

# United States Export Performance

Following a prolonged period of stagnation, the volume of United States exports registered one of its sharpest surges ever between January and November 1978. Export volume increased at nearly a 25 percent annual rate. That compares with an average increase of less than 1 percent per annum over the preceding three years.

The marked reversal in export performance requires explanation. Why did United States exports remain so weak up through early 1978? And why has the subsequent turnaround in exports been so pronounced?

Providing thoroughly convincing answers to these questions may be impossible. Over recent years this country's exporters—and potential exporters—have been faced with significant changes in dollar exchange rates, with sharply differing economic growth rates here and abroad, and with diverse trends in national inflation rates. In those circumstances, the profit incentives to export have undergone considerable change from one year to the next. And, in an atmosphere of continuing uncertainty, the varied responses of exporters to those changes in incentives have been unusually hard to foresee on the basis of simple statistical relationships drawn from the past.

Nevertheless, based on the initial results of empirical research in progress at the Federal Reserve Bank of New York, a number of conclusions can be made:

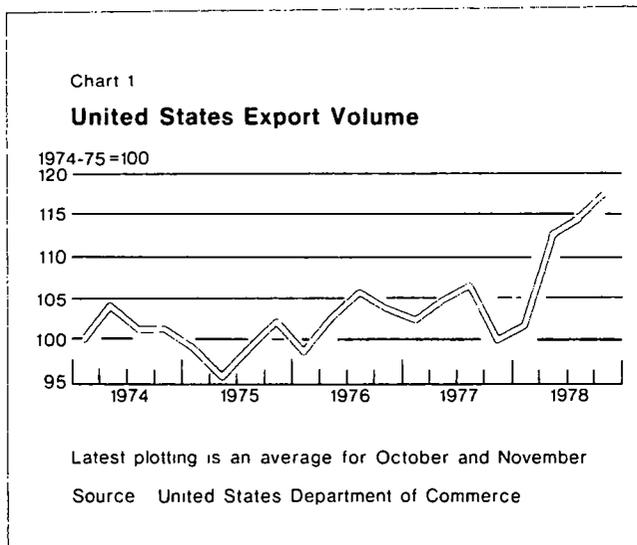
- Much of the weakness of United States export volume after the 1974-75 recession stems from the coincidence of slow growth of import demand in our major markets abroad, especially Japan and Canada, and relatively rapid economic growth in this country.

- The United States share of world markets deteriorated substantially in 1976 and 1977, largely because of a major erosion of the price competitiveness of our exports that occurred during the recession years.
- Price competitiveness has been restored by the exchange rate changes of the past two years. But it takes about two to three years for exports to respond significantly to improved profit opportunities, and those lags may have even lengthened as a result of the relative cyclical behavior of United States and foreign economies.
- Based on current patterns of adjustment, further substantial improvement in United States export volume—on the order of 10 to 15 percent—may be expected over the coming months.

## The export slump

In 1977 the value of this country's exports was about 18 percent higher than the average during the 1974-75 recession. But, after taking inflation into account, this amounted to an increase in export volume of less than 2 percent, or an average rise of less than 1 percent per year (Chart 1). This performance was poor relative to our own historical experience; export volume had increased about 5½ percent a year throughout the preceding decade. And it was poor by international comparison. Other industrial countries increased their export volume by about 13 percent between 1974-75 and 1977.

An emphasis on export *volume*, rather than on *value*,



requires some justification. The choice of a measure of export performance depends on the problem to be examined. Export value is an appropriate broad measure of the impact of trade flows on national income, since an increase in volume brings little economic gain when accompanied by a great drop in export prices relative to the general level of prices. Fortunately, the United States does not often find itself in such a situation. Because this country sells a wide range of goods abroad, the average level of our export prices is not much affected by price swings for a few commodities. By the same token, however, this means that, in order to achieve much of a reduction in the United States trade deficit, export volume must increase considerably.

