ROBERT Z. LAWRENCE
Brookings Institution

An Analysis of the 1977 U.S. Trade Deficit

IN 1977, the merchandise trade accounts of the United States recorded the largest deficit to date—$31.4 billion. Viewed in historical perspective, any U.S. trade deficit is an unusual occurrence: until 1971, the U.S. trade balance had been in surplus throughout the twentieth century. In 1977, the United States had a deficit of 1.7 percent of the gross national product, or 11.5 percent of the combined value of merchandise exports plus imports. (By comparison, Italy's trade deficit in 1974 was 10.3 percent of trade value; the deficit of the United Kingdom was 4.7 percent in 1967 and 12.1 percent in 1974.) The U.S. invisibles account showed a substantial surplus, however, so that the estimated current-account deficit in 1977 of $19.3 billion was 7.1 percent of the value of merchandise trade.

The present U.S. trade deficit is particularly conspicuous because the balance has declined precipitously since late 1975. In 1975:4, the trade balance (seasonally adjusted annual rate) was an $8.9 billion surplus; one year later it had become a deficit of $14.4 billion, and by 1977:4, the deficit had grown to $35.5 billion. This change in the trade balance resulted from a slow growth in the value of U.S. exports (an increase of 7.1

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percent in 1976 and 5.0 percent in 1977) and a rapid increase in the value of imports (26.5 percent in 1976 and 22.4 percent in 1977).[1]

The decline in the trade balance has been widespread geographically. Of the $39.3 billion overall decline between 1975 and 1977:3, the decline in the trade balance between the United States and developed countries ($14 billion), and that between the United States and members of the Organization of Petroleum Exporting Countries ($13.8 billion), each accounts for slightly more than one-third, and the decline in the trade balance with non-OPEC developing countries accounts for most of the remainder.

Some unusual circumstances contributed to the large 1975 surplus from which these declines are calculated. For most of the year, the U.S. economy was in its deepest postwar recession, while many of its trading partners had experienced much smaller percentage declines in output. The 11.2 percent reduction in import volumes in 1975 followed a 3.3 percent drop in 1974. The value of U.S. imports fell by 5.4 percent in 1975 while the value of exports increased 8.9 percent. Exports increased as a result of the expansion of the OPEC market, the increase of capital-goods investment that followed the bottlenecks of 1973 to 1974, and a strong world grains market. In addition, U.S. manufactured goods enjoyed the full cumulative effects of the price advantages conferred by the dollar devaluations of December 1971 and 1973.

Initially the decline in the U.S. trade surplus was viewed as a positive development. Americans recognized it as a characteristic of a recovering economy. In other countries the decline was taken as an indication of good prospects for growth led by exports. To observers of the international economy, it implied that the United States was at last assuming its share of the "incompressible OPEC surplus." Later, as the deficit grew in size and confidence weakened in the value of the dollar, observers became less sanguine. In Europe and Japan, the apparent failure of the United States to adopt energy-conservation measures was criticized. Americans, however, blamed European and Japanese policymakers for not stimulating internal demand in their economies.

Attention also focused on the possibility of a decline in the U.S. com-

1. The figures given here and in the following paragraph refer to merchandise exports and imports (excluding certain military goods), balance-of-payments basis. They are taken from "U.S. International Transactions," quarterly article in *Survey of Current Business,* vol. 57 (June, September, and December 1977), table 3, and unpublished data from the U.S. Bureau of Economic Analysis.

petitive position. Officials from the Treasury and the Federal Reserve denied any erosion of the U.S. position, while those at the Department of Commerce were not that certain.[2] Various observers cited additional factors that have contributed to the trade deficit: the curtailment of imports by less developed countries (particularly those in Latin America) in response to their debt accumulation, the rapid growth of their manufacturing capabilities, the deterioration of U.S. agricultural terms of trade, and the effects of a particularly severe winter on U.S. oil imports.

In this paper I present an analysis of the causes of the current U.S. deficit. Some are transitory or cyclical in nature; others indicate a permanent change in the structure of the world economy. Some are self-correcting or are changes that are expected to be absorbed, while others may require policy measures in the short or long run. A quantitative assessment of these different causes is important for the design of appropriate policy.

Commodity Composition of the Trade Balance

In table 1, the merchandise trade balance is decomposed into categories of major commodities. Between 1975 and 1977, the overall bal-

