Commissioner Alberger not participating) that--

> lag screws or bolts, bolts (except mine-roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, and 646.63 of the Tariff Schedules of the United States (TSUS),

are being imported into the United States in such increased quantities as to be a substantial cause of serious injury, 1/ or the threat thereof, 2/ to the domestic industry producing articles like or directly competitive with the imported articles. The Commission makes no determination with respect to imports of Canadian articles admitted free of duty as original equipment for motor vehicles under item 646.79 of the TSUS. 3/

1/ Chairman Minchew and Commissioner Bedell find serious injury with respect to imports of such articles.

2/ Commissioner Moore finds threat of serious injury with respect to imports of such articles.

3/ The affirmative determinations of Chairman Minchew and Commissioner Moore included imports of such Canadian articles; Commissioner Bedell's affirmative determination did not include such articles; Commissioner Ablondi's negative determination was with respect to all of the imported articles under investigation, including these Canadian articles; and Vice Chairman Parker and Commissioner Alberger did not participate in the determination.

Findings and Recommendations

The Commission finds and recommends 1/ (Vice Chairman Parker and Alberger not participating) that to prevent 2/ or remedy 3/ such injury it is necessary to impose rates of duty (a) in lieu of the present rates of duty with respect to lag screws or bolts and screws having shanks or threads over 0.24 inch in diameter, of iron or steel, provided for in items 646.49 and 646.63 of the TSUS, and (b) in addition to the present rates with respect to bolts (except mine roof bolts) and bolts and their nuts imported in the same shipment, and nuts, of iron or steel, provided for in items 646.54 and 646.56 of the TSUS, as follows--

1st Year	2nd Year	3rd Year	4th Year	5th Year
30% ad val.	30% ad val.	25% ad val.	20% ad val.	20% ad val.

1/ Having made a negative determination Commissioner Ablondi abstains from any recommendation of remedy.

2/ Commissioner Moore, having found a threat of serious injury, finds and recommends relief necessary to prevent such threatened injury.

3/ Chairman Minchew and Commissioner Bedell, having found serious injury find and recommend relief necessary to remedy such injury.

Views of Chairman Daniel Minchew and
Commissioner Catherine Bedell

The present investigation, conducted under section 201 of the Trade Act of 1974 (19 U.S.C. 2251), was instituted by the United States International Trade Commission on June 22, 1977, to determine whether lag screws or bolts, bolts (except mine-roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.63, and 646.79 of the Tariff Schedules of the United States (TSUS), are being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

The Trade Act of 1974 requires that each of the following conditions be met before an affirmative determination can be made:

(1) There are increased imports (either actual or relative to domestic production) of an article into the United States;

(2) A domestic industry producing an article like or directly competitive with the imported article is seriously injured, or threatened with serious injury; and

(3) Such increased imports of an article are a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

Determination

After considering the evidence obtained in this investigation, we have determined that increased imports are a substantial cause of serious

injury to the domestic industry producing bolts, nuts and large screws which are like or directly competitive with the imported articles considered herein. 1/

The domestic industry

It is our view that the domestic industry producing articles like or directly competitive with the imported articles consists of the facilities in the United States devoted to the production of bolts, nuts, and large screws of iron or steel.

Increased Imports

The first of the three criteria requires a finding that there are increased imports. The Trade Act provides, in section 201(b)(2)(C), that an increase in imports has occurred when the increase is "either actual or relative to domestic production." Thus, the requirement is satisfied when the increase is in actual or absolute terms or when the level of imports is declining in actual terms but is increasing relative to domestic production.

1/ Chairman Minchew and Commissioner Bedell note that the Automotive Products Trade Act of 1965 provides duty-free treatment for bolts, nuts, and large screws of iron or steel entered from Canada as original equipment for motor vehicles (TSUS item 646.79). The U.S. Department of Commerce does not report the quantity of imports for TSUS item 646.79; accordingly, the figures discussed in the report and in these views do not include imports of item 646.79. Such imports are estimated to be about 12 percent by value of the totals indicated in the report. Chairman Minchew has based his injury determination on the information contained in the Commission's report, however, he considers imports of item 646.79 to have contributed to the serious injury suffered by the domestic industry and, therefore, includes such items in his determination. Commissioner Bedell makes no finding with respect to imports under item 646.79 noting that such imports are subject to the terms of the U.S.-Canadian Automotive Agreement with respect to which a waiver has been granted under the GATT.

Imports have increased in actual terms in every year since 1969 except during 1971 and 1975 when strong cyclical contractions occurred in U.S. production of durable manufactured goods. U.S. imports increased from 372 million pounds in 1969 to 776 million pounds in 1974, declined to 535 million pounds in 1975 and increased to 704 million pounds in 1976. U.S. imports in January-June 1977 totaled 372 million pounds, 20 percent higher than in the corresponding period of 1976. The ratio of imports to production has increased every year since 1969, rising from 25 percent in 1969 to 65 percent in 1976. The ratio was 67 percent during January-June 1977. The information clearly shows that the first criterion set forth above is satisfied.

Serious Injury

The second criterion concerns the question of whether the domestic industry is suffering "serious injury, or the threat thereof." The Trade Act does not define the term "serious injury" but instead provides guidelines in the form of economic factors which the Commission is to take into account. Under section 201(b)(2) the Commission is to take into account "all economic factors which it considers relevant, including (but not limited to)--(A) . . ., the significant idling of productive facilities in the industry, the inability of a significant number of firms to operate at a reasonable level of profit, and significant unemployment or underemployment within the industry . . . ."

The information shows that there is presently a significant idling of production facilities within the domestic industry. Capacity utilization and domestic production have registered pronounced declines in recent years. Capacity utilization for firms producing bolts, nuts, and

large screws dropped precipitously from 76 percent in 1974 to 50 percent in 1975. This substantial idling of production facilities has continued throughout 1976 and January-June 1977, despite banner years for the automotive industry, which is the largest U.S. market for these products. During the past 6 months, 4 major producing establishments were closed.

The profit level for the industry has declined sharply during the past 3 years. During January-June 1977, 12 of the 41 firms reported either a loss or a profit rate of 5 percent or less. Clearly, a significant number of firms are unable to operate at a reasonable level of profit.

Employment has declined sharply from 20,232 production workers in 1969 to 13,077 in 1976. This drop in employment has been most pronounced in recent years; over 4,400 jobs have been lost since 1974. The pattern in man-hours worked is equally devastating. It is evident from the information in this investigation that the second criteria set forth above is satisfied.

It is also noted that during the past two years 29 petitions for adjustment assistance have been filed with the U.S. Department of Labor from groups of workers who had produced bolts, nuts and large screws. The Secretary of Labor has made an affirmative determination on 18 of the 29 petitions. These affirmative findings certified 3,000 workers for adjustment assistance.

Substantial cause

Section 201(b)(4) of the Trade Act defines the term "substantial cause" to mean "a cause which is important and not less than any other cause." Thus, increased imports must be both an "important" cause of

injury and "not less than any other cause." Section 201(b)(2) further provides that in determining "substantial cause" the Commission "shall take into account all economic factors which it considers relevant, including (but not limited to). . . an increase in imports (either actual or relative to domestic production) and a decline in the proportion of the domestic market supplied by domestic producers."

The information before the Commission clearly shows increased imports to be a substantial cause of serious injury to the domestic industry. As stated above, imports have increased both actually and relative to domestic production, and the proportion of the domestic market supplied by imports has increased from 22 percent in 1969 to 36 percent in 1974, 39 percent in 1975, and 44 percent in 1976.

Witnesses in opposition to the petition have alleged that numerous factors other than imports are a more important cause of injury to the domestic industry. These factors include the recent recession, domestic producers' emphasis on the original equipment manufacturer market rather than the distributor market, labor strikes, severe weather, and certain production inefficiencies. We have considered those factors and have concluded that, even though they may have contributed in part, imports have been the most important cause of injury.

Both the ratio of imports to domestic production and the ratio of imports to apparent consumption have increased every year since 1969. Clearly, imports have acquired an increasing market share in both good and bad economic years. A Commission survey indicates that a major factor contributing to this increasing market share by imports is the preference by domestic distributors for the lower priced imported articles.

In view of the above, we conclude that imports are a substantial cause of serious injury and that the third criterion is satisfied.

Conclusion

After considering all of the information developed during this investigation, we conclude that all three of the statutory criteria are satisfied and therefore make an affirmative injury determination.

Concurring Affirmative Views of Commissioner George M. Moore

In a previous Commission investigation TA-201-2 relating to imports of bolts, nuts and screws of iron or steel completed in November 1975, I determined that the articles under investigation were not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof to the domestic industry. That determination was based on information available through mid-1975.

In my opinion economic conditions affecting the domestic industry composed of U.S. producers of bolts, nuts and large screws of iron or steel have changed since that time.

Since January 1975, imports of the articles which are the subject of this investigation have continued to increase and the ratios of such imports to consumption and to domestic production have also increased.

Comparing the first six months of 1975 with the first six months of 1977, sales of the domestic industry declined from $407 million to $338 million. Producers' shipments fell from 640 million pounds to 596 million pounds. Importers unsold inventories are high and growing. The average number of workers has dropped from approximately 15,300 to 13,000, a loss of 2,300 jobs. Profits have declined from $58 million to $40 million. The average price of the domestic articles studied by the Commission decreased by 15 percent. Also, during the intervening period four U.S. producers in the domestic industry ceased production.

At the time of the last investigation one of the principal causes of serious injury or the threat thereof to the domestic industry may have been the 1975 recession. However, since 1975 the U.S. economy has staged a strong recovery while the domestic industry has remained depressed

and in my opinion is threatened with serious injury. It is my view that at present the effect of increased imports is the most important cause of such threatened serious injury.

By reason of changed conditions I have now determined that the articles subject to this investigation are being imported into the United States in such increased quantities as to be a threat of serious injury to the domestic industry producing articles like or directly competitive with such articles.

Views of Commissioner Italo H. Ablondi

The instant investigation, conducted under section 201 of the Trade Act of 1974 (19 U.S.C. 2251), was instituted by the United States International Trade Commission on June 22, 1977, to determine whether lag screws or bolts, bolts (except mine-roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.63, and 646.79 of the Tariff Schedules of the United States (TSUS), are being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article. The Commission instituted the investigation following receipt, on June 10, 1977, of a petition filed by the United States Fastener Manufacturing Group, the United Steelworkers of America, and the International Association of Machinists and Aerospace Workers.

In 1975 the Commission conducted investigation No. TA-201-2, Bolts, Nuts, and Screws of Iron or Steel, 1/ which covered all the articles under consideration herein together with small screws and mine-roof bolts.

In the previous investigation, the Commission determined (Commissioners Minchew and Bedell dissenting in part, Commissioner Parker

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1/ Bolts, Nuts, and Screws of Iron or Steel: Report to the President on Investigation No. TA-201-2 . . ., USITC Publication 747, 1975.

abstaining) that wood screws and bolts, nuts, and screws (including bolts and their nuts imported in the same shipment), all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.58, 646.60, 646.63, and 646.79 of the TSUS, were not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or threat thereof, to the domestic industry producing articles like or directly competitive with the imported articles.

While the Commission is not bound by the stare decisis doctrine in administrative proceedings, previous investigations which involved similar subject matter should, in the absence of changed circumstances, be followed.

The Trade Act of 1974 requires that each of the following conditions be met before an affirmative determination can be made:

(1) There are increased imports (either actual or relative to domestic production) of an article into the United States;

(2) A domestic industry producing an article like or directly competitive with the imported article is seriously injured, or threatened with serious injury; and

(3) Such increased imports of an article are a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

It is conceded that imports have increased within the meaning of the Trade Act. However, since the last investigation indexes of the economic conditions within the domestic industry have either remained stable or, in many important respects, have improved. Such economic data require a finding that the domestic industry is not being seriously injured or threatened with serious injury within the meaning of the act.

Section 201(b)(2)(a) of the 1974 act requires the Commission to investigate, with respect to serious injury, the inability of a significant number of firms to operate at a reasonable level of profit. Since the last investigation the domestic industry has operated at a reasonable level of profit. U.S. producers reported profit rates of 14.7 percent and 11.4 percent for the years 1975 and 1976, respectively. The profit rate during January-June 1977 was 10.4 percent. These profit rates are significantly higher than those reported by all fabricated metal product producers and all manufacturing corporations.

Section 201(b)(2)(a) requires the Commission to examine the significant idling of productive facilities in the industry in connection with serious injury. While four plant closings have been reported since the last investigation, much of the capital equipment was moved to other locations in order to increase efficiency and rationalize production. In addition, many firms have invested large sums of money in modernizing and expanding their productive facilities. Further, firms which primarily supply the automotive industry have been operating at near capacity during the past 18 months. It should be noted that the automotive industry is the

largest fastener-consuming market in the United States and its production has vastly increased compared with production during the 1975 investigation. Furthermore, this important market is supplied almost exclusively by U.S. producers. In addition, 7 to 8 percent of U.S. shipments are captive shipments produced solely for intracompany use.

Under section 201(b)2(a) the Commission is also required to investigate significant unemployment or underemployment within the domestic industry. Despite somewhat lower levels of employment after 1975, it appears that many firms have experienced difficulties in hiring skilled laborers. Nevertheless, man-hours worked have increased from 26.5 million in 1975 to 29.6 million on an annualized basis for the period January-June 1977. The increased productivity noted in our 1975 investigation continues to date.

The Commission also investigated other economic factors which have a bearing on the question of serious injury.

The domestic industry has not only maintained but increased its sizable export market. U.S. exports of bolts, nuts, and large screws of iron or steel increased from 172 million pounds in 1975 to 197 million pounds in 1976. During January-June 1977, exports amounted to 106 million pounds, 6 percent greater than in the corresponding period of 1976. The value of exports increased from $101 million in 1975 to $107 million in 1976. The value of exports during January-June 1977 was 10 percent higher than in the corresponding period of 1976. It should be noted that whereas U.S. imports of Canadian articles totaled $58 million in 1976, U.S. exports to Canada amounted to $91 million during the same year. It is difficult to reconcile

how U.S. imports from Canada can be specifically considered a cause of serious injury to the domestic industry when the United States enjoys such a sizable trade surplus with Canada in such articles.

It should also be noted, in 1976, 20 to 25 percent of all imports of bolts, nuts, and large screws were sold to or imported by U.S. producers or their wholly owned distributors.

Since the last investigation, U.S. producers' shipments increased from 1.0 billion pounds in 1975 to 1.1 billion pounds in 1976. U.S. producers' shipments registered 596,000 pounds during January-June 1977, 11 percent higher than in the corresponding period 1976. These improvements in shipments have occurred despite a sizable decline in U.S. producers' inventories, which had fallen from 308 million pounds in June 30, 1975, to 215 million pounds on June 30, 1977.

Conclusion

All the available data reveals that conditions within the domestic industry have not changed to the extent that would warrant a different determination. In the absence of change conditions to the contrary I am constrained to affirm my 1975 determination that increased imports of bolts, nuts, and large screws of iron or steel are not a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported articles.

Additional Views of Chairman Daniel Minchew and Commissioners George M. Moore and Catherine Bedell on Remedy

Section 201(d)(1) of the Trade Act requires that if the Commission makes an affirmative determination of serious injury or the threat thereof, it must find the amount of import relief necessary to prevent or remedy such injury, or, if it finds that adjustment assistance can effectively remedy the injury, it must recommend the provision of such assistance. Pursuant to this section, the remedies which may be recommended are (1) an increase in, or the imposition of, a duty or import restriction or (2) adjustment assistance. The purpose of such relief, as stated by the Senate Finance Committee in its report on the bill which became the Trade Act, is to give the domestic industry "sufficient time to adjust to freer international competition." 1/

Because of the widespread and persistent underselling of the domestic product by imports in this industry -- underselling which ranges up to 70 percent -- we have found that a sizeable tariff increase is necessary to remedy the serious injury that has been suffered by the domestic industry. 2/ Consequently, we recommend that ad valorem rates of duty be imposed on lag screws or bolts, bolts (except mine roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, and provided for in items 646.49, 646.54, 646.56, and 646.63 of the TSUS at a level of

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1/ Trade Reform Act of 1974: Report of the Committee on Finance. . ., S. Rept. No. 93-1298 (93d Cong., 2d Sess.), p. 119.

2/ Commissioner Moore finds this tariff increase is necessary to prevent the threat of serious injury to the domestic industry.

30 percent during the first year of import relief. Thereafter, we recommend that the temporary rates of duty be phased down as set forth below. Unless extended, such relief should terminate after the fifth year. The table below presents, by TSUS number, the details of our remedy recommendation.

Bolts, nuts, and screws of iron or steel: Proposed rates of duty necessary to remedy serious injury

(Rate in percent ad valorem, except where otherwise noted)

TSUS item	Present rate	Proposed full incremental rate increase	Proposed rate in effect -- Year 1	Year 2	Year 3	Year 4	Year 5
646.49 1/ 2/	12.5	17.5	30	30	25	20	20
646.54 2/	0.2¢/lb. 3/	30	30	30	25	20	20
646.56 4/	0.1¢/lb. 3/	30	30	30	25	20	20
646.63 5/	9.5	20.5	30	30	25	20	20

1/ Lag screws or bolts only.
2/ Bolts and bolts and their nuts imported in the same shipment.
3/ Ad valorem equivalent rate is negligible and is consequently disregarded in designing the remedy. However, if such remedy proposal were implemented, the actual rate of duty applicable to these articles would be a compound rate of duty.
4/ Nuts.
5/ Screws having shanks or threads over 0.24 inch in diameter.

SUMMARY

Bolts, Nuts, and Large Screws
of Iron or Steel

Investigation No. TA-201-27

The petition alleges that the increase in imports of bolts, nuts, and large screws of iron or steel is the most important cause of serious injury suffered by the domestic industry. The petition asserts that the imposition for a period of 5 years of an absolute import quota tied to the 1972 level of imports is necessary to remedy the alleged injury.

In 1975 the Commission conducted investigation No. TA-201-2 on bolts, nuts, and screws of iron or steel. The scope of the 1975 investigation, as defined in the Commission's Notice of Investigation, covered small screws and mine-roof bolts in addition to the bolts, nuts, and large screws covered in the instant investigation, No. TA-201-27.

In the previous investigation, the Commission made a negative determination (Commissioners Minchew and Bedell dissenting in part, Commissioner Parker abstaining). Commissioners Minchew and Bedell voted in the affirmative with respect to bolts (except mine-roof bolts), nuts, and large screws of iron or steel.

U.S. imports rose from 372 million pounds in 1969 to a peak of 776 million pounds in 1974, a year characterized by frenzied demand and an apparent fastener shortage. U.S. imports declined in 1975 to 535 million pounds and then rebounded sharply to 704 million pounds in 1976. U.S. imports in January-June 1977 totaled 372 million pounds, 20 percent higher than in the corresponding period of 1976. Since 1969 the ratio of U.S. imports to domestic production has increased annually.

During the period 1972-74, U.S. producers experienced increasing capacity utilization (from 71 percent to 76 percent), producers' shipments (from 1.4 billion pounds to 1.5 billion pounds), employment (from 37 million man-hours to 39 million man-hours), and profit (from $27 million to $146 million). The situation changed rapidly in 1975 and 1976 as U.S. producers realized decreased capacity utilization (50 percent in 1975 and 1976), producers' shipments (1.0 billion pounds and 1.1 billion pounds in 1975 and 1976, respectively), employment (27 million man-hours in 1975 and 1976) and profit ($100 million and $79 million in 1975 and 1976, respectively). The economic performance of the U.S. producers improved moderately during January-June 1977, compared with their performance in the corresponding period of 1976.

During the fastener shortage of 1973 and 1974, imported articles sold at a substantial premium over U.S.-made fasteners. By late 1974,

import prices had fallen sharply, and the price inversion had disappeared. By mid-1975 the imported article was priced about 35 to 45 percent lower than domestic articles. These very large price differences have not fundamentally changed during the past 2 years. Owing to a 15-percent decline in domestic prices and a 5- to 10-percent increase in import prices, the price difference in April-June 1977 amounted to about 30 percent.

Apparent consumption increased from 1.8 billion pounds in 1972 to 2.1 billion pounds in 1974 despite slackening activity in many fastener-consuming markets. The result of this paradoxical situation was the large inventories held by U.S. producers, importers, and distributors during 1975. Apparent consumption declined sharply in 1975 to 1.4 million pounds and then rebounded to 1.6 million pounds in 1976. Apparent consumption amounted to 900,000 pounds during January-June 1977, 15 percent higher than in the corresponding period of 1976. The ratio of imports to consumption increased in every year during the period, rising from 21 percent in 1969 to 44 percent in 1976.