There is another important reason to focus on export volume: it provides a more appropriate measure than export value for comparing the United States performance with that of other countries. Such a comparison is normally made in terms of the share of each country's exports in total world trade. But evaluating performance by value shares has drawbacks. The calculation of value shares requires that all export flows be translated into a common currency at current exchange rates. This immediately reduces the share of a country whose currency has depreciated. Value shares can, therefore, give a misleading indication of underlying performance. A country's export volume share may actually be improving during a given period in response to a previous depreciation of its currency even as its value share is still declining. For this reason, volume shares are preferred for cross-country comparisons of export performance.

Finally, changes in export volume are the appropriate measure for assessing the impact of foreign sales on domestic employment.

#### **Business cycle effects**

Following the 1974-75 recession, United States exporters faced slower growing export markets than did producers from other major industrial countries (Table 1). By and large, in this period as in the past, a high rate of export volume growth among industrial countries has been associated with relatively faster growing foreign markets. These differences in market growth rates account for only part of the differences in export performance among countries; other factors, such as price competitiveness, are also important. However, the impact is not negligible. For example, had United States export markets grown at the same rate as those for Japan over the period, the rate of increase in foreign sales volume for this country would have more than doubled, even assuming the United States suffered the same loss of relative market share that actually occurred. That would have translated into an extra \$3 billion of exports in 1977 (or 2½ percent of the total recorded).

That crude estimate, however, provides only a lower bound to the actual impact on our exports of slower foreign growth. Supply-side influences aggravated the effects on United States export performance of relatively weak demand in foreign markets. If foreign producers who compete directly with United States firms had faced more buoyant markets in their own countries, they might have run into constraints on supplying exports to third markets or they might have competed less aggressively for new business abroad, concentrating instead on meeting demand at home. This would have made it relatively easier for United States producers to compete both in other industrial countries and in the developing countries. Similarly, had the United States economy grown less rapidly than it in fact did, American firms would have found the export market relatively more attractive and competed there with more vigor.

The pattern of global recovery from the 1974-75 recession was particularly adverse for United States exports. Economic expansion in this country was vigorous by any yardstick. The actual rate of growth not only exceeded the economy's longer term potential growth rate, but it also exceeded the average growth rate achieved in recoveries from earlier postwar recessions.

The United States experience contrasts sharply with that of other industrial countries (Table 2). For them, economic recovery from the recession has been weak. Actual growth rates have been below historical recov-

Table 1

**Trade Volume and Market Shares for Selected Countries**

Exporting country	Own export volume growth 1974-75 to 1977 (percentage increase)	Rest-of-world import volume growth* 1974-75 to 1977 (percentage increase)	Average market share†		Marginal market share‡	Competitiveness ranking measures§ (ratio)
	(1)	(2)	1974-75 (percent)	1977 (percent)	(percent)	(6)
United States	18	13.6	15.1	13.5	2.0	0.1
Canada	17.9	16.1	4.4	4.5	4.9	1.1
Japan	33.6	16.4	7.2	8.3	14.8	2.1
France	14.4	15.5	7.0	6.9	6.5	0.9
Germany	12.7	14.8	12.5	12.3	10.8	0.9
Italy	21.5	15.9	4.4	4.6	5.9	1.3
United Kingdom	15.0	16.6	5.8	5.7	5.3	0.9

\* Based on world import volume minus that of the country for which the calculation is made

† Ratio of each country's export volume index to the rest-of-world volume index

‡ The change in each country's export volume between its 1974-75 average and its 1977 level divided by the change in rest-of-world import volume over the same period

§ Column 5 divided by column 3

Sources: International Monetary Fund *International Financial Statistics* and *Direction of Trade*

Table 2

**Import Volume and Real Domestic Growth**

Country	Import volume growth 1974-75 to 1977			Import Income elasticity	Gross national product growth at annual percentage rates			
	Actual (percentage increases)	Normal* (as a percentage)	Ratio of own to rest-of- world‡ (as a percentage)		Growth from 1974-75 to 1977	Actual recovery rate‡	Historic recovery rate	Long- term potential rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
United States	28.2	26.7	31.3	2.6	3.9	5.6	4.4	3.8
Canada	4.8	15.2	1.4	1.7	3.5	4.1	6.5	5.2
Japan	3.7	16.4	2.5	1.3	4.9	5.3	8.0	6.5
France	16.4	15.9	7.6	1.9	3.2	3.0	6.2	5.5
Germany	23.2	15.5	15.4	2.1	2.9	4.1	6.0	4.8
Italy	7.8	10.8	2.5	1.9	2.2	2.4	5.7	4.8
United Kingdom	1.8	4.9	0.8	2.1	0.9	2.3	3.3	3.0

\* Each country's import income elasticity times its annual growth rate (column 5) compounded over the two and one-half year period from the 1974-75 base to the end of 1977

† Rest-of-world import volume defined as in Table 1

‡ Actual rates of recovery are calculated from the trough quarter of the recession (which differs for each country) through the fourth quarter of 1977

Source: Staff estimates, Federal Reserve Bank of New York

Table 3

**Export Penetration of Four World Market Areas**

Exporting country	Market share 1974-75 (percent)	Market share 1977 (percent)	Marginal market share* (percent)	Competitiveness measure* (ratio)	Competitiveness Rank
<b>Industrial country markets†</b>					
United States . . . . .	12.6	11.4	7.4	0.6	5
Japan . . . . .	3.8	4.7	11.1	2.9	1
Germany . . . . .	12.0	11.6	9.2	0.8	4
France . . . . .	6.4	6.4	6.7	1.0	3
United Kingdom . . . . .	4.2	4.6	6.3	1.5	2
<b>Other European markets</b>					
United States . . . . .	9.4	7.9	-11.4	-1.2	5
Japan . . . . .	2.8	4.4	23.6	8.4	1
Germany . . . . .	3.8	12.1	-9.4	-0.7	4
France . . . . .	6.2	6.1	5.1	0.8	3
United Kingdom . . . . .	9.2	9.1	7.8	0.9	2
<b>Oil exporting country (OPEC) markets</b>					
United States . . . . .	17.5	16.6	15.5	0.9	4
Japan . . . . .	13.2	14.7	16.6	1.3	1
Germany . . . . .	12.0	13.5	5.1	1.3	1
France . . . . .	8.6	7.0	9.0	0.6	5
United Kingdom . . . . .	8.7	8.8		1.0	3
<b>Other less developed country (LDC) markets</b>					
United States . . . . .	20.4	16.0	-6.3	-0.3	5
Japan . . . . .	11.6	12.8	18.8	1.6	1
Germany . . . . .	6.6	5.8	1.8	0.3	3
France . . . . .	5.5	6.0	8.1	1.5	2
United Kingdom . . . . .	5.0	4.4	1.5	0.3	3

\* Defined as in Table 1

† A rest-of-industrial-market definition is used with respect to each country listed in the stub

Sources: International Monetary Fund *International Financial Statistics* and *Direction of Trade*

ery rates. And they have even been below longer term potential growth rates. In other words, growth was not fast enough to reduce significantly unemployed resources or to stimulate substantial import demand.

As a result, the United States market was exceptionally attractive to all producers. To foreign producers, the American economy provided nearly one third of the additional demand for "foreign" goods that was provided by the rest of the world combined. To American producers, faced with a buoyant home market and slack markets abroad, the incentives favored sales at home. Export efforts could be relaxed and domestic marketing became easier. Since less than 10 percent of United States gross national product (GNP) is exported, even a small shift in mar-

keting effort by United States producers can have a major impact on exports.