Those in opposition to the petition argue that the average ratio of net operating profit to net sales proves the absence of serious injury. They also assert that should the Commission find serious injury to exist, imports would not be a substantial cause of such injury. They suggest two other causes (each more important than imports) for the industry's problems. First, the industry is still suffering from the recent recession and particularly from the current lack of capital spending within the U.S. economy. Second, U.S. producers have abandoned the distributor market so as to emphasize the more profitable original-equipment manufacturer market. Counsel for the petitioners replies that (1) whereas the U.S. economy has staged a strong recovery since 1975, U.S. producers report declining trends in all relevant economic indicators and (2) U.S. producers were driven out of the distributor market by lower priced imports.

INFORMATION OBTAINED IN THE INVESTIGATION

Introduction

Following receipt on June 10, 1977, of a petition filed by the United States Fastener Manufacturing Group, the United Steelworkers of America, and the International Association of Machinists & Aerospace Workers, the United States International Trade Commission, on June 22, 1977, instituted an investigation under section 201(b) of the Trade Act of 1974 to determine whether lag screws or bolts, bolts (except mine-roof bolts) and bolts and their nuts imported in the same shipment, nuts, and screws having shanks or threads over 0.24 inch in diameter, all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.63, and 646.79 of the Tariff Schedules of the United States (TSUS), are being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

A public hearing in connection with the investigation was conducted on September 29 and 30, 1977, in the Commission's hearing room in Washington, D.C. All interested parties were afforded an opportunity to be present, to present evidence, and to be heard at the hearing.

Public notice of the investigation and hearing was duly given by publishing the original notice in the Federal Register of June 28, 1977 (42 F.R. 32852). On July 11, 1977, the Commission issued a public notice rescheduling the date of the hearing from October 11, 1977, to September 29, 1977. Notice of the rescheduled hearing was published in the Federal Register of July 18, 1977 (42 F.R. 36896). Copies of the notices were also posted at the U.S. International Trade Commission's offices in Washington, D.C., and in New York City.

The petition alleges that the increase in imports of bolts, nuts, and large screws of iron or steel is the most important cause of the serious injury being suffered by the U.S. producers of like or directly competitive articles. The petition asserts that the imposition for a period of 5 years of an absolute import quota tied to the 1972 level of imports is necessary to remedy the alleged injury.

In 1975 the Commission conducted investigation No. TA-201-2 on bolts, nuts, and screws of iron or steel. The 1975 investigation covered small screws and mine-roof bolts in addition to the bolts, nuts, and large screws covered in the instant investigation, No. TA-201-27.

In the previous investigation, the Commission determined (Commissioners Minchew and Bedell dissenting in part, Commissioner Parker abstaining) that wood screws and bolts, nuts, and screws

(including bolts and their nuts imported in the same shipment), all the foregoing of iron or steel, provided for in items 646.49, 646.54, 646.56, 646.58, 646.60, 646.63, and 646.79 of the TSUS, were not being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or threat thereof, to the domestic industry producing articles like or directly competitive with the imported articles.

Commissioners Minchew and Bedell determined that the bolts, nuts, and large screws classified under Tariff Schedules of the United States, Annotated (TSUSA) item 646.4920 and TSUS items 646.54, 646.56, and 646.63 (except mine-roof bolts classified under item 646.54) were being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the domestic industry producing articles like or directly competitive with the imported articles.

The information contained in this report was obtained from fieldwork, from questionnaires sent to U.S. producers, importers, and distributors, from the Commission's files, from other Government agencies, from information received at the hearing, and from briefs filed by interested parties.

Description and Uses

Bolts, nuts, and large screws, commonly called industrial fasteners, are mechanical devices designed specifically to hold, join, couple, or assemble multiple components. Industrial fasteners have an almost infinite variety of applications. Nearly all U.S. industries require them, whether as maintenance items or as parts for original equipment.

Bolts, nuts, and large screws have historically been classified by major product families for purposes of customs treatment, standardization, and convenience. The one feature common to all these fasteners is the presence of external threads on the bolts and large screws and internal threads in the nuts. Within each family, subgroupings are made according to head style, thread form, application, and other characteristics. Despite their wide use, the nomenclature applicable to these articles is not universally agreed upon. Certain problems respecting nomenclature and units of quantity are discussed in appendix A.

Bolts and large screws

Bolts and large screws are generally headed at one end and threaded at the other. They are often tightened or released by turning a nut. Lag screws are an exception in that they are tightened or released by torquing their heads. Some common bolt and large screw subgroupings are hex and square bolts, round head bolts, high-strength structural bolts, bent bolts, cap screws, and lag screws.

Nuts

Nuts are perforated metal blocks, with internal, or female, threads; they are used with bolts and some screws. Common nut subgroupings are hex and square nuts and locknuts.

Manufacturing Process

Bolts and large screws

Nearly all bolts and large screws less than 1 inch in diameter are cold-forged; cold-forging is a process that conserves energy. Hot-forging is usually required in the manufacture of bolts and screws 1 inch or more in diameter. Today, nearly all screw threads are rolled rather than cut, by squeezing a bolt or screw between reciprocating or rotating dies. Screw machines were replaced by cold-forging equipment in the 1920's and 1930's for the mass production of externally threaded fasteners.

Nuts

Nearly all nut blanks are produced in one of the following ways: Cold forming, hot forming, and cold punching. The most common method is cold forming, in which the machinery cuts round wire to proper length, shapes the wire into a hexagon nut, and punches the hole. The hot-forming method is similar to cold forming except that the raw material is heated to forging temperature before being fed into the machine. In cold punching, rectangular bar stock is fed into the machine, and in successive steps a hole is punched and countersunk, and the bar is sheared, chamfered, and trimmed.

Regardless of the method employed to produce the nut blank, the tapping operation to produce the thread is generally the same. Nuts three-fourths of an inch in diameter and smaller are tapped in automatic machines, while larger nuts are tapped in hand-fed machines.

Machinery

The machinery (cold headers, trimmers, threaders, boltmakers, nut formers, nut tappers, and so forth) employed by the U.S. fastener manufacturers is highly specialized and can be used only in the production of fasteners and certain components. Only two U.S. firms, National Machinery Co., Tiffin, Ohio, and Waterbury Farrel, a Textron company, Cheshire, Conn., manufacture the highly specialized forging equipment that is the heart of the fastener business.

Secondary operations

Fastener manufacturers perform a variety of secondary operations necessary to meet special user requirements concerning dimensional accuracy and surface finish. Some secondary operations are drilling, slotting, trimming, grinding, turning, pointing, polishing, and plating.

Heat treatment

Manufacturers employ a number of heating and cooling processes to insure the appropriate physical properties in the finished fastener. Some heat-treating processes include quenching, tempering, full annealing, process annealing, carburizing, and dry cyaniding.

Products That Compete With Ferrous Bolts, Nuts, and Large Screws

Many joining techniques compete with the use of ferrous bolts, nuts, and large screws in the product-design marketplace. Despite this competition, no major changes appear to have occurred during the last decade in the relative importance of ferrous bolts, nuts, and large screws vis-a-vis all other fastening techniques. This static condition suggests that most joining applications have one "least cost" solution and that the relative number of different joining applications has remained about the same. A summary of competing joining techniques follows.

Nonferrous threaded fasteners

Fasteners are produced from nonferrous metals when specified functional requirements of the fasteners go beyond the capabilities of the low-cost ferrous product. Nonferrous fasteners are generally priced three to four times as high as ferrous bolts, nuts, and large screws.

Copper alloy fasteners are strong, resilient, immune to rust, and easily formed. Nickel alloy fasteners are immune to discoloration and corrosion and retain their strength even at high temperatures. Aluminum alloy fasteners have a high strength-to-weight ratio, are easily machined, and resist both atmospheric and chemical corrosion.

Rivets

A rivet is a one-piece device used for permanently fastening a joint. In contrast to threaded fasteners, rivets are destroyed if removed after fastening. Although rivets are usually less expensive per piece than threaded fasteners, the tensile strength of rivets is also lower than that of threaded fasteners, and total cost must be evaluated on a joint-by-joint basis.

Other mechanical fasteners

There are literally thousands of mechanical fasteners that join, couple, or assemble multiple components. A representative sample of these products might include cotter pins, cotters, plastic fasteners, self-clinching fasteners, retaining rings, spring clips, quick-operating fasteners, tapping screws, and wood screws.

Fusion joining

The three categories of fusion joining are welding, brazing, and soldering, all of which require the presence of heat during the fastening process. These joining techniques usually require a large input of highly skilled labor, expensive capital equipment, and energy.

Pressure sensitive adhesive tape

The three types of pressure sensitive tape are transfer tape with an adhesive on only one side, double-coated tape, and tapes consisting of two layers of adhesive separated by a foam barrier. Most tapes use an acrylic adhesive.

Per joint, tape costs about the same as threaded fasteners. Savings result from not having to put holes in metal, a reduction in quality control, and the need for less skilled labor. This technique is most apt to replace small threaded fasteners in the future in certain joining applications.

U.S. Producers

Approximately 180 establishments specialize in the production of bolts (except mine-roof bolts), nuts, and large screws. These establishments produce a wide variety of fastener products, ranging from high-volume, commodity-type fasteners such as hex and square nuts, round head bolts, and cap screws to low-volume or limited-purpose fasteners. Since 1968 the number of U.S. producers has remained about the same, although some long-established firms, such as the Bolt and Nut Division of Republic Steel Corp. and National Machine Products of Standard Pressed Steel, have ceased operations. For the purpose of this report, all further references to bolts, nuts, and large screws will exclude nonferrous articles and mine-roof bolts, and "U.S. producers," unless otherwise noted, refers to U.S. producers of bolts, nuts, and large screws.

U.S. producers located in the East North Central region account for the majority of shipments of bolts, nuts, and large screws. The following tabulation indicates the percentage distribution of the value of shipments of these articles, by geographic regions, in 1977:

Region	Percent
New England	10.9
Middle Atlantic	16.9
East North Central	58.1
West North Central	1.0
South Atlantic	3.5
East South Central	4.1
West South Central	1.2
Mountain	.3
Pacific	4.0
Total	100.0

Other threaded fastener products manufactured in the United States are mine-roof bolts, aerospace fasteners, and small screws. Each of these product areas requires labor skills, productive facilities, and technologies different from those used in the manufacture of bolts, nuts, and large screws.

Eleven domestic firms produce mine-roof bolts, which are very long bolts (generally 4 to 12 feet in length) made on specialized equipment from bar stock (rather than from wire, from which most bolts are made). Four of the firms are integrated steel producers making mine-roof bolts for their captive coal mines. Of the 11 firms, only Bethlehem Steel Corp. fabricates other fastener products.

About 35 domestic establishments, primarily in California, produce aerospace fasteners. The U.S. aerospace and defense industries use lightweight fasteners in the assembly of commercial and military aircraft, missiles, space vehicles, and so forth. Most aerospace fasteners are either made from or alloyed with titanium, a very expensive, lightweight metal. On the basis of responses to Commission questionnaires, most aerospace fasteners appear to be nonferrous and therefore not "like" the imported articles covered in this investigation. Those aerospace fasteners which were reported by U.S. producers as being ferrous are estimated to account for no more than 2 percent of the quantity of total domestic shipments of all ferrous fasteners in any given year.

About 100 domestic establishments specialize in the production of small screws, including wood screws, machine screws, tapping and "other" screws less than one-fouth of an inch in diameter. These manufacturers produce both high-volume, commodity-type fasteners and low-volume or limited-purpose fasteners.

Raw materials

U.S. producers are major consumers of hot-rolled carbon steel wire rod, the staple raw material used in the production of ferrous fasteners. U.S. producers also use stainless steel and other alloy steel wire rod, but to a lesser extent.

U.S. producers obtain about 20 to 25 percent of their steel requirements from foreign sources, primarily from Japan. Some U.S. producers claim that Japanese-made steel is not only less expensive but also of a higher quality than U.S.-made steel. However, U.S. producers complain that despite its price advantage vis-a-vis U.S.-made steel, a two-tier pricing structure exists for Japanese-made steel (transcript of the hearing, p. 79). This means that U.S. producers must pay more for their basic raw material than their Japanese competitors.

Concentration

From 1969 to 1976, concentration in U.S. production of nuts declined, whereas for bolts and large screws it increased from 1969 to 1974 but then declined. The following tabulation summarizes the share of U.S. producers' shipments of these articles accounted for by the four and eight largest U.S. producers for the years 1969, 1974, and 1976 (in percent):

Product and year	4 largest producers	8 largest producers
Bolts and large screws:		
1969	27	41
1974	36	55
1976	30	50
Nuts:		
1969	55	72
1974	41	57
1976	36	57

The closing of the National Machine Products plant in Utica, Mich., is a major reason for the sharp decline in the concentration ratios for nuts. This plant had been the largest U.S. producer of nuts prior to its closing in 1971.

Channels of distribution

In 1974, U.S. producers sold about 28 percent of total domestic shipments to distributors for resale and about 72 percent directly to original-equipment manufacturers (OEM's) such as auto, machinery, and farm equipment manufacturers. Sales to OEM's consist of both high-volume, commodity-type fasteners and low-volume or limited-purpose fasteners. Many U.S. producers also market their products through distributors, which number about 4,000 nationwide. Distributors are often classified according to their product mix and types of customers. The four types of distributors are the fastener specialist, the auto supply wholesaler, the industrial (or mill) supply wholesaler, and the hardware wholesaler. Most distributors are independent, localized business establishments, although some are wholly owned subsidiaries of U.S. producers.

Foreign affiliates

The largest U.S. producers have foreign affiliates primarily in Western Europe and Canada and to a lesser extent in Mexico, Brazil, Argentina, Japan, Australia, Taiwan, and South Korea. At least one major U.S. producer derives 30 percent of net income from foreign operations.

Importers

Approximately 80 firms presently import bolts, nuts, and large screws into the United States. These importers tend to handle the high-volume, commodity-type products often called standard fasteners. Importers generally fall into one of the following categories.

Importer-trading companies

Importer-trading companies account for about 15 percent of all fasteners imported into the United States. They sell to U.S. producers and large distributors. This type of importer rarely sells directly to OEM's. The typical importer-trading company has no warehouse facilities and deals only in high-volume transactions that require long lead times.

Many importer-trading companies are U.S. branches of the large Japanese general trading companies, such as Mitsui & Co., Inc.; C. Itoh & Co., Inc.; Irimaru Co., Inc.; and Okura & Co., Inc. A U.S.-owned importer-trading company is Allied International, Rye, N.Y.

Importer-warehouses

Importer-warehouses handle about 50 percent of all fasteners imported into the United States. Their customers are U.S. producers, large distributors, and smaller jobbers, such as industrial and automotive supply companies. As a general rule this type of importer does not sell directly to OEM's. Because these firms stock merchandise, in contrast to trading companies, they provide faster delivery and fill smaller customers' orders. The largest importer-warehouses are Heads & Threads Co., Chicago, Ill., and Reynolds Fastener, Greenvale, N.Y.

Importer-distributors

With a current share of about 15 percent of all fasteners imported into the United States, these distributors have significantly increased their role during the past 3 years. The importer-distributor differs only slightly from other fastener distributors that obtain their merchandise from U.S. producers, importer-trading companies, and importer-warehouses. The importer-distributor, like any fastener distributor, is a localized, sales-oriented middleman, usually serving a large number of accounts.

Importer-end users

Importer-end users are responsible for about 10 percent of all fasteners imported into the United States. The largest importer-end users are the auto makers.

Importer-producers

Importer-producers directly import about 10 percent of all fasteners entering the United States. In addition, many U.S. producers purchase foreign-made fasteners from other importers. In 1976 about 20 to 25 percent of all shipments of imported fasteners were sold to or imported by U.S. fastener producers or their wholly owned distributors. U.S. producers testified at the public hearing that importing, as opposed to domestic manufacturing, offers very attractive gross profit (transcript of the hearing, p. 84). Witnesses in opposition to the petition assert that U.S. producers should not complain about imports to the extent that they themselves are responsible for them (transcript of the hearing, p. 257).

U.S. Tariff Treatment

The imported bolts, nuts, and large screws covered by the notice of this investigation are classified under TSUS items 646.49, 646.54, 646.56,

646.63, and 646.79. The present rates of duty range from free (Canadian articles for use as original motor-vehicle equipment) to 12.5 percent ad valorem (lag screws or bolts). The rates of duty applicable to TSUS items 646.54, 646.56, and 646.63 were reduced during the Kennedy round of trade negotiations held in Geneva during 1964-67. The table below summarizes recent most-favored-nation tariff treatment of articles covered by the notice of this investigation.

Bolts, nuts, and large screws: U.S. col. 1 rates of duty, Dec. 31, 1967, and July 1, 1977

(Cents per pound; percent ad valorem)

TSUS item No.	Commodity description	Col. 1 rates applicable on-- Dec. 31, 1967	July 1, 1977
646.49	Wood screws (including lag screws or bolts).	12.5%	12.5%
646.54	Bolts and bolts and their nuts imported in the same shipment.	0.5¢	0.2¢
646.56	Nuts	0.3¢	0.1¢
646.63	Screws (not including machine screws 0.375 inch or more in length and 0.125 inch or more in diameter) having shanks or threads over 0.24 inch in diameter.	19%	9.5%
646.79	Canadian article for use as original motor-vehicle equipment.	Free	Free

On October 30, 1968, the Commissioner of Customs announced that information had been received pursuant to section 16.24(b) of the Customs Regulations which indicated that certain rebates or refunds granted by the Government of Italy on the exportation of certain steel products constitute the payment of a bounty or grant, directly or indirectly, within the meaning of section 303 of the Tariff Act of 1930, as amended. After consideration of all the information received in the investigation pursuant to section 16.24(d), the Customs Bureau imposed countervailing duties of 13.55 lire per kilo (about 0.6 cent per pound in 1976) on bolts and nuts of iron or steel, and 12.73 lire per kilo (also about 0.6 cent per pound) on galvanized nuts from Italy. Acting on a separate complaint filed on August 7, 1975, by Russell, Burdsall & Ward, Inc., the U.S. Treasury Department instituted an investigation to determine whether similar rebates or refunds were granted by the Government of Italy on the exportation of cap screws.

On August 13, 1976, the U.S. Treasury announced that such rebates and refunds were, in fact, bounties or grants and, therefore, imposed a countervailing duty of 15 lire per kilo (about 0.7 cent in 1976) on screws of iron or steel.

In response to a complaint filed on April 19, 1976, by the Industrial Fastener Institute, the U.S. Treasury Department, after a 1-year investigation, imposed countervailing duties on imports of bolts and nuts of iron or steel from Japan. Effective May 6, 1977, imports of these products are assessed an additional duty of 0.2 percent ad valorem.

Title V of the Trade Act of 1974 authorizes the establishment of a Generalized System of Preferences (GSP) for eligible articles imported from beneficiary developing countries. Effective January 1, 1976, imports of bolts and nuts of iron or steel provided for in TSUS items 646.54 and 646.56 from all designated beneficiary developing countries became eligible for duty-free treatment under the provisions of the GSP. Such duty-free treatment was not extended to imports of large screws, provided for in TSUS items 646.49 and 646.63.

On June 22, 1976, GKN International, Inc., a sizable importer of industrial fasteners, petitioned the Office of the Special Representative for Trade Negotiations for, among other things, the addition of large cap screws, provided for in TSUSA item 646.6320, to the list of eligible articles under the GSP. On February 29, 1977, the Office of the Special Representative for Trade Negotiations announced its denial of the above petition.

The Question of Increased Imports

U.S. imports of bolts, nuts, and large screws of iron or steel cover a very broad range of fastener products and enter primarily from Japan and Canada. The U.S. Department of Commerce currently reports import data on these commodities in terms of pounds and dollars, with the exception of TSUS item 646.79, for which only dollar statistics are collected. Prior to January 1, 1975, import data on TSUS items 646.49 and 646.63 were collected in terms of pieces rather than pounds. In 1975 the Commission converted the historical import data from pieces to pounds after conducting a study on the relationship between these alternative units of quantity.

Since 1969, U.S. imports of bolts, nuts, and large screws have increased every year except 1971 and 1975, when strong cyclical contractions occurred in U.S. production of durable manufactured goods (table 1, app. B). U.S. imports rose from 372 million pounds in 1969 to a peak of 776 million pounds in 1974, a year characterized by frenzied demand and an apparent fastener shortage. U.S. imports declined in 1975 to 535 million pounds and then rebounded sharply to 704 million pounds

in 1976. U.S. imports in January-June 1977 totaled 372 million pounds, 20 percent higher than in the corresponding period of 1976. The average annual growth rate of U.S. imports for the period 1969-76 registered 9.5 percent.

The value of imports has generally moved in a pattern similar to that of the quantity of imports. However, in 1976 the quantity of imports recovered much more substantially than did the value. The persistent depression in the price of U.S. imports accounts in major part for this discrepancy. The following table summarizes data on U.S. imports since 1969. The ratio of U.S. imports to domestic production has increased every year since 1969, as shown in the table on the following page.