A particular consequence of the slow expansion abroad was a general weakness in world investment demand. Since capital goods form a substantial part of United States exports (30 percent over the past 14 years), weak investment spending had a major adverse effect on our foreign sales during the recovery period. The United States was the only industrial country in which the growth rate of real investment expenditure exceeded real income growth. German investment grew at the same rate as the economy in general. Italy suffered a 5½ percent decline, while real investment spending in the United Kingdom was but ½ percent above its 1974-75 level by the end of 1977. In Japan,

real investment spending rose by 2 percent, compared with cumulative real growth of 13 percent. Under these circumstances, the volume of United States capital goods exports rose less than 1 percent between 1974-75 and the beginning of 1978, compared with an average annual increase of about 8 percent per year over the previous decade.

Another major reason for our weak export performance can be found in the particular sluggishness of imports by Canada and Japan, two of our major markets. Over the last fourteen years, fully 30 percent of United States exports have been sold in Canada and Japan. Those two countries historically tend to increase their imports proportionately less than most industrial countries as their domestic economies expand. In technical terms, their "income elasticities of demand" are relatively low (Table 2). To make matters worse, in this recovery both Canada and Japan drew in far fewer imports than would be expected on the basis of past experience. For these countries, actual import volume growth turned out to be more than 10 percentage points below the growth that would have occurred had the historical relationships between import growth and income growth been maintained. Indeed, a closer look at Japanese import patterns shows an actual decline of about 10 percent in import volume from all industrial countries. United States export volume to Japan fell by a slightly larger proportion. Had Canadian and Japanese import volumes registered normal growth in relation to their income over the period, that alone would have added nearly \$4 billion to United States exports in 1977.

#### **Decline in market shares**

The weakness of United States exports over the recovery period is underscored by the severe drop in our share of foreign markets. The overall market share fell from about 15 percent for the 1974-75 average to under 14 percent in 1977 (Table 1). That means that at the margin less than 2 percent of the increase in world import volume outside the United States was met by American goods.

Comparisons with other countries are instructive. Japan improved its market share dramatically. At the margin, nearly 15 percent of the increase in world import volume outside Japan was met by Japanese goods. As a result, Japan's share of world markets rose from about 7 percent to around 8 percent. For other industrial countries, market shares did not change very much. Italy and Canada experienced small increases, while Germany, France, and the United Kingdom had minor declines in market shares.

These market share comparisons are based on aggregate rest-of-world imports, but obviously a country may do better or worse in different regional markets.

Table 3 provides information on selected regional markets that shows an across-the-board decline in United States market shares. In a number of areas there were even absolute declines in United States export volume. Japan, in contrast, increased its shares in all these areas dramatically. The German performance lies somewhere in between.

Rough orders of magnitude can be attached to the effects of declining market shares on United States export volume. Take the actual rate of foreign market growth faced by the United States and suppose that our market shares had remained constant, rather than falling as they actually did. Under those assumptions, United States export volume growth for the period would have been over 13 percent instead of about 2 percent. Supposing the same price increases that actually occurred, export value for 1977 would have been \$14 billion higher. In short, the fall in market shares is the most disturbing aspect of the export slump and accounts for nearly half of the \$31 billion merchandise trade deficit in 1977.

#### **Prices and exchange rates**

How much of this market share loss can be attributed to a deterioration in price competitiveness? Conversely, how much reflects the strength of the United States market and the relative weakness of other industrial country markets or the various nonprice influences on overall competitiveness—such factors as delivery delays, inadequate export financing facilities, or the effects of various government policies? Any answers to these questions must be viewed as highly tentative and subject to a considerable margin of uncertainty. Nevertheless, some preliminary estimates can be made.