Bolts, nuts, and large screws: U.S. imports for consumption, 1969-76, January-June 1976, and January-June 1977

Period	Quantity	Value
	1,000 pounds	1,000 dollars
1969	372,024	69,198
1970	400,691	85,900
1971	379,248	82,339
1972	474,194	113,446
1973	544,563	166,348
1974	776,442	388,222
1975	534,796	227,128
1976	704,474	259,790
January-June--		
1976	309,305	112,853
1977	371,859	150,434

Source: Compiled from official statistics of the U.S. Department of Commerce.

The vast majority of U.S. imports are fabricated from carbon steel. Imports of carbon, alloy, and stainless steel fasteners in 1974 accounted for 97, 2, and 1 percent, respectively, in terms of weight, and for 91, 5, and 4 percent, respectively, in terms of value, of all such imports.

Imported fasteners are distributed throughout the United States. The Ports of New York, Los Angeles, Baltimore, Chicago, New Orleans, and Houston handle the bulk of all U.S. imports. Canadian fasteners, used primarily in the automotive industry, enter the United States through the Port of Detroit.

Bolts, nuts, and large screws: Ratios of U.S. imports for consumption to production, by items, 1969-76, January-June 1976, and January-June 1977

(In percent)

Period	Bolts and large screws	Nuts	Total
1969	18	49	25
1970	20	56	28
1971	22	63	31
1972	25	63	33
1973	29	77	38
1974	39	95	51
1975	39	101	51
1976	54	109	65
January-June--			
1976	51	93	59
1977	57	103	67

Source: Computed from shipment and inventory data submitted in response to questionnaires of the U.S. International Trade Commission and from official statistics of the U.S. Department of Commerce.

In terms of value, since 1970 Japan has accounted for 60 to 70 percent of all U.S. imports (table 2), Canada has accounted for 12 to 22 percent, and Ireland, West Germany, the United Kingdom, Spain, Taiwan, Italy, India, and the Netherlands have each accounted for 1 to 4 percent.

The Question of Serious Injury to the Domestic Industry

The petitioners allege, among other things, that the domestic industry is being seriously injured or threatened with serious injury. In determining whether the domestic industry is suffering the requisite injury or threat thereof, the Comission considers all relevant economic factors, including capacity utilization, profitability, employment, shipments, inventories, exports, prices, costs, unfilled orders, capital expenditures, and industry efforts to compete with imports.

Utilization of productive facilities

To evaluate the extent of the idling of productive facilities, the Commission asked the U.S. producers to report their annual capacity to produce bolts, nuts, and large screws, in pounds, for 1972-76 and January-June 1977. Further, the Commission defined practical rated capacity as the normal sustained production that can be achieved on an annual basis, assuming the firm's average product mix during 1974-76 and making allowance for anticipated maintenance downtime.

Before the results are discussed, the shortcomings of this method of determining capacity should be noted. First, labor strikes reduce the measured rate of capacity utilization of the U.S. producers for reasons unrelated to actual production needs. Second, some firms manufacture cold-headed parts other than fasteners on their bolt-making machinery; in such cases, the allocation of capacity to any one product line is somewhat arbitrary. Third, the important assumption is made that adequate supplies of raw materials and labor are available for utilization of the existing plant and equipment. Clearly, the wire rod shortage in 1973 and 1974 held down U.S. production despite enormous demand for bolts, nuts, and large screws.

The following tabulation shows U.S. producers' capacity to produce bolts, nuts, and large screws in 1972-76 and January-June 1977 (in millions of pounds):

Item	1972	1973	1974	1975	1976	January-June 1977
Bolts and large screws	1,569	1,481	1,545	1,553	1,651	1,664
Nuts	442	429	475	513	538	518
Total	2,011	1,910	2,020	2,066	2,187	2,182

The decline in producers' capacity from 1972 to 1973 was due in major part to the closing of Republic Steel's Bolt and Nut Division in December 1972. Rising sales in 1973 and 1974 encouraged U.S. producers to increase capital expenditures for plant and equipment. These expenditures resulted in a 9-percent capacity expansion during 1972-76. During January-June 1977, producers' capacity declined primarily as a result of the closing of Lamson & Session's Tiedeman Road facility in Cleveland, Ohio. In recent months a number of U.S. producers have temporarily shut down facilities in Illinois, Ohio, and Pennsylvania.

There were major fluctuations in capacity ulitization during 1972-76 (table 3). The ratio of U.S. production to capacity increased from 71 percent in 1972 to 76 percent in 1974. Acute shortages of raw materials during 1973 and 1974 prevented U.S. producers from more fully utilizing their productive facilities. Capacity utilization dropped sharply in 1975; since then it remained at about 50 percent. It is estimated that the labor strikes mentioned above affected less than 5 percent of total capacity in any year during the period 1969-76. The following tabulation show ratios of U.S. production to capacity, in 1972-76 and January-June 1977 (in percent):

Item	1972	1973	1974	1975	1976	January-June 1977
Bolts and large screws	71	77	79	54	53	54
Nuts	71	66	67	39	39	44
Total	71	74	76	50	50	51

Profit-and-loss experience

The Commission sent detailed financial questionnaires to 46 U.S. producers and asked them to report their financial data with respect to their bolt and large screw operations and their nut operations separately. Unfortunately, a number of major U.S. producers could not accurately break out their financial data in this manner; therefore, this section must examine the profit-and-loss experience of the 41 respondents with respect to their combined bolt, nut, and large screw operations. The respondents to this questionnaire accounted for about 80 percent of all noncaptive producers' shipments during 1972-76.

Owing to rising prices and increased quantities of producers' shipments, net sales increased from $500 million in 1972 to $853 million in 1974 (table 4). Significant reductions in producers' shipments lowered net sales to $680 million and $693 million in 1975 and 1976, respectively. Net sales registered $389 million during January-June 1977, as shown in the table below.

Aggregate profit-and-loss experience of 41 U.S. producers on their bolt, nut, and large screw operations, 1972-76 and January-June 1977

Period	Net sales	Net operating profit before income taxes	Ratio of net operating profit to net sales
	1,000 dollars	1,000 dollars	Percent
1972	499,674	27,108	5.4
1973	634,653	59,369	9.4
1974	852,613	146,184	17.1
1975	680,151	100,154	14.7
1976	692,694	78,660	11.4
1977 (January-June)	388,669	40,262	10.4

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

Net operating profit increased from $27 million in 1972 to $59 million in 1973 and then surged to $146 million in 1974. Greatly improved profit margins caused by excess demand accounted for the large profit generated in 1974. A sharp reduction in the volume of sales lowered net operating profit to $100 million in 1975; continued low levels of sales and decreasing profit margins reduced net operating profit to $79 million in 1976 and to $40 million during January-June 1977.

The average ratio of net operating profit to net sales was 5.4 percent in 1972, rose to 9.4 percent in 1973, and reached a peak of 17.1 percent in 1974. The ratio declined to 14.7 percent and 11.4 percent in 1975 and 1976, respectively. The average ratio of net operating profit to net sales amounted to 10.4 percent during January-June 1977.

A comparison of the trends in net operating profit ratio for U.S. producers of bolts, nuts, and large screws with those of corresponding ratios for producers of all fabricated metal products and all manufacturing corporations shows a similarity with respect to direction but a divergence with respect to magnitude. As shown in the table below, all three profit ratios improved from 1972 through 1974 and declined in 1975, and the latter two recovered in 1976. However, the fluctuations in the profit ratio for U.S. producers of bolts, nuts, and large screws have been more extreme than those of the other ratios. The average ratio of net operating profit to net sales for U.S. producers of bolts, nuts, and large screws was below the ratios for producers of all fabricated metal products and all manufacturing corporations in 1972, but higher than those ratios from 1973 through January-June 1977.

Ratios of net operating profit to net sales for U.S. producers on their bolt, nut, and large screw operations, for producers of fabricated metal products, and for all manufacturing corporations, by products, 1972-76 and January-June 1977

(In percent)

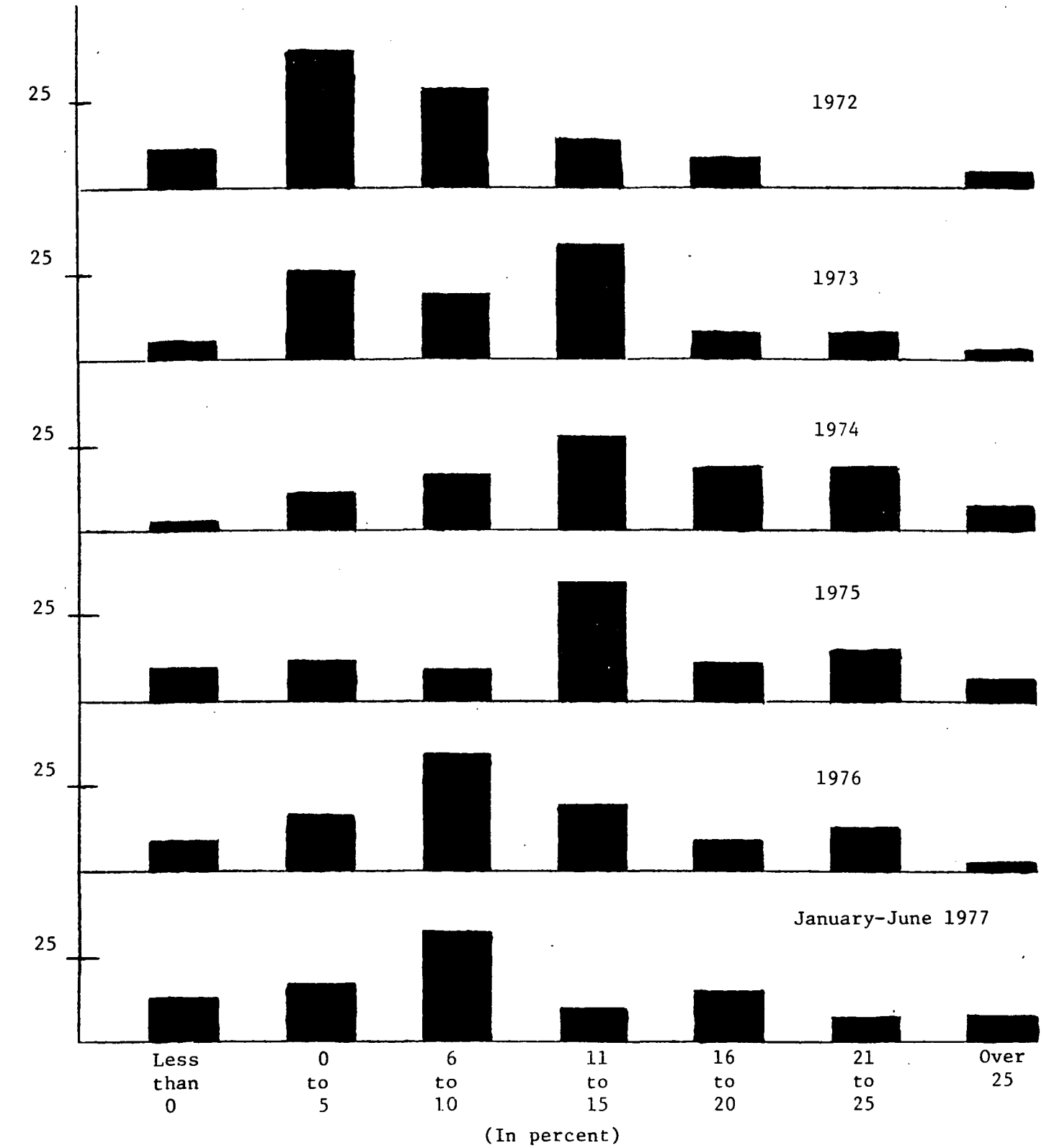
Item	1972	1973	1974	1975	1976	January-June 1977
Bolts, nuts, and large screws	5.4	9.4	17.1	14.7	11.4	10.4
Fabricated metal products	6.5	7.3	7.9	7.4	8.3	1/
All manufacturing	7.5	8.0	8.7	7.5	8.7	1/

1/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission and from the Federal Trade Commission quarterly financial report for manufacturing operations.

The table below and the figure on the following page show the distribution of the number of U.S. producers, by ratios of net operating profit or loss to net sales. The number of firms registering net operating losses in the years 1972-76 was five, two, one, four, and four, respectively. Five firms reported a net loss during January-June 1977. The number of firms reporting either a loss or a profit ratio of 5 percent or less declined from 21 in 1972 to 6 in 1974 and then increased to 9 in 1975 and 11 in 1976. Twelve firms reported either a loss or a profit ratio of 5 percent or less during January-June 1977. The number of firms reporting a profit ratio of 21 percent or more increased from 1 in 1972 to 11 in 1974 and than declined to 6 during January-June 1977.

Bolts, nuts, and large screws: Distribution of the number of U.S. producers by ratios of net operating profit to net sales, 1972-76 and January-June 1977.



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

Bolts, nuts, and large screws: Distribution of the number of U.S. producers, 1/ by ratios of net operating profit or loss to net sales, 1972-76 and January-June 1977

Item	1972	1973	1974	1975	1976	January-June 1977
Loss	5	2	1	4	4	5
Profit:						
0 to 5 percent	16	11	5	5	7	7
6 to 10 percent	11	8	7	4	14	13
11 to 15 percent	5	14	12	15	8	4
16 to 20 percent	3	3	8	5	4	6
21 to 25 percent	0	3	8	7	5	3
26 percent or more	1	1	3	3	1	3
Total	40	42	44	43	43	41

1/ 2 additional producers are included in this table but not in the other tables presented in this section.

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

Unemployment or underemployment of the domestic work force

Employment trends.--The Commission collected employment data from the U.S. producers; a summary of this information can be found in the following table and in tables 5 and 6. The average number of production and related workers producing bolts, nuts, and large screws increased slightly from 1972 to 1973, remained about the same in 1974, and then declined precipitously in 1975; there was little change after 1975. The pattern for man-hours worked is similar.

Average number of employees in U.S. establishments producing bolts, nuts, and large screws, total and production and related workers producing bolts, nuts, and large screws, and man-hours worked by them, 1972-76 and January-June 1977

Item	1972	1973	1974	1975	1976	January-June 1977
Average number of all employees 1,000 workers	40.1	42.1	42.3	35.1	34.3	34.5
Average number of production and related workers 1,000 workers	16.9	17.5	17.4	13.4	13.1	12.9
Man-hours worked by production and related workers million man-hours	37.2	38.5	38.7	26.6	26.6	1/ 29.7

1/ Annualized.

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

Characteristics of the work force.--In December 1975, the U.S. Department of Labor issued a report pursuant to section 224 of the Trade Act of 1974 concerning workers employed in the production of bolts, nuts, and screws. The report identifies the following occupations as being the most common in the production of these articles: Upsetter, inspector, production packager, production machinist, heat treater, plater, and foreman. The report concludes that a significant proportion of these workers would be designated as skilled rather than semiskilled or unskilled. The report shows that more than 48 percent of all production workers are 45 years of age or older; in all manufacturing industries, only 34 percent of the workers are 45 years of age or older. The report reveals that 78 percent of all fastener employees have a high school education or less, more than 29 percent have less than 12 years of education, and more than 6 percent have less than 8 years of education. Finally, the report shows that more than 88 percent of all employees are male and that most female employees are in secretarial or clerical positions.

Trade adjustment assistance.--Title II, chapter 2, of the Trade Act of 1974 provides for adjustment assistance to workers, firms, and communities when increased imports have contributed importantly to their economic difficulties. During the past 2 years no petitions for adjustment assistance were filed with the U.S. Department of Commerce by firms or communities affected by increased fastener imports. However, during the same period 29 petitions for adjustment assistance were filed with the U.S. Department of Labor by groups of workers who had produced bolts, nuts, and large screws. The Secretary of Labor made affirmative determinations on 18 of the 29 petitions; these affirmative findings certified 3,090 workers for adjustment

assistance. Such assistance can take the form of special monetary allowances, retraining, and job search and relocation allowances. Three companies--Bethlehem Steel Corp., Lamson & Session Co., and RB&W, Inc.--own 13 of the 18 establishments whose workers were certified. In 1976, these companies accounted for about 20 percent and 30 percent of U.S. producers' shipments and capacity, respectively. During the past 2 years the Secretary of Labor denied 11 petitions for adjustment assistance; the negative findings denied eligibility to 1,258 workers.

Productivity.--Productivity, for the purpose of this discussion, is defined as the ratio of total volume of physical output to the number of man-hours worked to produce that output. This is a gross measure of labor productivity and does not identify the specific contributions of labor or capital or other factors of production.

Indexes of domestic production (output measured in pounds) per production worker man-hour for all U.S. producers during 1969-76 were as follows (1969=100):

	Productivity
1969	100
1970	112
1971	106
1972	118
1973	114
1974	122
1975	121
1976	127

It can readily be seen that output per manhour increased significantly during the period. Three major factors appear to explain the increase. First, the closing of certain old productive facilities appears to have had a favorable influence on aggregate productivity. Second, a shift in product mix away from bolts and nuts of middle-range diameters (one-fourth to one-half of an inch) toward similar fasteners of larger diameters had a positive effect on output per man-hour. Third, newer and more efficient capital equipment came into production during the last 8 years.

Producers' shipments

For the purpose of this report, U.S. producers' shipments include U.S.-made bolts, nuts, and large screws that are shipped to domestic customers, exported, or transferred within the company for use in the manufacture of other products. Producers' shipments declined during 1969-71, increased substantially during 1972-74, and dropped sharply in 1975. As shown in the following table, producers' shipments recovered modestly in 1976 but still remained 28 percent lower than in 1974. Producers' shipments in January-June 1977 show an 11-percent improvement over the corresponding period of 1976.

Approximately 1.8 percent of the producers' shipments described above consisted of imported fasteners further processed in domestic establishments. Owing to increased unit values, recent declines in the value of producers' shipments are moderated somewhat.

Bolts, nuts, and large screws: U.S. producer's shipments, by categories, 1969-76, January-June 1976, and January-June 1977

(In millions of pounds)

Period	Domestic shipments	U.S. exports	Intracompany shipments	Total
1969	1,281	95	106	1,482
1970	1,177	89	101	1,368
1971	1,058	84	100	1,242
1972	1,192	102	122	1,416
1973	1,250	125	125	1,500
1974	1,260	159	110	1,529
1975	764	172	84	1,023
1976	819	197	84	1,100
January-June--				
1976	402	100	36	538
1977	454	106	36	596

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

Domestic shipments.--Producers' shipments to domestic customers reached their highest level in 1969. Moving with general economic conditions domestic shipments declined during 1970 and 1971 and then increased during 1972-74. Domestic shipments dropped precipitously in 1975, by about 37 percent from the 1974 level. Strong demand by the automotive industry for fastener products allowed domestic shipments to stage a modest recovery in 1976 and January-June 1977.

U.S. exports.--U.S. exports increased every year after 1971, rising 234 percent, in terms of quantity, during 1969-76. U.S. exports accounted for 6 percent and 18 percent of U.S. producer's shipments in 1969 and 1976, respectively. Canada is by far the largest market for U.S. exports, accounting for over 80 percent of all U.S. exports in 1976. Exported articles consist in major part of special-purpose fasteners sold directly to major Canadian durable goods manufacturers.

Intracompany shipments.--Intracompany shipments remained relatively stable during 1969-71, increased in 1972 and 1973, and then declined to the same level in both 1975 and 1976. Five firms which account for nearly all intracompany shipments use these articles in the manufacture of automobiles, farm equipment, and other durable goods. These captive shipments generally account for about 7 to 8 percent of total U.S. producers' shipments.

Inventories

U.S. producers and importers provided information regarding their inventories on certain dates during the period December 1972-June 1977; a summary of this information is found in the following table. The data are not particularly revealing, since inventories held by U.S. producers exhibit no real trend and inventories held by importers appear to have moved irregularly upward.

Bolts, nuts, and large screws: Inventories held by U.S. producers and importers, by specified dates, Dec. 31, 1972-June 30, 1977

(In millions of pounds)

Date	Producers' inventories	Importers' inventories 1/
Dec. 31, 1972	307	173
Dec. 31, 1973	230	179
June 30, 1974	240	154
Dec. 31, 1974	236	224
June 30, 1975	308	291
Dec. 31, 1975	255	261
June 30, 1976	230	233
Dec. 31, 1976	245	319
June 30, 1977	215	320

1/ Estimated from a survey of importers which accounted for approximately 50 percent of the quantity of total U.S. imports in 1974 and 1976.

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

A firm adjusts its inventory position to its anticipated level of shipments, i.e., a firm voluntarily changes its level of inventories so as to maintain some desired ratio of inventories to shipments. This ratio should be high enough to insure prompt delivery to customers, yet not too high because inventories are costly. Changes in the actual ratio of inventories to shipments away from the desired ratio represent involuntary inventory buildup or liquidation. Involuntary inventory changes would be associated with excess demand or supply in the particular market under investigation.