Price competitiveness of exports depends on both the actual prices of goods produced here and abroad and the exchange rates for the dollar against other currencies. As illustrated in Chart 2, the price competitiveness of United States exports has fluctuated widely over recent years. Chart 3 breaks out the component parts: the ratio of national price levels and the weighted average or "effective" exchange rate of the dollar. It shows that, after exchange rates began to float in March 1973, our price competitiveness initially improved—at first because the dollar depreciated and then because inflation was lower here than abroad. The peak in price competitiveness in this period was reached in the second quarter of 1974. Then an acceleration of United States inflation led to a deterioration of our competitive position through mid-1975. An appreciation of the dollar extended that trend until late that year. By mid-1976, however, the loss of competitiveness was reversing as United States inflation

slowed relative to that abroad. This began to restore price competitiveness despite further appreciation of the dollar's weighted average exchange value. The improvement in price competitiveness gathered momentum during 1977 as the dollar fell sharply in the exchange markets. By 1978, domestic inflation had worsened but the dollar's continued depreciation more than compensated for the adverse competitive consequences. Even after the dollar's recovery in the exchange markets after November 1, United States price competitiveness was still around levels comparable to the 1974 peak.

The erosion in price competitiveness of United States exports between mid-1974 and early 1976 progressively depressed foreign demand for products made in this country. The adverse effect did not take place all at once, but only gradually as decisions were made at the margin whether to buy goods from the United States or from a competing firm located in another industrial nation. As a result, foreign goods were more frequently chosen whenever price was the determining factor. What is worse, the process con-

tinued long after the erosion of price competitiveness had begun to be reversed.

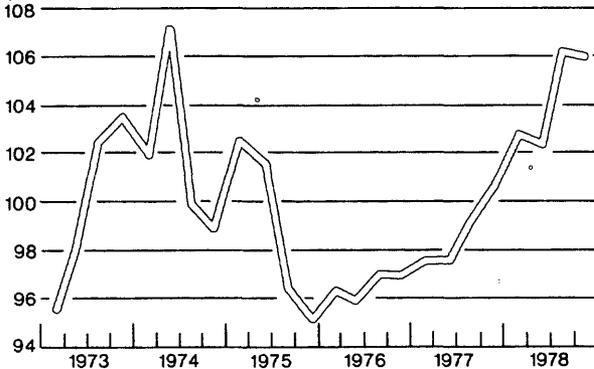
Economists concerned about international trade flows have sought to estimate statistically how and over what time period these factors affect exports. Our results suggest that adjustment lags extending two or three years after a major change in price competitiveness appear to be characteristic of United States exports. In other countries, for which capital goods exports are a less important component of total foreign sales, the time lags seem to be shorter.

By 1977, those lagged effects were having their maximum depressing effect on exports. Over half of the decline in the United States export market share is estimated to have resulted from the erosion in price competitiveness between mid-1974 and early 1976. In other words, for 1977, United States export volume might have been about 8 to 9 percent greater than it was had the erosion not occurred.

To be sure, that leaves much of the decline in market share unexplained. In particular, a large part of that residual may reflect aggressive efforts by ex-

Chart 2  
United States Export Competitiveness

Average for period=100

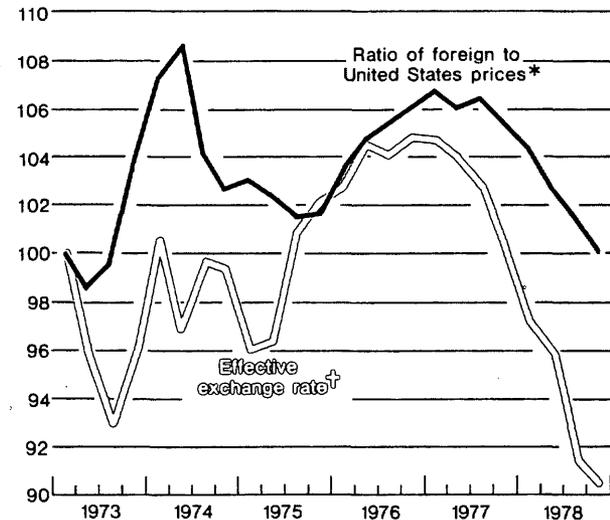


This indicator of changing price competitiveness of United States exports is a ratio of wholesale prices, measured in dollar terms, of the major trade competitors of the United States--Canada, France, Germany, Italy, Japan, and the United Kingdom--to United States wholesale prices.