The following table presents the actual ratios of inventories to shipments for U.S. producers and importers for specified periods during the past business cycle. A logical estimate of the desired ratios would be the median value of the actual ratios observed, because the median value discounts the more extreme values of the observed data. This method suggests that the desired ratios for U.S. producers and importers are 21 percent and 37 percent, respectively. The higher desired ratio for importers reflects a much longer channel of distribution and a product mix which consists primarily of high-volume, commodity-type fasteners.

Bolts, nuts, and large screws: Ratios of U.S. producers' inventories to 1/ producers' shipments and importers' inventories to importers' shipments, 1972, 1973, and, by specified periods, January 1974-June 1977

(In percent)

Period	Ratio of--	
	Producers' inventories to producers' shipments	Importers' inventories to importers' shipments
1972	22	37
1973	15	33
1974:		
January-June	15	22
July-December	16	30
1975:		
January-June	24	67
July-December	33	46
1976:		
January-June	21	35
July-December	22	52
1977: January-June	18	43

1/ The ratios represent inventories at the end of the period shown divided by that period's annualized quantities of producers' shipments and importers' shipments.

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

The ratio of U.S. producers' inventories to shipments was 22 percent in 1972, implying that U.S. producers held nearly the desired level of inventories in that year. U.S. producers involuntarily liquidated inventory in 1973 and 1974; the ratio of inventories to shipments fell to about 15 percent. This is consistent with the fastener shortage which occurred during these years. Sharply declining sales in 1975 forced U.S. producers to involuntarily increase inventories; the ratio of inventories to shipments reached its peak of 33 percent during July-December 1975. U.S. producers have since reduced their inventories to levels in line with their lowered levels of shipments.

The ratio of importers' inventories to shipments was 37 percent in 1972, nearly equal to the estimated desired ratio. The actual ratio dropped in 1973 and reached a record low of 22 percent during January-June 1974, a period of excess demand. A large decline in shipments and the inability to quickly close the distribution pipeline propelled the ratio of inventories to shipments to 67 percent in January-June 1975. The large involuntary accumulation

glutted the market and drove down the price of the imported articles. Importers liquidated these stocks during the period July 1975-June 1976. Because of increased unfilled orders during July-December 1976, importers increased foreign orders only to find themselves again involuntarily accumulating inventories. During January-June 1977 the ratio of inventories to shipments declined to more desirable levels.

Price trends and comparisons

To investigate price trends in the U.S. market the Commission sent detailed questionnaires to U.S. producers and importers, which were asked to supply the lowest net selling prices received on sales of six representative fastener products to distributors during January 1972-June 1977. The Commission selected the six particular pricing items only after extensive discussions with U.S. producers, importers, and distributors. The selected items cover a broad range of diameters (1/4"-3/4"), lengths (1"-3"), and grades of steel (grades 2-8). For comparison purposes the Commission took price readings on sales to the distributor market, where U.S. producers and importers compete head to head, with price an important consideration. Aggregated results showing the ranges and averages of domestic and import prices can be found in tables 7 through 12. Graphic analysis of the price data can be found in figures 1 through 6 in appendix C.

Domestic prices remained quite stable in 1972, increased about 15 percent during 1973, and then surged upward throughout 1974 (table 13), rising 75 percent in that year in an atmosphere of excess demand and steel shortages. During January-March 1975, prices peaked at a level twice as high as that registered in 1972. After 1975, domestic prices declined about 15 percent. Domestic fastener prices increased much faster during 1973 and 1974 than aggregate wholesale prices. During 1976 and January-June 1977, while domestic fastener prices declined the price indexes for durable manufactured goods and miscellaneous metal products increased consistently (table 14).

The average net selling prices received by importers fluctuated considerably more than domestic prices (table 15). From January-June 1972 through April-June 1974, import prices increased about 175 percent; certain items nearly quadrupled in price. During this period, panic buying, shortages, and lengthening lead times characterized the U.S. market; distributors, desperate for supply, bid up prices. Then, in late 1974 the volatile market changed direction; demand fell rapidly and inventories, swollen to record levels, began to exert enormous downward pressure on prices. Purchasers which only recently had been double and triple ordering canceled orders whenever possible. The dramatic turn in the market immediately affected import prices, which fell more than 40 percent within a matter of months. Import prices remained depressed during 1975, 1976, and January-June 1977, increasing only slightly during the last 2 years.

In 1972 most prices of U.S. imports were about 26 to 31 percent below prices of comparable domestically made fasteners (table 16). Price differences lessened during January-September 1973, and in October-December 1973 the

situation was reversed, with imported articles selling at about 16 percent more than U.S.-made fasteners. This price inversion lasted throughout January-June 1974, with import prices averaging about 15 to 25 percent more than domestic prices. By late 1974, import prices fell sharply, and the inversion disappeared. By mid-1975 the prices of imported fasteners were about 30 to 45 percent below domestic prices; these very large price differences did not fundamentally change during the past 2 years. Owing to a slight decline in domestic prices and a small increase in import prices, the price difference in April-June 1977 amounted to about 30 percent.

Cost trends and comparisons

To more fully understand the underpinnings of the price structure, the Commission obtained cost information from U.S. producers and importers. For the purpose of this report, domestic cost is defined as the unit cost of production, comprising material costs, direct labor costs, overhead costs; import cost is defined as the total delivered cost (including duty) to U.S. importers. A summary of the questionnaire responses can be found in table 17. In addition, Peter Feller, counsel for the petitioners, submitted collective confidential exhibit No. 5, which contains domestic cost information on a company-by-company basis and import costs as evidenced in price quotations and actual purchase orders.

The information shows that domestic cost rose throughout the period January 1972-June 1977. The largest increases in domestic cost occurred in 1973 and 1974, when steel costs escalated rapidly. Import cost surged even faster than domestic cost during the boom years 1973 and 1974 but fell sharply in 1975. Import cost increased only slightly during 1976 and January-June 1977.

During 1972, import cost was on the average 20 to 40 percent below domestic cost. Cost differences virtually disappeared during the 1973 and 1974 fastener boom; however, large cost differences existed for nearly all fastener articles after 1975. Since then, the total delivered cost of imported bolts, nuts, and large screws has been only marginally higher than the cost of steel used in the domestic manufacture of similar articles.

Unfilled orders

U.S. producers and importers provided information regarding their unfilled orders on certain dates during the period December 1972-June 1977; a summary of this information is found in the following table.

Bolts, nuts, and large screws: Unfilled orders held by U.S. producers and importers, by specified dates, Dec. 31, 1972-June 30 1977

(In millions of pounds)

Date	U.S. producers' unfilled orders	Importers' unfilled orders 1/
Dec. 31, 1972	177	97
Dec. 31, 1973	402	200
Dec. 31, 1974	376	120
Dec. 31, 1975	165	87
June 30, 1976	176	152
Dec. 31, 1976	189	131
June 30, 1977	196	113

1/ Estimated from a survey of importers which accounted for approximately 50 percent of the quantity of total U.S. imports in 1974 and 1976.

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

In line with other economic indicators, unfilled orders of U.S. producers and importers reached cyclical peaks on December 31, 1973, and lows on December 31, 1975. During the past 2 years, U.S. producers' unfilled orders increased moderately. In contrast, importers' unfilled orders fell after mid-1976 following a rebound in July-December 1975. Importers apparently viewed an increase in orders during January-June 1976 as a sign of renewed demand in the U.S. market and responded with a significant increase in the level of imports during July-December. Unfortunately, the renewed vigor in demand was short lived; inventories subsequently increased while unfilled orders decreased.

Capital expenditures

As shown in the following table, total capital expenditures by U.S. producers increased irregularly during 1969-76. However, these nominal money values greatly overstate the actual plant and equipment brought into the production of bolts, nuts, and large screws. This distortion is caused by the rapidly increasing cost of capital equipment. According to the U.S. Bureau of Labor Statistics, the wholesale price of metal-forging equipment increased about 250 percent during the past 7 years. Thus, the $32 million spent in 1976 for plant and equipment actually purchased physical assets worth about $13 million in terms of 1969 constant dollars.

Bolts, nuts, and large screws: Total capital expenditures by U.S. producers, 1969-76 and January-June 1977

(In thousands of dollars)

Period	Total capital expenditures
1969	20,935
1970	16,897
1971	13,682
1972	12,411
1973	34,605
1974	24,390
1975	24,633
1976	32,194
June-January 1977	12,926

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

Note.—Data are based on responses to Commission questionnaires by U.S. producers which accounted for approximately 50 percent of the value of total domestic shipments in 1974.

Efforts of U.S. producers to compete with imports

U.S. producers were asked to describe their efforts in recent years to compete more effectively in the U.S. market. They reported that they had done one or more of the following: (1) Reduced prices despite increased costs in an effort to stay competitive with the imported articles, (2) strengthened their position in the special fastener market, where engineering and technical requirements tend to limit foreign competition, (3) purchased lower cost steel from abroad, (4) conducted research in new products and in special tools for proprietary fasteners, (5) purchased high-speed heading equipment, (6) improved customer service through reduced delivery lead times, and (7) increased employee training so as to improve productivity.

The Question of Substantial Cause

Petitioners claim that increased imports are a substantial cause of serious injury, or the threat thereof. Section 201(b)(4) of the Trade Act of 1974 defines the term "substantial cause" as "a cause which is important and not less than any other cause." Section 201(b)(2) of the Trade Act further states that in determining whether increased imports are a substantial cause of injury, the Commission should consider all

relevant economic factors, including, but not limited to, an increase in imports (either actual or relative to domestic production) and a decline in the proportion of the domestic market supplied by the U.S. producers. This section sets forth and analyzes various possible causes of any injury or threat thereof.

Factors affecting demand for the imported article

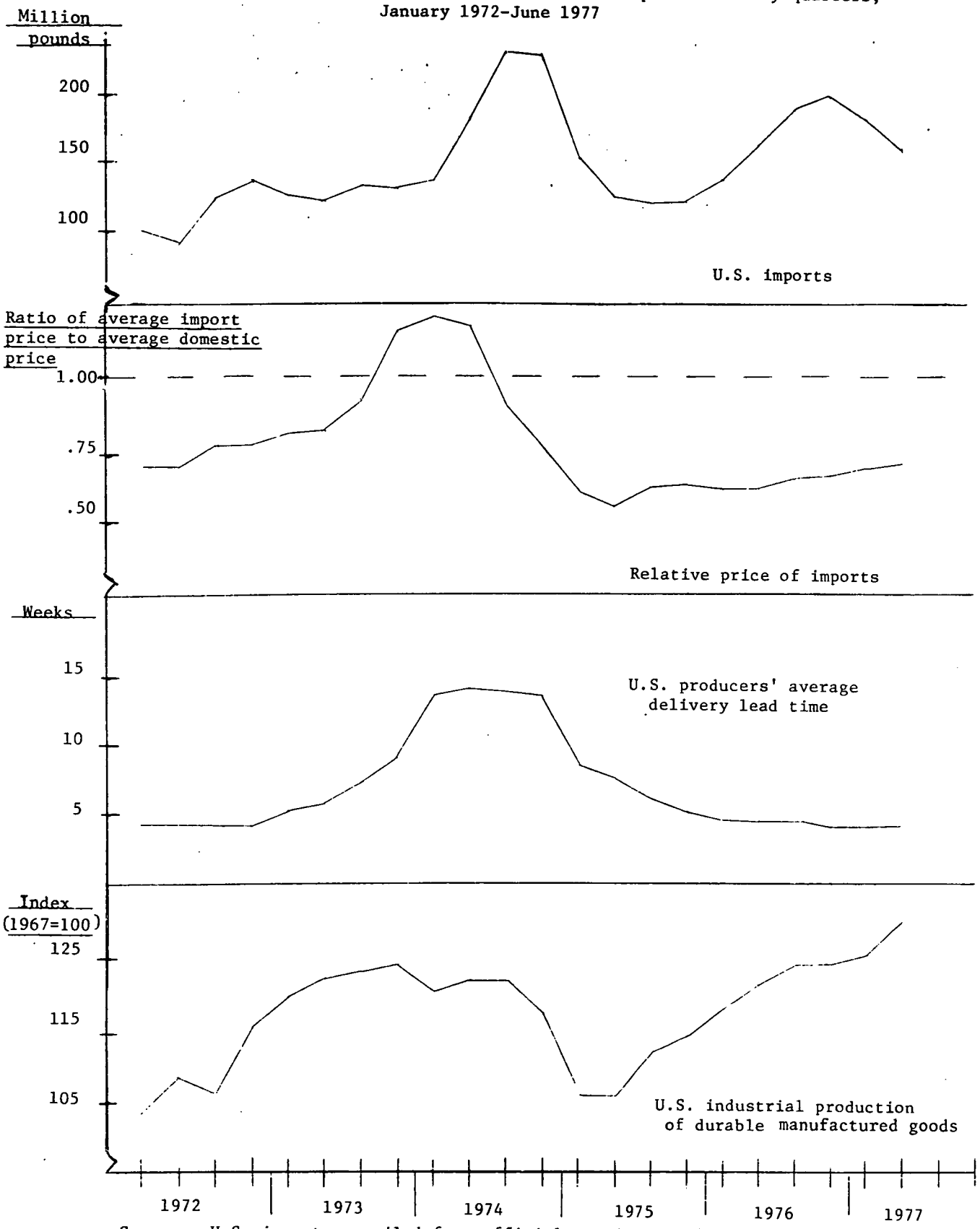
This section analyzes the various factors affecting U.S. demand for imported bolts, nuts, and large screws. The table on the following page illustrates changes in the level of U.S. imports and the factors affecting such changes.

Industrial production of durable manufactured goods.—Many witnesses at the public hearing testified that the demand for industrial fasteners is derived primarily from the demand for consumer durable goods, such as automobiles, and capital goods, which include industrial equipment, tools, and so forth (transcript of the hearing, pp. 89, 93, 112, 120, 257, 298, 373, and 463). Durability is a factor that permits discretion in the timing of purchases of products which incorporate industrial fasteners. Consequently, cyclical fluctuations in durable goods production have usually been much wider than those in the production of nondurable goods, and they have extended over longer periods of time. The demand for bolts, nuts, and large screws is similarly cyclical because it is derived from the demand for durable manufactured goods.

As the above discussion indicates, another factor which influences the demand for fasteners is the fact that they are intermediate goods. This means that fasteners are not consumed as final products but rather as components in the production of other products. Because fasteners are intermediate goods, a decline in the demand for durable goods would result in a proportionally larger decline in the demand for fasteners. For example, a fastener-consuming manufacturer, facing declining demand for his own products, would sharply curtail his fastener inventories to match declining production. Therefore, not only would a smaller quantity of fasteners be used on the assembly line, but also a smaller quantity would be held in stock. As a result, the demand for fasteners is likely to show even more cyclical variation than the demand for durable goods.

Relative price.—Demand for bolts, nuts, and large screws is relatively unaffected by changes in price. A reason for this is that fastener demand is a derived demand for articles incorporating fasteners. Thus, a price reduction for imported and domestically produced fasteners will not result in an appreciable shortrun increase in demand. However, nearly all witnesses agreed that price differences between imported and domestically produced fasteners have a major influence on distributors' purchasing decisions (transcript of the hearing, pp. 42, 71, 78, 96, and 269).

Bolts, nuts, and large screws: Determinants of import demand by quarters, January 1972-June 1977



Source: U.S. imports compiled from official statistics of the U.S. Department of Commerce; relative price of imports and U.S. producers' average delivery lead time compiled from responses to questionnaires of the U.S. International Trade Commission; industrial production compiled from official statistics of the Board of Governors of the Federal Reserve System.

To investigate the relative importance of various factors to distributors' purchasing decisions, the Commission asked a number of large distributors to rank the following factors in numerical order (1 being most important, 2 being the next most important, and so forth):

_____ historical source
_____ quality
_____ "Buy American" policy
_____ price
_____ alternate source
_____ special design (i.e., specialty items)
_____ availability.

Of the 41 respondents, 22 listed price as the most important factor affecting their purchasing decisions. Price was listed as the second and third most important factor by nine and five respondents, respectively. Clearly, price differences play a key role in determining how aggregate demand for fasteners will be shared between imported and domestically produced products. In the absence of strong demand, increases in price differences caused by reduced prices of imports, result in increasing imports, which reduce U.S. producers' shipments proportionally. It should be noted, however, that a similar result will occur if the domestic industry raises prices during periods of soft demand in order to maintain profit levels.

Witnesses in opposition to the petition stated that quality and availability requirements overwhelm price as the decisive factor influencing demand for fasteners made to unique customer specifications (transcript of the hearing, pp. 232, 255, and 308). From staff fieldwork, the Commission learned that these nonprice considerations are the basis upon which a fastener supplier qualifies to bid on a large OEM contract. Once the supplier is certified, price competition begins in earnest.

Availability.—Availability (or lead time) is also an important consideration in the distributor market for high-volume, commodity-type fasteners. This statement is confirmed by the results of the distributor survey discussed above, in which 33 of the 41 respondents rated availability as being among the three most important factors influencing their purchasing decisions.

Fastener-consuming markets

Many witnesses at the public hearing argued about the vulnerability of various fastener-consuming markets to imports. Witnesses in opposition to the petition stated that U.S. producers were insulated from import competition in the OEM market for made-to-order fasteners (transcript of the hearing, pp. 251, 256, 300, and 354). Witnesses in favor of the petition disagreed and pointed to current import competition in

these markets (transcript of the hearing, pp. 68, 74, and 83). This section will briefly analyze the interaction of the distributor and the OEM markets and the extent to which the imported article with its unique set of commercial properties can compete in the various end-user markets.

There is little disagreement that imported articles have captured a major share of the distributor market; figures 7 and 8 illustrate this point. To identify the ultimate end user of the articles which go through this channel of distribution, the Commission asked distributors who their customers were. Of the 41 respondents, 24 reported that they sold the majority of their products to OEM's. The Commission also asked the distributors to agree or disagree with the following statements:

(1) If the volume is there, we will source, stock, and supply any fastener to our customers--"standard" or "special."

(2) It is almost impossible for us to obtain anything but high-volume "standard" fasteners from importers.

(3) We deal almost exclusively with high-volume fastener products.

(4) We source "special" bolts, nuts, and large screws from domestic producers.

(5) We cannot compete with domestic producers in sales to large OEM customers.

(6) We can compete with domestic producers in sales to large OEM customers if we are able to obtain "special" fasteners in a timely manner.

(7) We can compete with domestic producers in sales to large OEM customers with respect to their "standard" fastener needs.

The results of this inquiry are summarized below.

Statement	Agree strongly	Agree but not strongly	Not sure; it depends	Disagree but not strongly	Disagree strongly
1	30	9	2	0	0
2	11	13	4	4	9
3	10	11	5	11	3
4	26	11	2	2	0
5	19	10	3	4	5
6	6	12	12	6	3
7	7	13	8	6	4

These results suggest that the distributors have aggressively and sucessfully sold to small- and medium-sized OEM's but have had much less success with the large OEM's. This is in accord with the following conclusion reached in a recent study, Fastener Markets--A Product Line Analysis, by the Stanford Research Institute:

> Few companies reported any concern about the origin of their fasteners. SRI concluded that if a manufacturer or distributor of fasteners stands behind the reliability of the product, this is adequate and is the most important consideration. A considerable number of companies said they wanted to buy from U.S. fastener companies but little effort was extended in trying to identify the country of orgin of the fastener used.

The few companies that do report serious concern about the origin of their fasteners are the large OEM's. For these companies with large and varied fastener needs, the distributor market presents significant problems. Large-scale fastener consumption requires these OEM's to be cognizant of their suppliers' long-term production capabilities. Small- and medium-sized OEM's probably do not perceive their fastener needs as placing similar constraints on their suppliers. Another important consequence of large-scale consumption is the attendant economies of scale that large OEM's can exploit. Large OEM's can only develop these economies of scale through extensive two-way communication with their suppliers on such topics as special designs, inventory control, quality control, and traceability requirements. The cost of transmitting this information from large OEM through a distributor to a fastener manufacturer (foreign or domestic) could be prohibitive.

The fact that distributors have difficulty in servicing large OEM's does not mean that the large OEM market is completely insulated from import competition. First, distributors of U.S. imports have become secondary or tertiary sources of supply to the large OEM's. Second, a foreign manufacturer working in close association with a U.S. producer could possibly overcome many of the obstacles in supplying this portion of the market. Such an arrangement would have the U.S. producer develop and immediately transfer the productive technique, supply initial quantities of the product, and provide productive capacity for "emergency" situations. Upon receiving the productive technique, the foreign manufacturer would supply the article for the remainder of the contract, except for the final weeks, when inventory-control consideration would return production to the United States. Clearly, the above situation would require extraordinary integration of the productive capabilities of the U.S. and foreign manufacturers. Although movements toward such arrangements can occur and have occurred, their full implementation would require a significant restructuring of the worldwide fastener industry. The continuation of excess capacity throughout the worldwide fastener industry strongly encourages the present trend toward further consolidation.

Consumption and market penetration

Apparent consumption of bolts, nuts, and large screws declined from 1.8 billion pounds in 1969 to 1.6 billion pounds in 1971 and then increased steadily to 1.9 billion pounds in 1973 (table 1). Surprisingly, apparent consumption increased about 12 percent in 1974 despite slackening activity in many fastener-consuming markets. In fact, industrial production of all durable goods manufacturers actually declined in 1974. The explanation for this apparent paradox is the large inventories held by U.S. producers, importers, and distributors during 1975.

The large decline in apparent consumption in 1975 was in part a result of both the 1974 shortage situation and the stockpiling it engendered. As supply tightened in early 1974, durable goods manufacturers actively sought secondary and tertiary sources of industrial fasteners. The manufacturer's position is reasonable in that it could lose a $25,000 sale, that of a machine tool for instance, because it lacked a dozen screws. When this possibility is multiplied a thousandfold, the fastener boom of 1974 becomes explicable. Double and triple ordering exacerbated the supply situation, drove up prices, and reinforced the belief that the fastener shortage was, in fact, acute. According to trade sources, the situation was completely out of hand by the spring of 1974.

Foreign suppliers responded to the feverish seller's market and provided large quantities of fasteners at very high prices. In 1974 the quantity of imports increased by 37 percent and the value, by 118 percent.

The fastener market retrenched in the final months of 1974 as end users, then distributors, and then manufacturers and importers realized the full extent of the inventory overhang.

Apparent consumption recovered to 1.6 billion pounds in 1976. Apparent consumption amounted to 862 million pounds during January-June 1977, 15 percent higher than in the corresponding period of 1976. As shown in the table below, the ratio of imports to consumption increased in every year during 1969-76. The ratio for nuts was significantly higher than the ratio for bolts and large screws throughout the period under consideration.

Bolts, nuts, and large screws: Ratios of U.S. imports to apparent consumption, 1/ 1969-76, January-June 1976, and January-June 1977

(In percent; by quantity)

Period	Bolts and large screws	Nuts	Total
1969	16	34	22
1970	19	38	24
1971	19	39	25
1972	21	41	27
1973	23	43	28
1974	30	52	36
1975	32	58	39
1976	39	57	44
January-June--			
1976	37	56	41
1977	39	56	43

1/ Equal to U.S. producers' shipments plus imports minus exports.

Source: U.S. producers' shipments, compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; imports and exports, compiled from official statistics of the U.S. Department of Commerce.

Possible causes of serious injury to the domestic industry

Recession.—Witnesses in opposition to the petition testified that the U.S. recession is a more important cause than imports for any alleged injury to the domestic industry (transcript of the hearing, pp. 257, 375, and 463). Counsel for the petitioners testified that the recession

seriously affected U.S. producers in 1975, but whereas the economy has subsequently staged a pronounced recovery, the U.S. industry remains depressed (transcript of the hearing p. 112).

The following table shows that the apparent consumption of bolts, nuts, and large screws was closely correlated with U.S. industrial production of durable manufactured goods during 1969-73.

Bolts, nuts, and large screws: Indexes of U.S. production, producers' shipments, imports for consumption, apparent consumption and industrial production of durable manufactured goods, 1969-76, January-June 1976, and January-June 1977

(1969=100; by quantity)

Period	Production	Producers' shipments	Imports	Apparent consumption	Industrial production of durable manufactured goods
1969	100	100	100	100	100
1970	96	92	108	96	92
1971	84	84	102	88	90
1972	97	96	128	102	99
1973	97	101	146	109	111
1974	105	103	209	122	110
1975	71	69	144	79	100
1976	75	74	189	91	112
Jan.-June					
1976	72	73	166	85	110
1977	76	89	200	98	117

Source: U.S. production and producers' shipments, compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; imports and apparent consumption, compiled from responses to Commission questionnaires and from official statistics of the U.S. Department of Commerce; industrial production, compiled from official statistics of the Board of Governors of the Federal Reserve System.

However, in 1974, apparent consumption increased significantly while durable goods production declined. Panic buying and excessive inventories account for these seemingly contradictory movements. Owing to the enormous inventories and the nature of the product, the decline in apparent consumption was more severe than the reduction in durable goods production. Both indicators increased substantially in 1976 and January-June 1977, yet apparent consumption lagged somewhat in comparison with production of

manufactured durable goods. This discrepancy in the rate of recovery probably involves the structure of U.S. demand for these articles.

As mentioned earlier, demand for fasteners is primarily drived from the demand for consumer durables, particularly automobiles, and capital goods, including machinery, transportation equipment, and so forth. During the past 2 years U.S. production of consumer durables staged a strong recovery. This did not occur in the capital goods sector, where the high cost of capital and low profit levels, among other things, restricted capital expenditures. Eric Cohen, president of Allied International, testified at the public hearing that the lack of capital spending was the most important cause of any injury suffered by the domestic industry (transcript of the hearing, p. 463).

U.S. producers and the distributor market.—Witnesses in opposition to the petition testified that U.S. producers have chosen to disregard the distributor market so as to emphasize the production and sales of special fasteners to large OEM customers (transcript of the hearing, pp. 229, 309, and 439). These witnesses further contend that any injury resulting from lost sales in the distributor market has been caused by the deliberate corporate policy of the U.S. producers. Counsel for the petitioners argued that, in fact, low-priced imports have driven the U.S. producers out of the distributor market.

To evaluate the above allegations the Commission asked a number of major distributors of bolts, nuts, and large screws to agree or disagree with the following statements:

(1) Domestic producers often sell to our customers at the same price, or an even lower price, than they will sell to us.

(2) During the fastener shortage of 1974, the domestic producers looked after our needs at least as well as the importers.

(3) During the past 2 years we have had no delivery problems from either domestic producers or importers.

(4) We are very pleased with the general level of service given to us by the domestic producers of bolts, nuts, and large screws.

(5) We are very pleased with the general level of service given to us by the importers of bolts, nuts, and large screws.

(6) The prices offered by domestic producers of bolts, nuts, and large screws are just not competitive with prices offered by importers.

The results of this inquiry are summarized as follows:

	Agree strongly	Agree but not strongly	Not sure; it depends	Disagree but not strongly	Disagree strongly
1	24	8	5	2	2
2	11	3	2	8	15
3	11	13	4	9	4
4	8	15	5	8	5
5	26	11	1	2	0
6	35	5	1	0	0

These results suggest the following: first, the delivery and pricing policies of U.S. producers have at times irritated distributors; second, distributors did not experience major difficulties in obtaining either domestic or imported articles during the past 2 years; third, distributors are pleased with the general level of service provided by importers and somewhat less pleased with the service provided by U.S. producers; and fourth, prices offered by U.S. producers are not competitive with prices offered by importers.

Other causes of serious injury (other than imports).—Witnesses in opposition to the petition alleged that certain special circumstances surrounding certain U.S. producers are primarily responsible for any injury suffered by these firms. Mr. Houlihan, counsel for the American Importers Association, Industrial Fasteners Group, testified that prolonged work stoppages at two plants account for any injury suffered by Lamson & Sessions Co., and RB&W, Inc. (transcript of the hearing, pp. 227 and 237). He further alleged that producers' shipments for January-June 1977 were adversely affected by the inclement weather during that period. He stated that Lake Erie Screw Corp. lost 40 percent and 30 percent of January and February production, respectively, owing to the severe winter weather (transcript of the hearing, p. 241). Finally, he asserted that the economic difficulties of Bethlehem Steel Corp. were not only the result of inefficiency but also of poor production and marketing policies (transcript of the hearing, p. 236).

Counsel for the petitioners argued that (1) labor strikes had a minimal impact on overall industry capacity, (2) the severe weather affected U.S. producers for 2 months at most, and (3) Bethlehem's Fastener Division has at times registered healthy earnings, hardly the mark of an inefficient producer.

Imports.—The U.S. producers allege that increased imports are the most important cause of the serious injury they now suffer. Information gathered by the Commission clearly shows that imports significantly increased their market share during each of the past 7 years

(table 1). The U.S. producers assert that the wide price differences between imported and domestic articles caused this market penetration. Information collected by the Commission shows that during the period October 1974-June 1977, significant price differences did exist between Japanese- and U.S.-made fasteners for all six representative fastener items (table 7 through 12). Further, the Commission found price to be the most important factor influencing the purchasing decision of distributors.

APPENDIX A

FASTENER NOMENCLATURE AND UNITS OF QUANTITY

Controversies Concerning Fastener Nomenclature

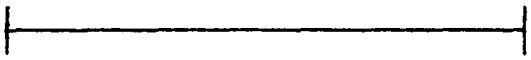
Standard versus special

Nearly every witness who testified during the public hearing on investigation No. TA-201-27 mentioned the terms "standard" and "special" with reference to fasteners. This section will briefly discuss the characteristics which distinguish standard from special fasteners. An understanding of these characteristics may help to determine the usefulness of the standard versus special distinction in the instant investigation.

Trade information developed from briefs, fieldwork, questionnaires, trade journals, and transcripts indicates that there are two characteristics that distinguish standard fasteners from special fasteners. These characteristics do not relate to the physical properties of the product, but rather to its present use in commercial trade.

The first characteristic is the volume of trade in the particular item. This characteristic is expressed below as a continuum ranging from very-low-volume items to very-high-volume items.

Very low volume — Very high volume



VOLUME OF TRADE

The second characteristic is the number of commercial applications for the particular item. This characteristic is expressed below as a continuum ranging from single-purpose (limited-purpose) items to multipurpose (commodity-type) fasteners.

Single purpose — Multipurpose

NUMBER OF COMMERCIAL APPLICATIONS

The figure on the next page, derived by combining the two above-mentioned continuums, expresses the whole range of fastener products in terms of volume of trade and number of commercial applications. The fastener referred to in the trade as a standard fastener is a fastener which is both a high-volume item and a multipurpose (commodity-type) fastener. Therefore, standard fasteners would occupy the upper right portion of the figure.

It must be noted that the dash lines drawn to distinguish high from low volume on the vertical line and limited purpose from multi-purpose on the horizontal line are completely arbitrary.

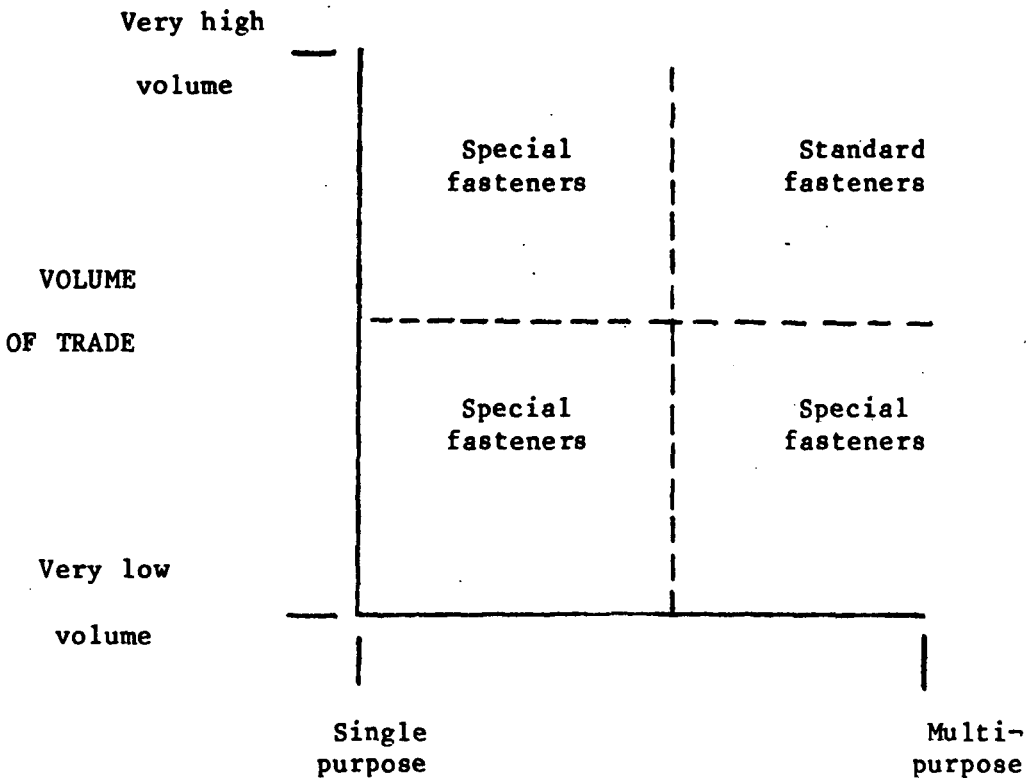
The fastener referred to in the trade as a special fastener is a fastener which is either a low-volume item or a limited-purpose fastener. Special fasteners would then occupy the upper left, lower left, and lower right portions of the figure. Once again, the lines drawn are completely arbitrary.

It should also be noted that the relative position of a particular fastener in the figure can change over time. During the public hearing, testimony was given that within 10 years many fastener items commonly called locknuts changed from special to standard fasteners.

The petition filed in connection with investigation No. TA-201-2 states that "the designation of 'standard' products is used to distinguish them from custom-made or specialty products." The petition also states that "standard products conform to . . . specification in authoritative reference books published by various U.S. standards organizations, and that, as a general rule, standard products are carried in inventory by fastener producers, whereas specialty products are not." Although the observations above are usually correct, the distinction between a standard and a special fastener is always arbitrary, often ambiguous, and sometimes controversial. The petition does not reveal the fact that some standard fasteners cannot be referenced from standards publications, and that many special fasteners are carried in inventory.

Fastener Standards, a publication of the Industrial Fastener Institute, describes the difficulties inherent in the standard versus special distinction:

> A product that may be referred to as standard by one manufacturer or user, might be completely special to another. For example, a producer may manufacture 1,000,000 pieces every week of a given type of product. Because of this quantity, he refers to this as a standard item for his production. In terms of industry usage, however, this may be a special.


Very high
volume
Special
fasteners
Standard
fasteners
VOLUME
OF TRADE
Special
fasteners
Special
fasteners
Very low
volume
Single
purpose
Multi-
purpose
NUMBER OF COMMERCIAL APPLICATIONS

Essentially, the term "standard" as it is used here refers to a high-volume, commodity-type fastener. The characteristics "high-volume" and "commodity-type" do not relate to the physical properties of the product, but rather to its present use in commercial trade. Such product classification defies consistent application and presents insurmountable obstacles to data collection and analysis.

Bolt versus screw

Traditionally higher rates of duty on screws vis-a-vis bolts have created much controversy and led to many classification battles in customs court. This series of litigation culminated on April 17, 1968, in C.D. 3412, MSL Industries v. United States, where certain imported merchandise was invoiced as "Hexagon Socket Head Bolts," and classified as "other screws" under item 646.63 of the TSUS, yet claimed to be "bolts" under item 646.54 of the TSUS. Judge Richardson stated:

> What we are dealing with here are competing eo nomine provisions for bolts and screws, concerning which the court must, among other things, undertake to ascertain their common meaning vis-a-vis the merchandise at bar. Plaintiff has cited to us the case of Morris Supply Company v. United States, 52 Cust. Ct. 174, C.D. 2457, as authority for its contention that a capscrew in general and a socket head capscrew in particular is a bolt. And defendant has called our attention to a number of lexicographical authorities which it contends compel the conclusion that capscrews are screws within the meaning of the tariff provisions for screws.
>
> The court found that "although lexicographical authorities place this merchandise in the category of bolts, the tariff schedules indicate an administrative practice of classifying the merchandise as 'screws' and a clear congressional intent to approve such practice. Held, the court is bound to follow the clear intention of Congress."

In testimony before the Committee on Ways and Means, MSL Industries had claimed that the administrative practice described above was suspect:

> The United States Cap Screw Service Bureau and its members have, by means of deliberate, conscious misrepresentation, continued their efforts to achieve their predetermined result, which is to change this product from a "bolt" to a "screw".
>
> This trade association acts as "experts" in advising the U.S. Customs officials as to whether an article

> is, or is not, a bolt. Although such advice is hardly disinterested, it has been particularly effective.

The "clear congressional intent" alluded to in C.D. 3412 refers to subpart D of part 3 of schedule 6 of the TSUS. Judge Richardson states:

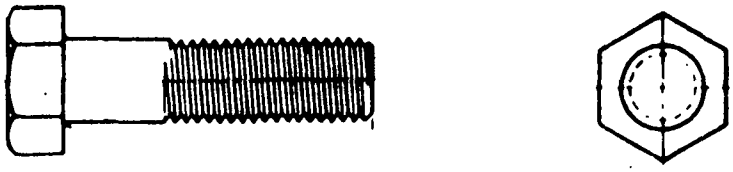
> The schedule makes use of the word (cap screws) only in excluding articles so designated from the duty rate accorded machine screws of certain dimensions. And this exclusionary use of the term "cap screws" takes place under the heading of "screws" in the statute. This would seem to indicate a legislative intent to treat the article designated as "cap screws" as "screws".

According to current customs procedure, a cap screw is distinguished from the bolts in item 646.54 by the presence of a washer face on the underside of the head of the cap screw. The washer face distinguishing a cap screw from a bolt is illustrated on the following page.

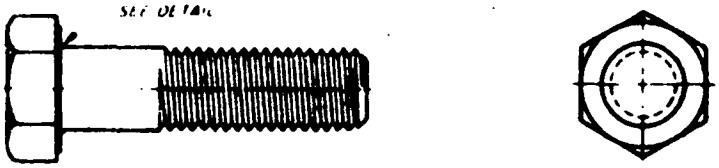
Pieces versus pounds

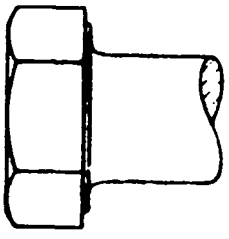
Despite essential similarity, bolts, nuts, and large screws are not homogeneous products. The vast range of head configurations, diameters, lengths, and finishes account for the fact that more than 150 million different fastener products were manufactured in 1976. This diversity presents some difficulty in choosing an acceptable unit of quantity for these commodities. Evidence suggests that two major biases occur when using pounds as the unit of quantity for bolts, nuts, and large screws. First, most imported articles have small diameters. Generally, small diameter fasteners receive more fabrication, i.e., forming, heading, and threading per pound, than large diameter fasteners, and more fabrication per pound generally means more value added per pound. Because most imported fasteners have small diameters, the use of pounds as a unit of quantity tends to understate the impact of imports on the U.S. market. Second, significantly more domestic articles are manufactured to end-user specifications than imported articles. A product manufactured to unique customer specifications generally requires more engineering input and setup time and, therefore, contains more value added per pound than fasteners made to industry standards. Because domestic articles are more apt to be made to unique end-user specifications than imports, the use of pounds as a unit of quantity tends to overstate the impact of imports on the U.S. market. In conclusion, the two major biases inherent in the use of pounds as a unit of quantity appear to be similar in magnitude and offsetting in effect. For this reason pounds were used as the unit of quantity in the trade data of this report.

HEX BOLTS



HEX CAP SCREWS
(FINISHED HEX BOLTS)





APPENDIX B

STATISTICAL TABLES

Table 1.--Bolts, nuts, and large screws: U.S. producers' shipments, imports for consumption, exports of domestic merchandise, and apparent consumption, by types, 1969-76, January-June 1976, and January-June 1977

(Quantity in thousands of pounds; value in thousands of dollars)

Type and period	Producers' shipments	Imports 1/	Exports 2/	Apparent consumption	Ratio (percent) of imports to-- Shipments	Ratio (percent) of imports to-- Apparent consumption
	Quantity					
Bolts and large screws:						
1969	1,141,800	206,363	81,914	1,266,249	18	16
1970	1,069,401	224,629	77,457	1,216,573	21	19
1971	978,951	215,833	71,667	1,123,117	22	19
1972	1,112,776	279,382	84,355	1,307,803	25	21
1973	1,190,653	329,038	102,665	1,417,026	28	23
1974	1,217,178	474,829	127,350	1,564,702	39	30
1975	828,898	329,758	129,006	1,029,650	40	32
1976	881,236	474,084	150,078	1,205,242	54	39
January-June --						
1976	440,618	214,727	76,435	578,910	49	37
1977	477,133	255,849	78,422	654,560	54	39
Nuts:						
1969	340,307	165,661	13,134	492,834	49	34
1970	298,284	176,062	11,691	462,655	59	38
1971	263,535	163,415	11,560	415,390	62	39
1972	303,089	194,812	17,690	480,211	64	41
1973	309,074	215,525	21,730	502,869	70	43
1974	312,173	301,613	31,802	581,984	97	52
1975	194,172	205,038	43,480	355,730	106	58
1976	219,145	230,390	47,191	402,344	105	57
January-June --						
1976	97,398	94,578	24,093	167,883	97	56
1977	119,250	116,010	27,830	207,430	97	56
Total:						
1969	1,482,107	372,024	95,048	1,759,033	25	21
1970	1,367,685	400,691	89,148	1,679,228	29	24
1971	1,242,486	379,248	83,227	1,538,507	31	25
1972	1,415,865	474,194	102,045	1,788,014	34	27
1973	1,499,727	544,563	124,395	1,919,895	36	28
1974	1,529,351	776,442	159,107	2,146,686	51	36
1975	1,023,070	534,796	172,486	1,385,380	52	39
1976	1,100,381	704,474	197,269	1,607,586	64	44
January-June --						
1976	538,016	309,305	100,528	746,793	58	41
1977	596,383	371,859	106,252	861,990	62	43

See footnotes at end of table.