An increase in the ratio suggests an improvement in United States competitiveness, a decline, a worsening. Foreign prices and exchange rates for each country are weighted by the average of the shares derived from, first, 1977 United States bilateral exports to each country and, second, 1977 exports of each country to markets other than the United States.

Chart 3  
Components of United States Export Competitiveness

1973-I=100



\*Prices are wholesale prices. Foreign prices are those of the six countries listed in the footnote to Chart 2 and are weighted in the manner described in that footnote.

†Exchange rates are in terms of foreign currency units per dollar. The effective rate is constructed by weighting dollar exchange rates for the currencies of the six foreign countries in the manner described in the footnote to Chart 2.

porters of some countries to develop and to expand market penetration at a time when domestic growth prospects in their countries looked weak and, at the same time, relative indifference by many American companies to export opportunities.

#### **Adjustment lags**

Just as the slump in United States export volume growth took time to materialize, a favorable response of export volume to improved price competitiveness after 1975 also came with a long delay. Before detailing the character of last year's export surge, it is worthwhile to discuss further why the adjustment lags are so long.

Generally, producers in economies that are relatively dependent on exports will be less prone to shift sales patterns between domestic and foreign markets in response to what they feel are transitory factors. When the export sector is large relative to the domestic sector, many producers may find a swift change in sales patterns to be excessively disruptive and undesirable. Therefore, exporters in export-dependent countries have an incentive to maintain their market shares by cutting profit margins. That behavior seems to have had a major effect in slowing adjustment to the changes in price competitiveness as they occurred.

In addition, our statistical analysis suggests that market participants may react fairly quickly to changes in prices of United States goods relative to foreign goods when such changes result from differing domestic inflation rates. But they may react comparatively slowly to changes in prices of United States goods relative to foreign goods when such changes result from movements in exchange rates.

A reason for these differential rates of response may be this. It is likely that domestic exporters and foreign purchasers will not alter their behavior in response to price incentives that they consider to be temporary. Changes in price competitiveness resulting from changes in domestic currency prices of manufactured goods may be viewed as relatively permanent. From experience, firms appear to be uneasy committing themselves to new listed prices only to retract the changes soon thereafter. But exchange rates are known to fluctuate widely over short periods of time. Thus, exporters and importers may take account of exchange rate changes only after rates have appeared to stabilize. That kind of behavior might result in lengthening the observed lag between exchange rate changes and changes in export volume.

The delay in responding may be even longer if exchange market expectations of United States exporters and foreign importers are conflicting. For example, when the dollar began to decline in 1977, United States

businesses may have expected an early rebound and may not have taken steps immediately to expand export sales. By contrast, many foreigners might have been willing to purchase United States goods as soon as they became "cheap enough", but held back orders in anticipation of still better prices later on should the dollar decline further.

Another complicating factor tends to lengthen the adjustment lags following an improvement in price competitiveness. Shifting sources of supply involves costs, and buyers may be willing to incur those costs only after they feel a price advantage will be permanent. Take, for example, a commodity like lumber, for which there is a uniform world price. Any depreciation of the dollar makes lumber cheaper to foreign purchasers in terms of their local currency. But lumber purchasers may decide to switch to American lumber only after the depreciation has become large enough to offset whatever adjustment costs are perceived, and the new rate is broadly expected to be sustained.

Suppliers, too, may have to incur additional costs by changing the focus of their sales effort. This is particularly true for products which, unlike lumber, are not uniform in nature, such as industrial machinery or computers. Such products may require a special sales effort because they have distinctive characteristics differing among national producers or because they are built to specification. This may necessitate a substantial marketing expenditure by the producer or the producer's sales agent which, in some cases, may include educating the prospective consumer as to the potential benefits of the product. The existence of these start-up costs when penetrating new markets also explains exporters' reluctance to bear new costs until they are sure that those costs can be recouped.