Table 1.--Bolts, nuts, and large screws: U.S. producers' shipments, imports for consumption exports of domestic merchandise, and apparent consumption, by types, 1969-76, January-June 1976, and January-June 1977--Continued

(Quantity in thousands of pounds; value in thousands of dollars)

Type and period	Producer shipments	Imports 1/	Exports 2/	Apparent consumption	Ratio (percent) of imports to-- Shipments	Ratio (percent) of imports to-- Apparent consumption
	Value					
Bolts and large screws:						
1969	541,660	35,629	36,856	340,433	7	7
1970	498,575	44,289	36,692	506,172	9	9
1971	491,058	43,839	35,317	499,580	9	9
1972	565,839	62,191	40,114	587,916	11	11
1973	658,249	91,150	51,429	697,970	14	13
1974	834,260	202,576	73,196	963,640	21	21
1975	665,739	127,669	77,930	715,478	19	18
1976	665,910	161,697	83,125	744,482	24	22
January-June--						
1976	337,875	71,666	41,911	367,630	21	20
1977	382,091	94,774	45,268	431,597	25	22
Nuts:						
1969	191,737	33,569	9,647	215,659	18	16
1970	172,028	41,611	8,684	204,955	24	20
1971	169,876	38,500	9,374	199,002	23	19
1972	202,825	51,255	11,322	242,758	25	21
1973	247,723	75,198	14,613	308,308	30	24
1974	333,517	185,646	22,536	496,627	56	37
1975	258,142	99,459	23,321	334,280	39	30
1976	280,487	98,093	23,930	354,650	35	28
January-June--						
1976	146,413	41,187	12,151	175,449	28	24
1977	161,756	55,660	14,162	203,254	34	27
Total:						
1969	733,397	69,198	46,503	756,092	9	9
1970	670,603	85,900	45,376	711,127	13	12
1971	660,934	82,339	44,691	698,582	13	12
1972	768,664	113,466	51,436	830,674	15	14
1973	905,972	166,348	66,042	1,006,278	18	17
1974	1,167,777	388,222	95,732	1,460,267	33	27
1975	923,881	227,128	101,251	1,049,758	25	22
1976	946,397	259,790	107,055	1,099,132	28	24
January-June--						
1976	484,288	112,853	54,062	543,079	23	21
1977	543,847	150,434	59,430	634,851	28	24

1/ Quantity does not include bolts, nuts, and screws imported free of duty from Canada under the Automotive Products Trade Act (APTA); quantity of such articles is not reported in the official statistics of the U.S. Department of Commerce. Value of imports includes bolts, nuts, and screws imported free of duty from Canada (APTA).

In official import statistics of the U.S. Department of Commerce, the TSUS items containing screws were reported in gross pieces during 1969-74; for these years, the staff converted the gross pieces into pounds.

2/ Includes bolts, threaded rods and studs, nuts if nuts and bolts are in the same shipment, screws, rivets, washers, and similar articles. It is estimated by the staff of the U.S. International Trade Commission that bolts of iron or steel accounted for approximately 80 percent of total exports.

Source: U.S. producers' shipments, compiled from data submitted in response to questionnaires of the U.S. International Trade Commission; imports and exports, compiled from official statistics of the U.S. Department of Commerce.

Table 2.--Bolts, nuts, and large screws: U.S. imports for consumption, by principal sources, 1972-76, January-June 1976, and January-June 1977

(In thousands of dollars)

Source	1972	1973	1974	1975	1976	January-June--	
						1976	1977
Japan	70,739	103,600	261,879	135,712	160,082	66,505	91,981
Canada 1/	24,344	33,716	56,515	39,501	58,198	28,478	34,459
Taiwan	238	813	8,851	2,044	6,293	1,872	3,655
Italy	2,795	3,891	6,665	8,155	4,964	2,533	2,855
West Germany	2,410	3,737	7,205	8,958	5,832	2,921	3,308
Ireland	3,148	4,619	6,283	3,609	4,870	2,407	2,596
United Kingdom	2,501	2,959	7,759	6,777	3,495	1,968	1,918
Spain	1,688	2,249	6,265	3,839	3,399	1,420	2,177
Netherlands	1,678	3,581	5,938	6,472	3,308	1,651	1,420
All other	3,885	7,220	20,820	12,058	9,348	3,102	6,165
Total	113,426	166,385	388,180	227,125	259,789	112,857	150,434

1/ Includes value of imports entered duty free from Canada as original motor-vehicle equipment.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3.--Bolts, nuts, and large screws: U.S. production and producers' capacity, 1/ 1972-76 and January-June 1977

Item	1972	1973	1974	1975	1976	January-June 1977
Bolts and large screws:						
Production----million pounds--	1,107	1,140	1,216	841	879	446
Capacity----------do----	1,569	1,481	1,545	1,553	1,651	832
Ratio of production to capacity----------percent--	71	77	79	54	53	54
Nuts:						
Production----million pounds--	312	280	317	201	211	113
Capacity----------do----	442	427	475	513	538	259
Ratio of production to capacity----------percent--	71	66	67	39	39	44
Total:						
Production----million pounds--	1,419	1,419	1,533	1,042	1,091	559
Capacity----------do----	2,011	1,910	2,020	2,066	2,189	1,091
Ratio of production to capacity----------percent--	71	74	76	50	50	51

1/ Capacity is defined as the normal sustained production that can be achieved on an annual basis and is based upon a firm's average product mix during 1974-76 with allowance made for anticipated maintenance downtime.

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

Table 4.--Profit-and-loss experience of 41 U.S. producers on their bolt, nut, and large screw operations, 1972-76 and January-June 1977

Item	1972	1973	1974	1975	1976	January-June 1977
Net sales--1,000 dollars--	499,674	634,653	852,613	680,151	692,694	388,669
Cost of goods sold--do--	405,449	499,332	611,822	494,344	524,326	300,844
Gross profit--do--	94,225	135,321	240,791	185,807	168,368	87,825
Selling and administrative expenses 1,000 dollars--	67,117	75,952	94,607	85,653	89,708	47,563
Net operating profit--do--	27,108	59,369	146,184	100,154	78,660	40,262
Other income or (expense)--do--	(1,775)	(392)	515	(210)	145	162
Net profit before income taxes--do--	25,333	58,977	146,699	99,944	78,805	40,424
Ratio of net operating profit to net sales--percent--	5.4	9.4	17.1	14.7	11.4	10.4

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

Note.--Owing to a different sampling of U.S. producers, data reported above for the years 1972-74 may differ from data published in USITC Publication 747, Bolts, Nuts and Screws of Iron or Steel. . ..

Table 5.--Average number of persons employed in U.S. establishments in which bolts, nuts, and large screws were produced, total and production and related workers engaged in the production of all products and of bolts, nuts, and large screws, 1969-76 and January-June 1977

Period	Total, all employees	Production and related workers engaged in the production of--			Total
		All products	Bolts, and large screws	Nuts	
1969	43,457	34,154	1/	1/	20,232
1970	40,639	32,541	1/	1/	18,746
1971	38,624	30,744	1/	1/	17,210
1972	40,073	32,262	1/	1/	16,858
1973	42,092	33,791	1/	1/	17,536
1974	42,342	34,497	13,008	4,382	17,390
1975	35,101	26,977	10,016	3,357	13,373
1976	34,339	27,080	9,690	3,387	13,077
1977 (January-June)	34,509	27,011	9,510	3,393	12,903

1/ Not available.

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

Table 6.--Man-hours expended by production and related workers in U.S. establishments in which bolts, nuts, and large screws were produced, 1969-76 and January-June 1977

(In thousands of man-hours)

Period	All products	Bolts and large screws	Nuts	Total
1969	73,226	1/	1/	45,220
1970	67,038	1/	1/	39,073
1971	61,758	1/	1/	35,775
1972	70,434	1/	1/	37,211
1973	73,331	1/	1/	38,519
1974	74,322	29,152	9,511	38,663
1975	54,470	20,054	6,507	26,561
1976	55,073	20,046	6,575	26,621
1977 (January-June)	32,181	I0,868	3,979	14,847

1/ Not available.

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

Table 7.--Bolts, nuts, and large screws: Ranges and averages 1/ of lowest net selling prices received by U.S. producers and importers on sales of cap screws, grade 2, 3/8"-16 x 1", 2/ to distributors, by specified periods, January 1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June--	$9.08-$24.50	$10.80	$6.20-$15.31	$7.94	74
July-Dec---	9.28- 24.50	11.05	6.98- 9.80	8.04	73
1973:					
Jan.-Mar---	9.45- 24.50	11.77	7.85- 19.80	11.62	99
Apr.-June--	9.58- 24.50	11.62	9.37- 19.80	10.67	92
July-Sept--	11.11- 24.50	12.23	7.42- 19.80	11.73	96
Oct.-Dec---	10.80- 24.50	12.52	10.40- 19.80	14.28	114
1974:					
Jan.-Mar---	11.27- 24.50	12.91	12.89- 24.80	16.48	128
Apr.-June--	12.40- 51.00	17.70	15.10- 24.80	18.47	104
July-Sept--	18.20- 51.00	22.14	14.95- 24.80	20.67	93
Oct.-Dec---	18.92- 51.00	22.92	14.75- 33.53	18.28	80
1975:					
Jan.-Mar---	23.46- 51.00	25.41	13.33- 33.53	15.82	62
Apr.-June--	23.44- 51.00	24.53	12.38- 33.53	15.55	63
July-Sept--	15.88- 30.00	22.86	11.14- 25.10	15.64	64
Oct.-Dec---	15.88- 30.00	22.09	10.75- 25.10	14.52	68
1976:					
Jan.-Mar---	15.90- 30.00	21.74	11.37- 15.90	13.50	66
Apr.-June--	15.90- 27.00	21.75	12.28- 15.90	14.32	62
July-Sept--	15.87- 27.30	22.05	12.85- 15.95	14.74	67
Oct.-Dec---	15.90- 27.30	21.88	10.16- 16.90	14.50	66
1977:					
Jan.-Mar---	15.90- 27.30	21.64	13.44- 17.25	15.06	70
Apr.-June--	15.90- 31.57	20.53	13.36- 17.25	14.79	72

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

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

Table 8.--Bolts, nuts, and large screws: Ranges and averages 1/ of net selling prices received by U.S. producers and importers on sales of cap screws, grade 8, 3/8"-16 x 1", 2/ to distributors, by specified periods, January-1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June	$23.64-$31.50	$25.15	$19.06	$19.06	76
July-Dec	20.28- 26.90	24.84	3/	3/	3/
1973:					
Jan.-Mar	22.95- 33.71	28.80	3/	3/	3/
Apr.-June	26.07- 37.44	29.06	$14.72- 27.17	17.30	60
July-Sept	26.55- 37.44	29.05	9.03- 27.17	21.83	75
Oct.-Dec	26.94- 37.44	29.01	25.47- 29.64	29.13	100
1974:					
Jan.-Mar	30.60- 38.72	31.91	26.81- 33.82	30.32	95
Apr.-June	34.43- 62.40	36.02	26.81- 36.89	34.38	95
July-Sept	38.25- 65.52	39.52	29.17- 36.89	36.12	91
Oct.-Dec	31.80- 48.53	42.40	29.17- 36.89	33.67	79
1975:					
Jan.-Mar	33.65- 48.53	40.40	25.82- 33.82	28.67	71
Apr.-June	28.94- 48.53	40.67	19.35- 33.09	23.13	57
July-Sept	20.43- 44.80	30.50	22.45- 29.79	26.12	86
Oct.-Dec	20.43- 44.80	28.17	20.24- 29.79	25.02	89
1976:					
Jan.-Mar	21.28- 44.80	31.07	20.24- 29.79	25.02	81
Apr.-June	21.28- 44.68	30.61	22.09- 27.82	24.96	82
July-Sept	21.28- 40.32	29.24	21.40- 29.77	24.86	85
Oct.-Dec	21.28- 43.80	30.91	21.40- 29.77	24.72	80
1977:					
Jan.-Mar	21.28- 44.63	30.51	22.54- 40.30	27.63	91
Apr.-June	21.28- 37.45	29.78	21.40- 40.30	27.87	94

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

3/ Not available.

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

Table 9.-- Bolts, nuts, and large screws: Ranges and averages 1/ of lowest net selling prices received by U.S. producers and importers on sales of hexagon nuts, 1/4"-20, 2/ to distributors, by specified periods, January 1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June--	$2.49-$6.97	$3.42	$1.27-$6.00	$1.89	55
July-Dec---	2.61- 6.97	3.06	1.45- 5.50	2.07	68
1973:					
Jan.-Mar---	2.61- 7.20	4.21	1.57- 6.00	2.89	69
Apr.-June--	2.81- 7.20	4.17	1.65- 6.00	2.55	61
July-Sept--	3.15- 7.20	4.23	1.76- 6.49	3.00	71
Oct.-Dec---	3.22- 8.10	4.10	2.63- 6.80	4.05	99
1974:					
Jan.-Mar---	3.47- 8.10	4.73	2.71-14.70	5.89	125
Apr.-June--	3.44-18.00	5.56	2.75-14.70	7.14	128
July-Sept--	5.40-18.00	7.43	2.65-14.70	5.17	70
Oct.-Dec---	5.75-18.00	6.76	1.89- 9.00	3.12	46
1975:					
Jan.-Mar---	5.75-18.00	8.07	1.36-10.00	2.08	26
Apr.-June--	5.64-18.00	8.06	1.46-10.00	2.35	29
July-Sept--	2.91-10.00	5.96	1.60- 2.70	2.05	34
Oct.-Dec---	2.81- 9.93	5.94	1.50- 2.70	2.14	36
1976:					
Jan.-Mar---	2.69- 8.81	5.66	1.71- 2.70	2.21	39
Apr.-June--	2.69- 8.80	5.66	1.71- 2.61	2.17	38
July-Sept--	2.63- 9.78	5.85	1.68- 2.84	2.31	39
Oct.-Dec---	2.63- 9.83	5.85	1.80- 3.01	2.35	40
1977:					
Jan.-Mar---	2.59- 8.82	5.72	2.10- 2.94	2.47	43
Apr.-June--	2.59- 8.70	5.64	2.10- 2.94	2.40	43

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

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

Table 10.--Bolts, nuts, and large screws: Ranges and averages 1/ of lowest net selling prices received by U.S. producers and importers on sales of hexagon nuts, 1/2"-13, 2/ to distributors, by specified periods, January 1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June--	$9.36-$25.90	$11.10	$6.41-$20.00	$8.77	79
July-Dec---	9.82- 25.90	11.01	6.82- 18.00	8.55	78
1973:					
Jan.-Mar---	9.82- 25.90	12.62	6.99- 23.50	10.01	79
Apr.-June--	10.40- 25.90	12.09	6.99- 25.62	10.85	90
July-Sept--	11.43- 25.90	13.28	7.02- 23.50	11.50	87
Oct.-Dec---	11.66- 32.40	13.27	7.09- 26.00	16.64	125
1974:					
Jan.-Mar---	13.48- 32.40	17.95	7.09- 42.50	25.47	142
Apr.-June--	14.20- 72.50	22.59	7.09- 42.50	27.98	124
July-Sept--	14.20- 72.50	27.73	7.09- 51.00	22.93	83
Oct.-Dec---	18.90- 72.50	25.32	10.35- 44.40	15.63	62
1975:					
Jan.-Mar---	18.90- 72.50	26.11	8.80- 37.80	11.36	44
Apr.-June--	18.90- 72.50	22.89	9.85- 37.80	11.43	50
July-Sept--	16.89- 37.02	25.12	8.75- 14.50	11,55	46
Oct.-Dec---	16.89- 36.86	25.11	8.79- 13.50	11.25	45
1976:					
Jan.-Mar---	17.60- 33.42	24.22	9.15- 13.50	11.79	49
Apr.-June--	17.60- 33.02	24.23	9.00- 14.98	12.22	50
July-Sept--	17.60- 36.93	25.00	8.84- 15.44	12.78	51
Oct.-Dec---	17.60- 28.40	23.84	10.67- 15.73	13.07	55
1977:					
Jan.-Mar---	17.60- 32.88	24.44	10.60- 15.19	12.76	52
Apr.-June--	17.60- 32.98	24.23	10.58- 14.02	12.51	52

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

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

Table 11.--Bolts, nuts, and large screws: Ranges and averages 1/ of lowest net selling prices received by U.S. producers and importers on sales of structural bolts, A325, with nut, 3/4" x 2", 2/ to distributors, by specified periods, January 1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June	$134.48-$165.20	$164.80	$125.98	$125.98	76
July-Dec	141.81- 178.00	162.32	$144.13- 148.00	144.61	89
1973:					
Jan.-Mar	146.92- 178.00	176.62	133.45- 160.00	157.05	89
Apr.-June	152.16- 188.80	185.92	170.81- 182.00	176.48	95
July-Sept	166.16- 188.80	186.02	247.00	247.00	133
Oct.-Dec	169.65- 188.80	184.77	247.54- 250.00	247.88	134
1974:					
Jan.-Mar	189.57- 236.00	217.21	257.89- 410.11	259.37	119
Apr.-June	215.09- 282.50	258.42	254.27- 343.00	284.17	110
July-Sept	280.60- 369.50	342.06	294.00- 366.81	344.27	101
Oct.-Dec	272.55- 408.60	339.23	256.00- 366.84	339.22	100
1975:					
Jan.-Mar	258.03- 357.00	316.43	251.00- 397.20	314.32	99
Apr.-June	316.07- 403.85	334.35	234.82- 397.20	268.50	80
July-Sept	187.18- 357.00	293.33	226.36- 313.33	262.52	89
Oct.-Dec	191.56- 352.90	290.28	210.00- 282.00	237.34	82
1976:					
Jan.-Mar	189.43- 352.90	289.66	212.50- 282.00	238.95	82
Apr.-June	194.95- 357.00	308.26	189.00- 282.00	239.13	78
July-Sept	199.30- 357.00	293.23	217.00- 282.00	238.62	81
Oct.-Dec	162.55- 339.20	272.34	194.00- 298.73	231.91	85
1977:					
Jan.-Mar	215.00- 339.20	281.75	204.09- 283.74	232.33	82
Apr.-June	215.00- 339.20	282.92	203.00- 283.74	230.17	81

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

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

Table 12.--Bolts, nuts, and large screws: Ranges and averages 1/ of lowest net selling prices received by U.S. producers and importers on sales of carriage bolts, 3/8" x 3", 2/ to distributors, by specified periods, January 1972-June 1977

Period	Domestic price		Import price		Ratio of average import price to average domestic price
	Range	Average	Range	Average	
	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Per 1,000 pieces	Percent
1972:					
Jan.-June	$20.24-$28.01	$26.80	$13.50-$30.00	$15.10	56
July-Dec	18.41- 28.01	26.89	16.56- 30.00	19.12	71
1973:					
Jan.-Mar	20.88- 35.40	27.64	16.54- 39.20	18.41	67
Apr.-June	20.55- 35.40	26.91	22.11- 39.20	25.84	96
July-Sept	25.90- 35.40	28.09	20.11- 39.20	27.74	99
Oct.-Dec	24.35- 38.01	28.29	27.12- 40.00	35.35	125
1974:					
Jan.-Mar	27.84- 35.52	29.28	31.80- 53.80	33.83	116
Apr.-June	28.01- 44.00	31.26	33.27- 53.80	46.66	149
July-Sept	28.01- 53.25	39.20	33.08- 53.80	41.17	105
Oct.-Dec	39.32- 53.40	48.97	34.02- 66.20	42.34	86
1975:					
Jan.-Mar	39.22- 53.40	45.11	25.47- 66.20	30.01	67
Apr.-June	39.22- 53.40	51.18	22.63- 66.20	28.12	55
July-Sept	38.90- 74.40	52.72	21.30- 39.88	30.77	58
Oct.-Dec	33.40- 74.40	51.96	29.34- 37.77	32.23	62
1976:					
Jan.-Mar	33.40- 74.40	49.46	21.95- 37.77	31.21	63
Apr.-June	33.40- 66.96	48.78	24.93- 37.77	32.32	66
July-Sept	33.40- 66.96	50.55	29.60- 39.20	32.94	65
Oct.-Dec	33.40- 66.96	50.70	29.23- 38.85	34.01	67
1977:					
Jan.-Mar	33.40- 55.80	47.78	29.50- 41.36	36.14	76
Apr.-June	33.40- 65.10	45.99	28.50- 42.02	35.09	76

1/ Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

2/ The precise specifications corresponding to this fastener are shown in app. D.

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

Table 13.--Bolts, nuts, and large screws: Indexes of lowest net selling prices received by U.S. producers on sales of selected fasteners to distributors, by specified periods, January 1972-June 1977.

(January-June 1972=100)

Period	Cap screw, grade 2, 3/8"-16 x 1"	Cap screw, grade 8, 3/8"-16 x 1"	Hexagon nut, 1/4"-20	Hexagon nut, 1/2"-13	Structural bolt, A325, with nut, 3/4" x 2"	Carriage bolt, 3/8" x 3"	Average
1972:							
January-June	100	100	100	100	100	100	100
July-December	102	99	90	99	99	100	98
1973:							
January-March	109	115	123	114	107	103	111
April-June	108	116	122	109	113	100	111
July-September	113	116	124	120	113	105	115
October-December	116	115	120	120	112	106	114
1974:							
January-March	120	127	138	162	132	109	131
April-June	164	143	163	204	157	117	158
July-September	205	157	217	250	208	146	197
October-December	212	169	198	228	206	183	199
1975:							
January-March	235	161	236	235	192	168	204
April-June	227	162	236	206	203	191	204
July-September	212	121	174	226	178	197	185
October-December	205	112	174	226	176	194	181
1976:							
January-March	201	124	165	218	176	185	178
April-June	201	122	165	218	187	182	179
July-September	204	116	171	225	178	189	181
October-December	203	123	171	215	165	189	178
1977:							
January-March	200	121	167	220	171	178	176
April-June	190	118	165	218	172	172	173

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

Table 14.--Bolts, nuts, and large screws: Indexes of prices for durable manufactured goods, miscellaneous metal products, and domestic and imported fasteners, by specified periods, January 1972-June 1977

(January-June 1972

Period	Durable manufactured goods	Miscellaneous metal products	Domestic fasteners	Imported fasteners
1972:				
January-June	100	100	100	100
July-December	101	101	98	110
1973:				
January-March	103	102	111	132
April-June	106	104	111	132
July-September	106	106	115	155
October-December	108	108	114	194
1974:				
January-March	112	112	131	233
April-June	120	124	158	274
July-September	128	135	197	255
October-December	133	142	199	216
1975:				
January-March	135	145	204	173
April-June	137	146	204	161
July-September	138	147	185	164
October-December	140	148	181	159
1976:				
January-March	142	149	178	158
April-June	144	149	179	162
July-September	147	151	181	165
October-December	149	155	178	166
1977:				
January-March	152	156	176	172
April-June	155	157	173	170

Source: Indexes for durable manufactured goods and miscellaneous metal products compiled from official statistics of the U.S. Bureau of Labor Statistics; indexes for domestic and imported fasteners, compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 15.--Bolts, nuts, and large screws: Indexes of lowest net selling prices received by importers on sales of selected fasteners to distributors, by specified periods, January 1972-June 1977

(January-June 1972=100)

Period	Cap screw, grade 2, 3/8"-16 x 1"	Cap screw, grade 8, 3/8"-16 x 1"	Hexagon nut, 1/4"-20	Hexagon nut, 1/2"-13	Structural bolt, A325, with nut, 3/4" x 2"	Carriage bolt, 3/8" x 3"	Average
1972:							
January-June	100	100	100	100	100	100	100
July-December	101	1/	110	98	115	127	110
1973:							
January-March	146	1/	153	114	125	122	132
April-June	134	91	135	124	140	171	132
July-September	148	115	159	131	197	184	155
October-December	180	153	214	190	197	234	194
1974:							
January-March	208	159	312	390	206	224	233
April-June	233	180	378	319	226	309	274
July-September	260	190	274	262	273	273	255
October-December	230	177	165	178	269	280	216
1975:							
January-March	199	150	110	130	250	199	173
April-June	196	121	124	130	213	186	161
July-September	197	137	108	132	208	204	164
October-December	183	131	113	128	188	213	159
1976:							
January-March	170	131	117	134	190	207	158
April-June	180	131	115	139	190	214	162
July-September	186	130	122	146	189	218	165
October-December	183	130	124	149	184	225	166
1977:							
January-March	190	145	131	145	184	239	172
April-June	186	146	127	143	183	232	170

1/ Not available.

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

Table 16.--Bolts, nuts, and large screws: Ratios of average import price to average domestic price, by selected fasteners, January 1972-June 1977

(In percent)

Period	Cap screw, grade 2, 3/8"-16 x 1"	Cap screw, grade 8, 3/8"-16 x 1"	Hexagon nut, 1/4"-20	Hexagon nut, 1/2"-13	Structural bolt, A325 with nut, 3/4" x 2"	Carriage bolt, 3/8" x 3"	Average
1972:							
January-June	74	76	55	79	76	56	69
July-December	73	1/	68	78	89	71	76
1973:							
January-March	99	1/	69	79	89	67	81
April-June	92	60	61	90	95	96	82
July-September	96	75	71	87	132	99	93
October-December	114	100	99	125	134	125	116
1974:							
January-March	128	95	125	142	119	116	121
April-June	104	95	128	124	110	149	118
July-September	93	91	70	83	101	105	91
October-December	80	79	46	62	100	86	76
1975:							
January-March	62	71	26	44	99	67	62
April-June	63	57	29	50	80	55	56
July-September	64	86	34	46	89	58	63
October-December	68	89	36	45	82	62	64
1976:							
January-March	66	81	39	49	82	63	63
April-June	62	82	38	50	78	66	63
July-September	67	85	39	51	81	65	65
October-December	66	80	40	55	85	67	66
1977:							
January-March	70	91	43	52	82	76	69
April-June	72	94	43	52	81	76	70

1/ Not available.

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

Table 17.--Bolts, nuts, and large screws: Ranges and averages 1/ of domestic cost 2/ and import cost 3/ of selected fastener items, 1972, 1974, 1976, and January-June 1977

Item and period	Domestic cost					
	Raw materials		Direct labor		Overhead	
	Range	Average	Range	Average	Range	Average
	Per 1,000 pieces					
Cap screw, grade 2, 3/8"-16 X 1":						
1972	$2.28- $5.78	$5.17	$0.41-$4.90	$0.67	$0.73- $8.83	$3.59
1974	3.61- 10.24	7.78	.53- 6.58	1.40	1.43- 10.52	4.92
1976	4.87- 10.12	8.38	.20- 5.00	2.32	.44- 14.30	6.73
1977 January-June	5.05- 12.33	9.08	.20- 7.18	2.51	.41- 15.50	7.37
Hex nut, 1/4"-20:						
1972	.45- 1.24	1.01	.30- .72	.50	1.51- 2.82	2.35
1974	.73- 1.48	1.35	.37- .92	.69	1.78- 3.12	2.49
1976	.86- 1.80	1.53	.10- 1.48	.70	.30- 7.46	3.45
1977 January-June	.93- 2.20	1.70	.10- 1.63	.84	.31- 7.94	3.72
Structural bolt, A325, X 2":						
1972	33.30-102.40	98.48	3.31-22.84	7.43	9.07- 81.98	18.21
1974	52.30-211.40	157.71	5.43-30.39	12.89	21.48- 92.49	50.28
1976	64.16-206.81	126.84	5.71-27.69	14.75	10.13-123.25	57.13
1977 January-June	66.59-211.53	134.88	5.40-27.19	16.08	14.99-133.00	66.94

Item and period	Domestic cost--Con.		Import cost		Ratio of average import cost to average domestic cost
	Total		Range	Average	
	Range	Average			
	Per 1,000 pieces				Percent
Cap screw, grade 2, 3/8"-16 X 1:					
1972	$6.80-$19.34	$9.43	$5.18- $6.71	$6.06	64
1974	11.05- 24.73	14.10	11.27- 6.64	19.33	102
1976	10.19- 26.65	17.43	10.51- 12.25	11.71	67
1977 January-June	11.83- 30.39	18.96	11.16- 12.88	11.92	63
Hex nut, 1/4"-20:					
1972	2.70- 4.42	3.86	1.30- 1.76	1.47	38
1974	3.86- 5.53	4.53	3.40- 5.70	4.46	98
1976	2.40- 10.21	5.69	1.75- 2.12	1.89	33
1977 January-June	2.45- 10.85	6.26	1.70- 2.16	1.96	31
Structural bolt, A325, 3/4" X 2":					
1972	111.01-172.84	124.12	79.76- 98.79	89.28	72
1974	162.19-265.79	220.83	175.54-200.99	228.27	103
1976	139.51-272.22	199.22	166.76-187.88	178.42	90
1977 January-June	151.24-293.36	217.85	189.46-204.09	196.18	90

1/ Weighted averages are used for all domestic cost data; simple averages are used for all import cost data.

2/ Domestic cost is defined as the total unit cost of production, comprising material costs, direct labor costs, and overhead costs.

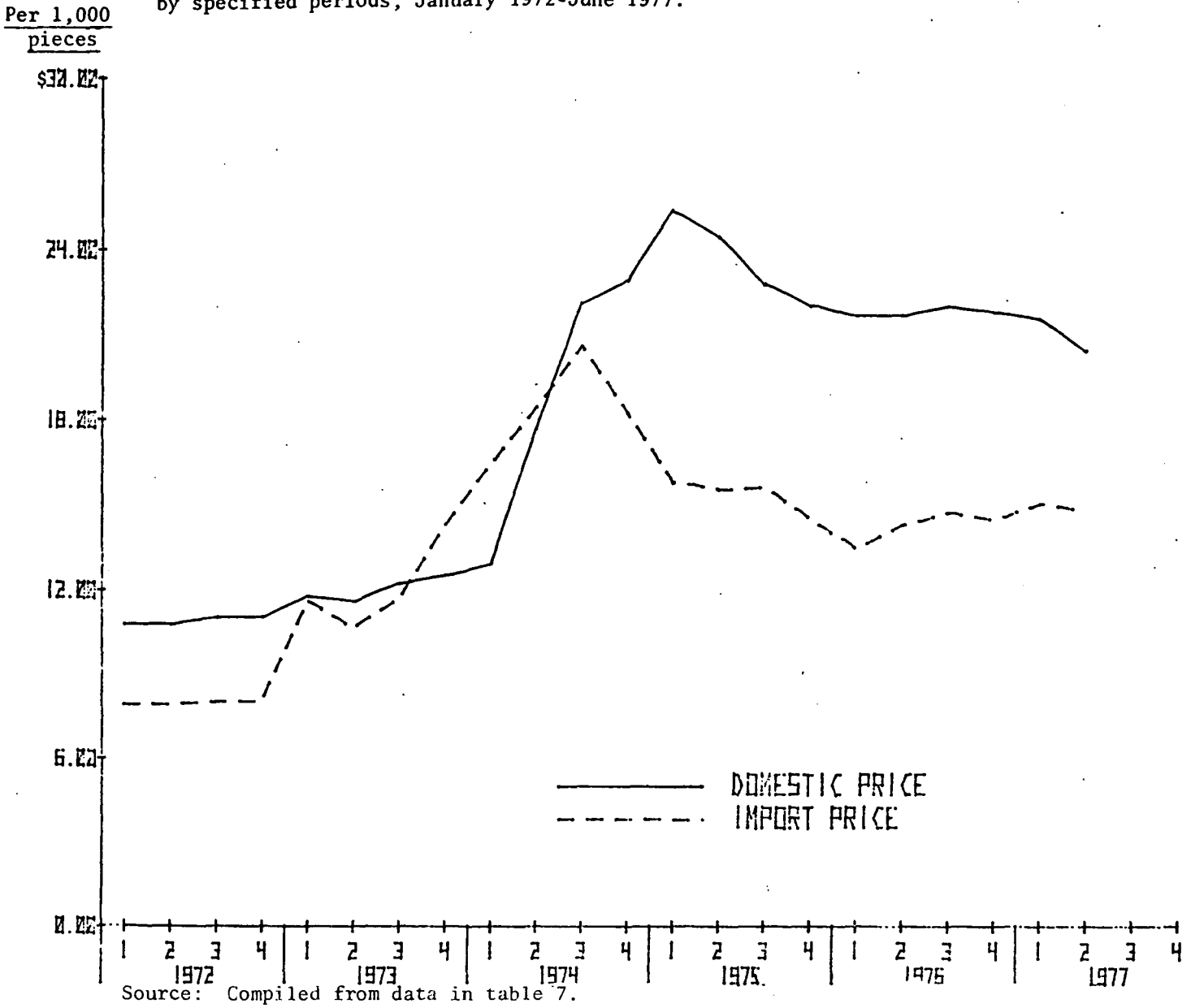
3/ Import cost is defined as the total delivered cost (including duty) to U.S. importers.

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

APPENDIX C

FIGURES

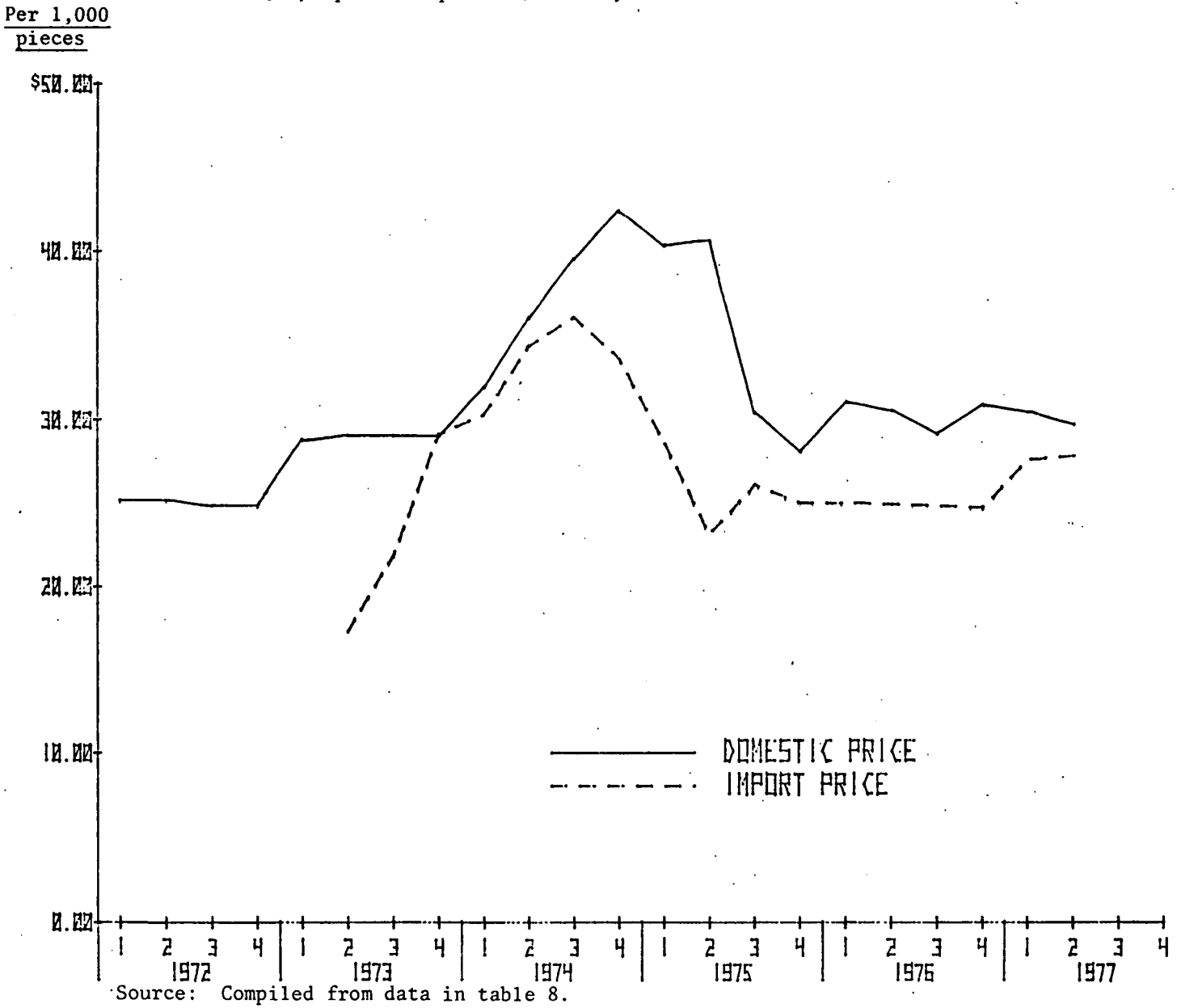
Figure 1.--Bolts, nuts, and large screws: Averages of lowest net selling prices received by U.S. producers and importers on sales of cap screws, grade 2, 3/8"-16x1", to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 7.

Note.--Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

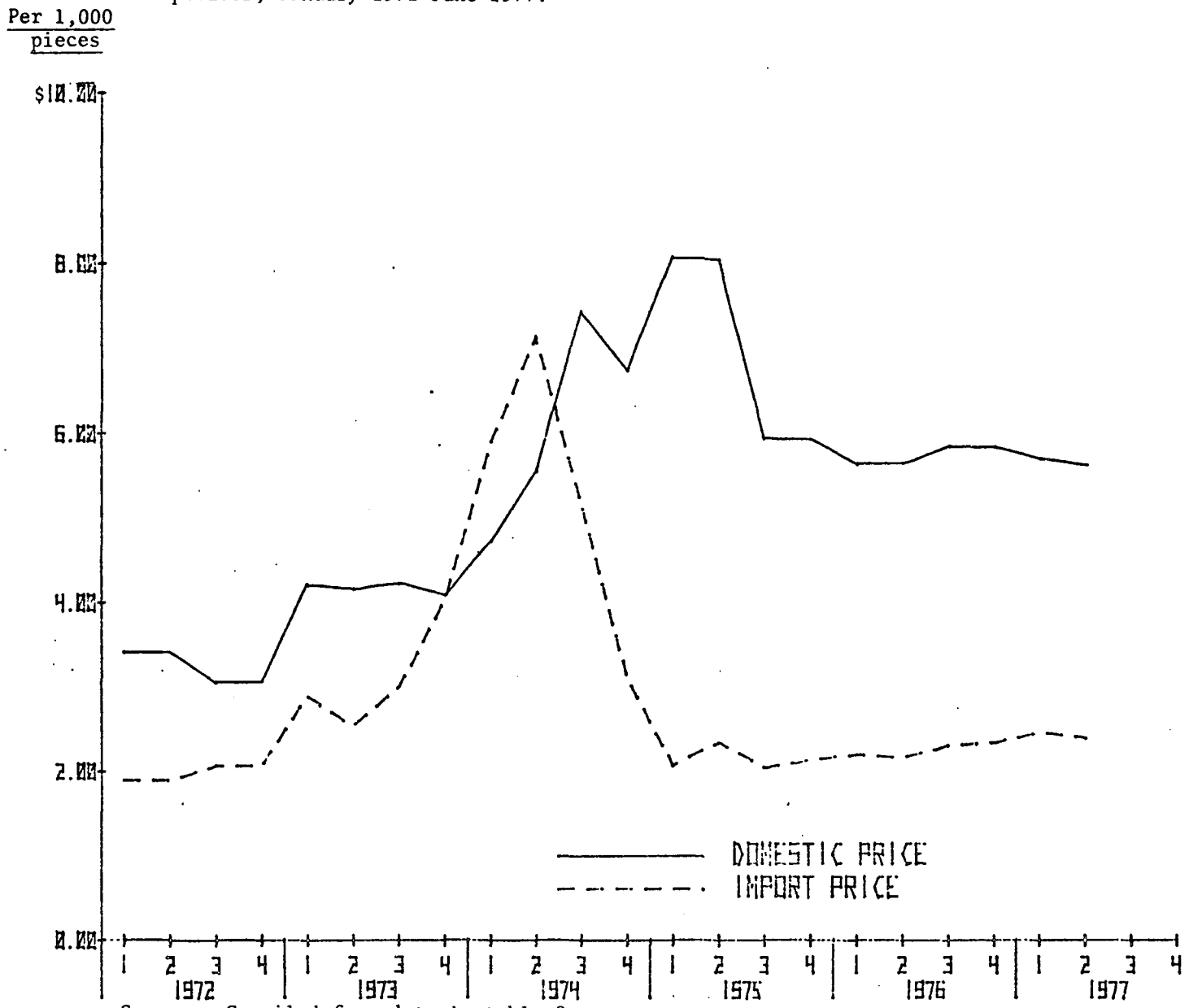
Figure 2.--Bolts, nuts, and large screws: Averages of net selling prices received by U.S. producers and importers on sales of cap screws, grade 8, 3/8"-16 x 1", to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 8.