Finally, the response of exporters and potential exporters to a change in profit incentives to export may be conditioned by the nature of domestic inflationary pressures at the time. An initial improvement in price competitiveness resulting from a depreciation of the dollar may generate substantial foreign orders. For goods already in inventory, both buyer and seller could profit from a quick sale. But for goods that take time to produce, the incentives are more ambiguous if increased inflation is expected to accompany the depreciation. In that case, the exporter, faced with the prospect of higher costs, would tend to raise future delivery prices—and perhaps enough to discourage the potential buyer altogether. It may be that exporters are willing to make firm contracts for future delivery only after the depreciation clearly has gone far enough to compensate for anticipated inflation.

Indeed, a clear increase in sales abroad was delayed until the second quarter of 1978, when it was widely

felt that neither a sharp rebound for the dollar nor any likely acceleration in United States inflation would wipe out the existing profit potential to export.

### **The export surge**

Between January and November of last year, United States foreign sales volume increased at a 25 percent annual rate and the share of our exports in world markets recovered significantly.

The increases occurred across virtually all groupings of commodities sent to all areas of the world. The volume of agricultural exports rose at an annual rate of 18 percent, compared with 27 percent for nonagricultural export volume. Exports to Latin America and other developing countries have rapidly accelerated, in large measure because of exceptionally high agricultural purchases. Consumer goods exports to the nonindustrialized world have also risen substantially. Increased absorption by Western Europe of industrial materials and supplies indicates both the improvement in United States price competitiveness and the somewhat stronger growth of European economies. These changes have also led to mounting purchases of United States capital goods.

Based on our empirical research, about half of the increase in nonagricultural exports can be traced to the improvement in United States price competitiveness since the beginning of 1976 and about half to cyclical developments and other factors. For agricultural commodities, estimating the impact of the dollar's depreciation is more difficult, but it certainly contributed to the sudden strength of agricultural export volume early last year.

Relatively favorable price competitiveness can be expected to continue in the months to come, although it will be eroded somewhat to the extent that inflation here is faster than abroad. Nonetheless, a further gain of 10-15 percent in United States export volume is a reasonable anticipation, given an outlook for somewhat stronger growth of demand in foreign countries.

Looking to the longer term prospects for United

States exports, one clear challenge is to increase the number of firms that regularly do business abroad. The export promotion package announced by the Administration last September seeks to accomplish that as one of its objectives. The plan envisages increases in Export-Import Bank loan authorizations and expanded efforts to heighten producer awareness of foreign sales opportunities. In addition, it proposes elimination of the requirement that exporters must file environmental impact statements, a move that can help reduce delays in realizing new export opportunities. The extent to which other broad government policies—including those on human rights in foreign countries, on nuclear non-proliferation, on the Arab boycott, and on special business payments to foreign importers—may be impeding the growth of United States exports remains unclear.

Another major challenge is to improve United States productivity, a fundamental determinant of United States comparative advantage, by developing ways to strengthen business capital spending and research and development efforts. The latter, in particular, play an important role in opening up opportunities to export, and in the United States such expenditures have been lagging of late. As a percentage of GNP, United States expenditures on research and development have fallen from 2.7 percent in 1962 to 2.2 percent in 1978. Over approximately the same period such expenditures by Germany and Japan have risen 1 percentage point and ½ percentage point to 2.3 percent and 2.0 percent of GNP, respectively.<sup>1</sup>

Finally, United States export performance is likely to depend crucially on the outlook for world investment spending. The share of investment in GNP has declined in a number of important countries in recent years. A reversal of that trend would provide a significant underpinning for stronger United States exports in the future.

<sup>1</sup> National Science Board, *Science Indicators 1976* (Washington, D. C.: National Science Foundation), September 30, 1977.

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