Note.--Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

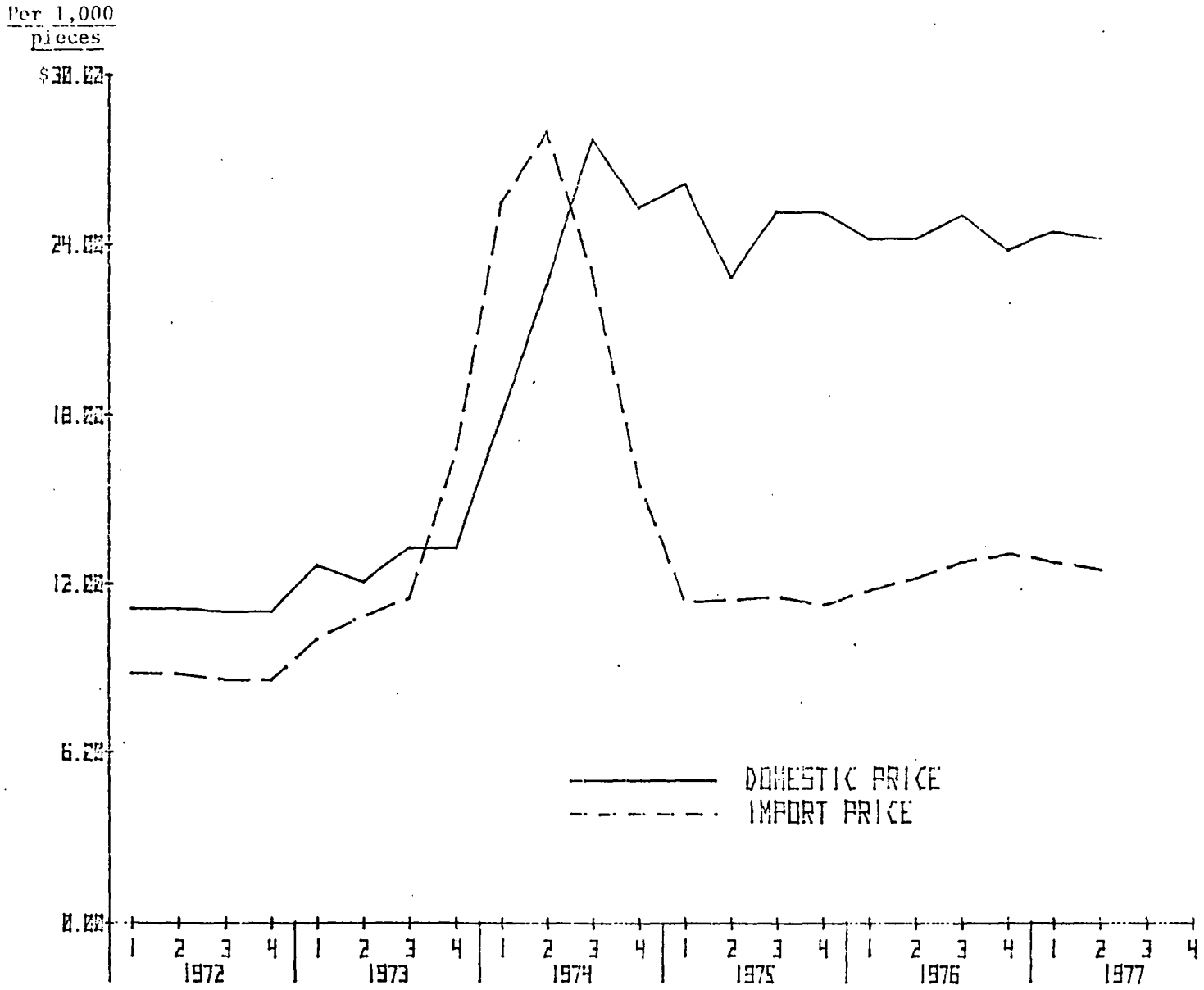
Figure 3.--Bolts, nuts, and large screws: Averages of lowest net selling prices received by U.S. producers and importers on sales of hexagon nuts, 1/4"-20, to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 9.

Note.--Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

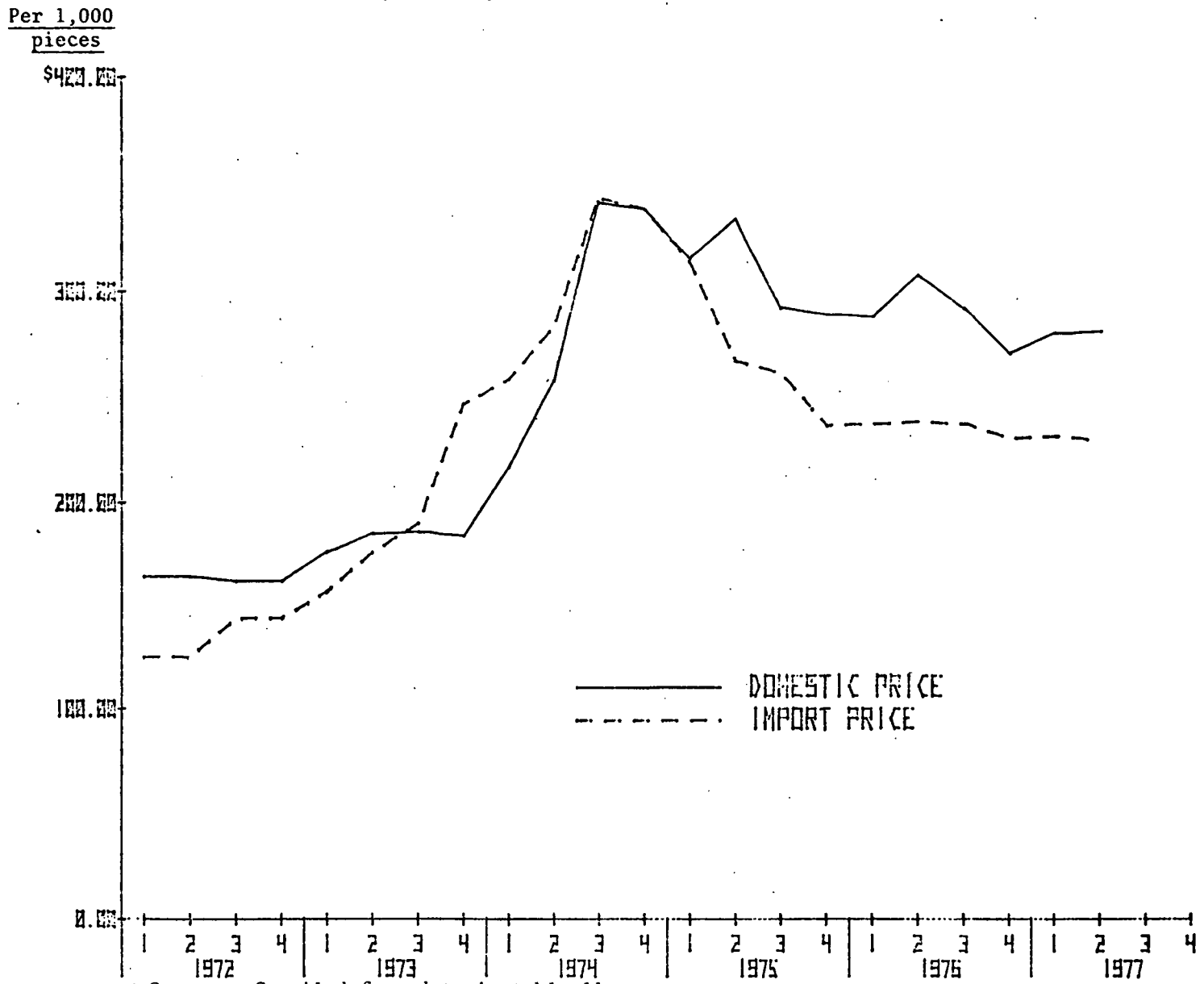
Figure 4.--Bolts, nuts, and large screws: Averages of lowest net selling prices received by U.S. producers and importers on sales of hexagon nuts, 1/2"-13, to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 10.

Note.--Weighted averages are used for the specified periods January-June 1975; simple averages are used for the specified periods July 1975-June 1977.

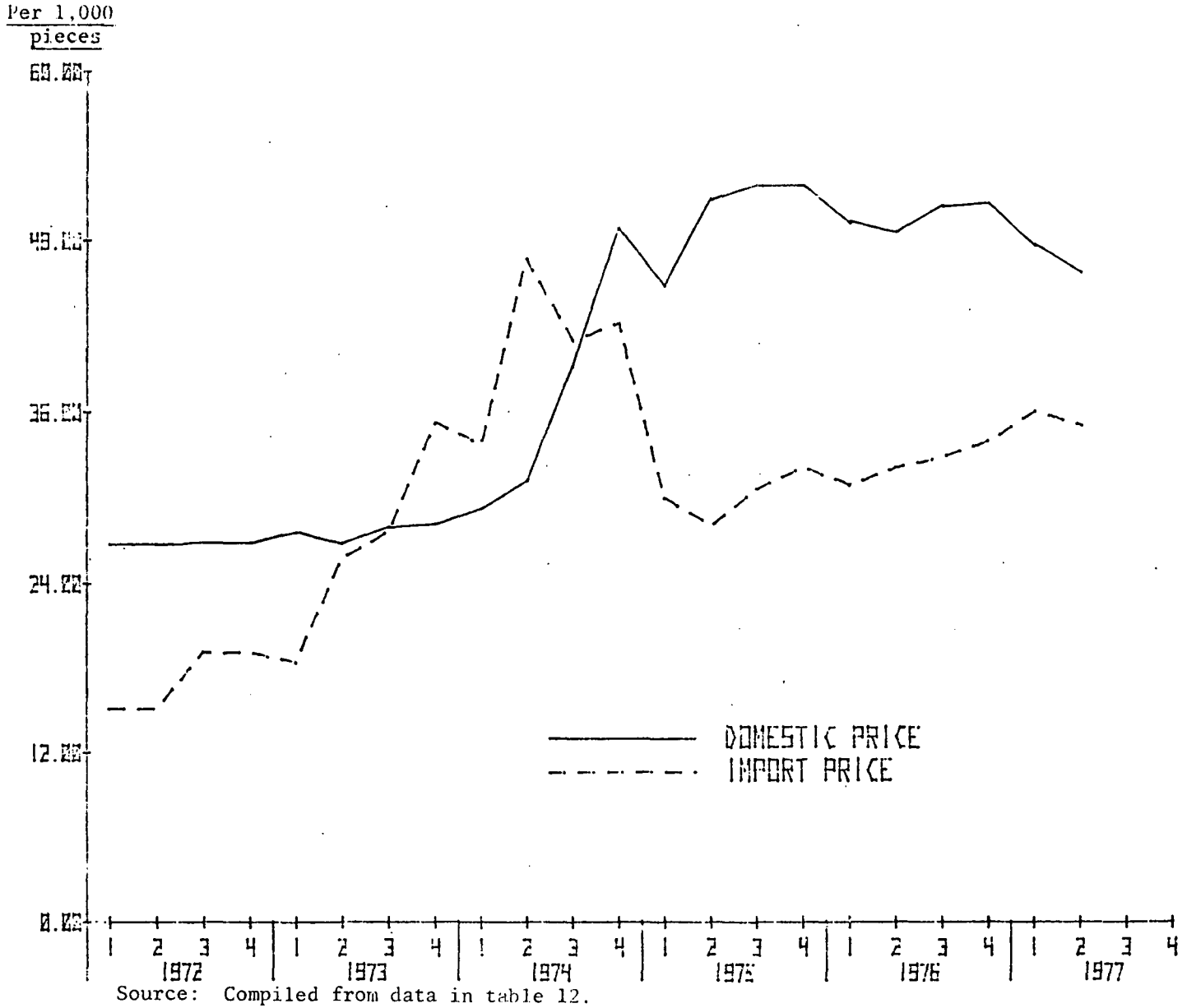
Figure 5.--Bolts, nuts, and large screws: Averages of lowest net selling prices received by U.S. producers and importers on sales of structural bolts, A325, with nut 3/4" x 2", to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 11.

Note.--Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

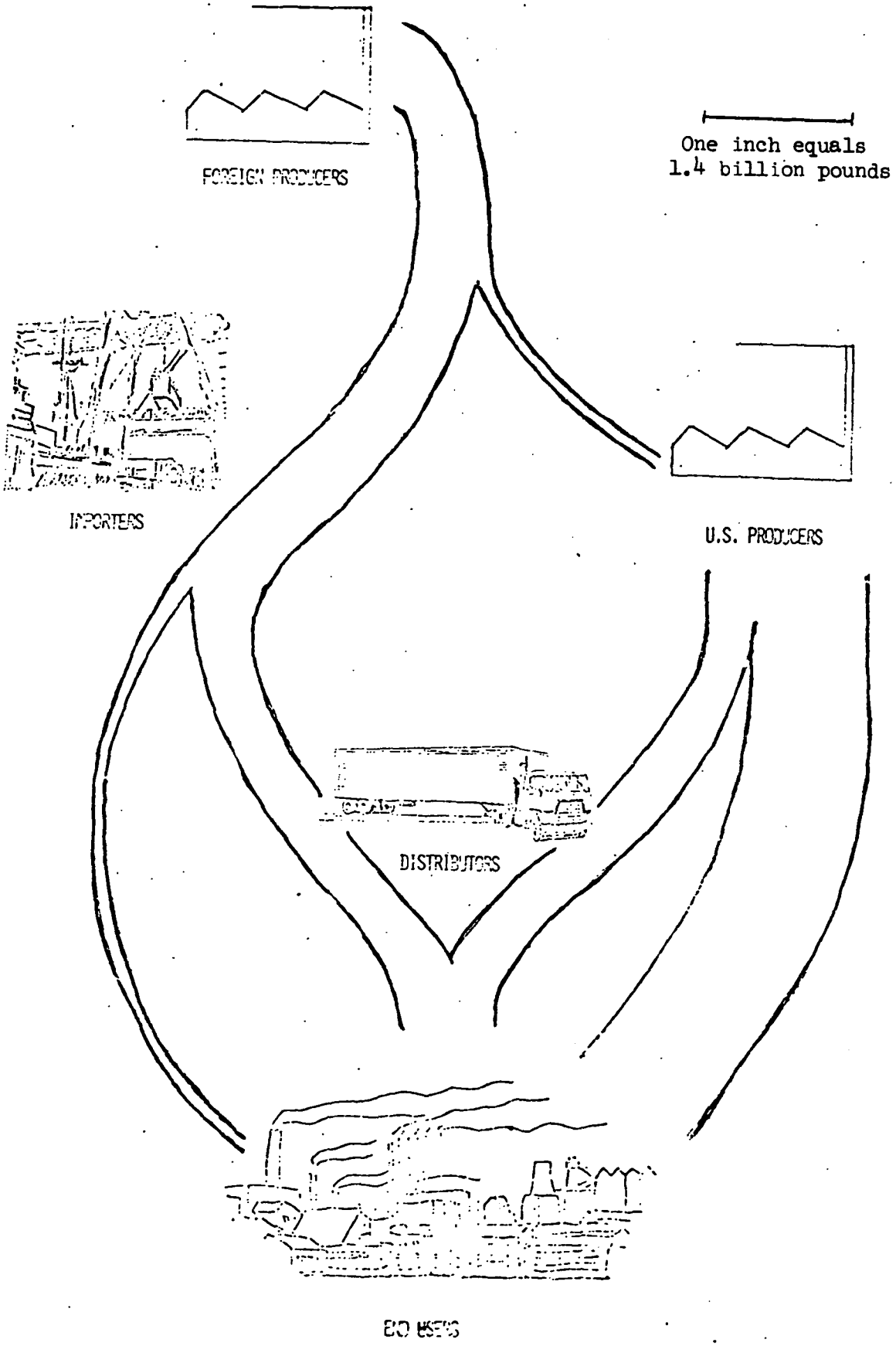
Figure 6.--Bolts, nuts, and large screws: Averages of lowest net selling prices received by U.S. producers and importers on sales of carriage bolts, 5/8" x 5", to distributors, by specified periods, January 1972-June 1977.



Source: Compiled from data in table 12.

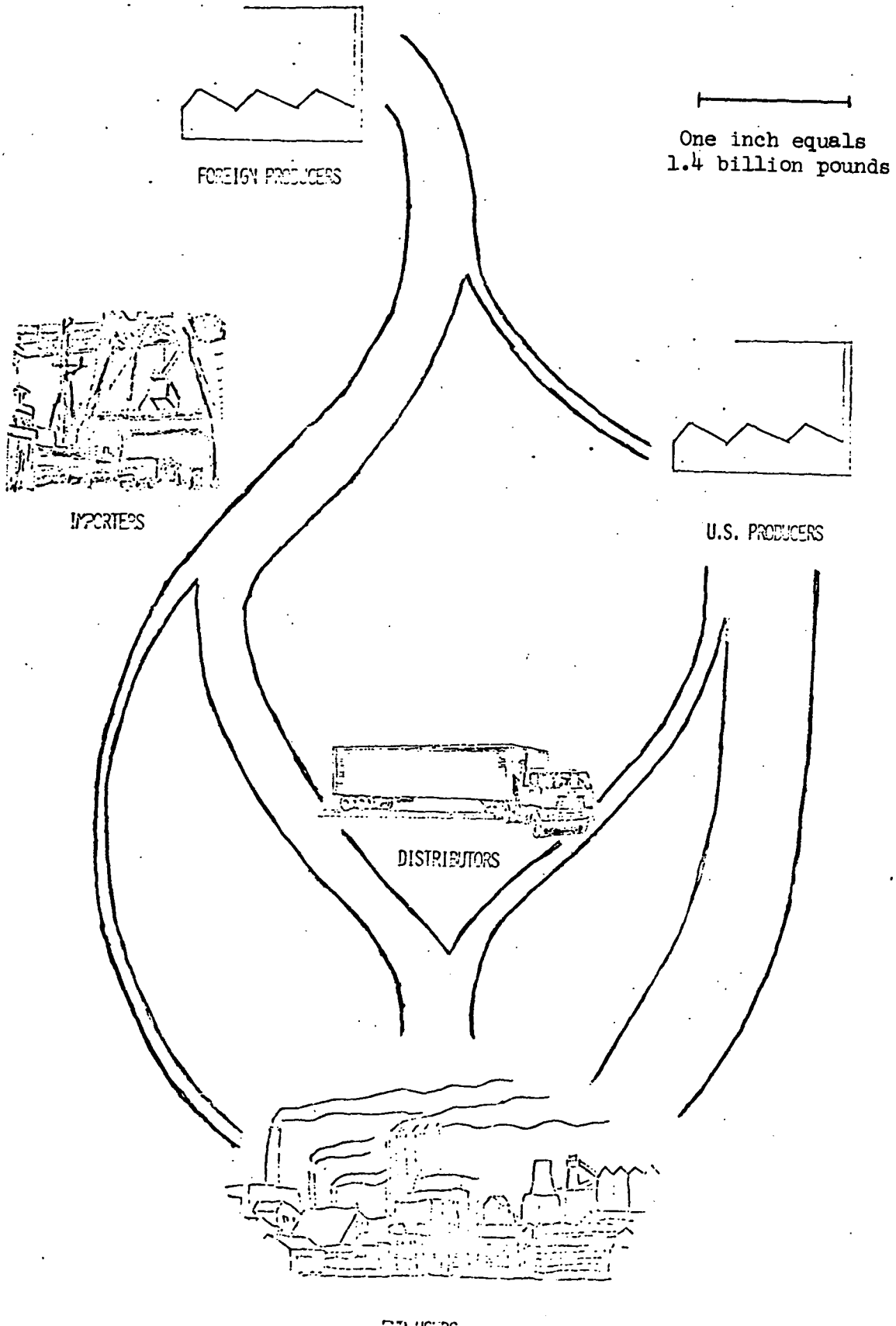
Note.--Weighted averages are used for the specified periods January 1972-June 1975; simple averages are used for the specified periods July 1975-June 1977.

Figure 7.--Bolts, nuts, and large screws: Apparent consumption, by channels of distribution, 1974.



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

Figure 8.--Bolts, nuts, and large screws; Apparent consumption, by channels of distribution, 1976.



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

APPENDIX D
SPECIFICATIONS FOR FASTENERS

The specifications for the fasteners for which price data were presented in tables 7 through 12 are as follows:

Cap screws:

Grade 2, 3/8"-16 x 1", hex head cap screws with washer face, plain finish, UNC Class 2A thread.
Grade 8, 3/8"-16 x 1", hex head cap screws with washer face, plain finish, UNC Class 2A thread.

Bolts:

High-strength structural bolts, A325, with heavy hexagon head, washer faced, and heavy hexagon nuts, 3/4" x 2".
Round head square neck carriage bolts, full size, black, 3/8" x 3", less nut.

Nuts:

Finished hexagon nuts, bright, double chamfered, plain finish, 1/4"-20.
Finished hexagon nuts, bright, double chamfered, plain finish, 1/2"-13.

Library Cataloging Data

U.S. International Trade Commission.
Bolts, nuts, and large screws of iron or steel. Report to the President on investigation no. TA-201-27 under section 201 of the Trade act of 1974. Washington, 1977.

19, A 1-82 p. illus. (USITC Publication 847)

1. Bolts and nuts. 2. Screws.
I. Title.