2. "The swing in the trade balance is due almost entirely to two factors: (1) the growing U.S. dependence on foreign oil and (2) the fact that our major trading partners have achieved less than we by way of sustained economic expansion. There has been no significant loss of U.S. competitiveness in this picture." (Remarks by C. Fred Bergsten, Assistant Secretary of the Treasury for International Affairs, before the Subcommittee on Trade of the House Committee on Ways and Means, U.S. Department of the Treasury, *News,* B-532, November 3, 1977, p. 1.) "An examination of the share of U.S. exports in the markets of particular countries indicates that we have not experienced a declining share in most of them. . . . An examination of . . . exchange rates adjusted for different degrees of price inflation here and abroad . . . also suggests that neither our export nor our domestic economy has, over the past 2 years, lost price competitiveness." (Statement by Henry C. Wallich, Member, Board of Governors of the Federal Reserve System, before the Subcommittee on Trade of the House Committee on Ways and Means, November 3, 1977, *Federal Reserve Bulletin,* vol. 63, November 1977, p. 985.) "The consensus among economists is that a decline in U.S. competitiveness is not a primary cause of the U.S. trade deficit at this time. This does not mean, however, that the U.S. may not have experienced some loss in its relative competitive position or that competitiveness is not a problem for the United States." (Statement by Frank A. Weil, Assistant Secretary of Commerce for Domestic and International Business, before the Joint Senate-House Subcommittee on International Economics of the Joint Economic Committee, October 11, 1977; processed, p. 7.)

Table 1. U.S. Trade Balances, 1970–77

Billions of U.S. dollars, annual data or seasonally adjusted annual rates

Type of trade balance	1970	1971	1972	1973	1974	1975 First half	1975 Second half	1976 First half	1976 Second half	1977 First half	1977 Second half[a]
Merchandise[b]	2.6	−2.3	−6.4	0.9	−5.4	9.5	8.6	−5.8	−12.8	−29.9	−32.9
Agricultural	1.6	2.1	3.0	9.5	12.0	12.8	12.4	11.7	12.7	10.7	10.9
Nonagricultural	1.0	−4.3	−9.4	−8.6	−17.4	−3.3	−4.0	−17.5	−25.5	−40.6	−43.8
Manufactured goods[c]	3.5	*	−4.1	0.1	8.4	17.6	22.4	13.8	11.6	5.2	0.7
Fuels and lubricants[b]	−1.5	−2.3	−3.4	−7.0	−23.9	−22.0	−25.5	−29.3	−35.6	−43.6	−41.6
Current account	−0.4	−4.0	−9.9	−0.4	−5.0	10.9	12.2	2.0	−4.9	−17.5	−21.1[d]

Sources: *Survey of Current Business*, various issues; Department of Commerce, *News, BEA*, 77–95, December 21, 1977; U.S. Bureau of the Census, *Highlights of U.S. Export and Import Trade* (Government Printing Office), various issues; and unpublished data from Bureau of the Census and U.S. Bureau of Economic Analysis.

a. Preliminary.

b. Balance-of-payments basis; excludes exports and imports of U.S. military agencies meeting certain specifications.

c. Standard international trade classifications 5–8. Exports and imports are valued free alongside ship (except 1970–73 imports, which are customs-value basis); exports include grant-aid shipments of the U.S. Department of Defense, military assistance programs.

d. Author's estimate.

*Less than 0.05 billion.

ance declined by $40.4 billion. Nearly $19 billion of this was a decline in the balance in fuels and lubricants from rising fuel imports. An additional $17.1 billion was a decline in the balance in manufactured goods. Although substantial changes occurred in the prices and total values of individual agricultural imports and exports—including a $2.3 billion increase in the value of green coffee imports, a $1.1 billion decline in the value of grains exports, and a $1.1 billion rise in soybean exports—the overall agricultural balance declined by only $1.9 billion. In the remainder of the paper I focus on fuels and manufactured goods, the two commodity categories responsible for most of the change in the trade balance between 1975 and 1977.

Fuels and Lubricants Trade

Table 2 summarizes U.S. fuels trade in recent years. The value of U.S. imports of fuels has increased dramatically, from $8.3 billion in 1973 to $28.5 billion in 1975 to $47.4 billion in 1977. The volume of imports has risen to fill the growing gap between increasing domestic energy demand and declining domestic supply. Domestic production of crude oil fell by 3.1 percent from 1975 to 1976, and an additional 2.0 percent through mid-1977, continuing a decline that has averaged 3.5 percent a year since 1972. This trend was reversed in the second half of 1977 with the opening of the Alaskan pipeline. Total domestic petroleum demand rose 6.9 percent in 1976 and 5.7 percent in 1977, inducing increases of 20.5 and 19.5 percent in import volumes in the two years. Between 1975 and 1977, the share of imports in total petroleum consumption rose from 37 to 47 percent. U.S. imports have grown faster than those of other, more import-dependent economies, in part because the United States began with an import base that was a smaller percentage of overall supplies.

Because the members of OPEC have spent some of their proceeds on U.S. exports, it would be incorrect to consider the entire increase in U.S. fuels expenditure as widening the trade deficit. The long-run respending coefficient is probably only about 16 cents to the dollar, however, so that most of our oil increase does lead to a decline in the trade balance.[3]

3. In 1976, OPEC imports of goods (f.o.b.) increased by about two-thirds of the increase in OPEC export earnings. The United States had an 18 percent share in the OPEC market, so that direct respending amounted to 12 cents per dollar. In-

Table 2. U.S. Fuels Trade, 1972–77

Annual data or annual rate

Item	1972	1973	1974	1975	1976	1977			
						First quarter	Second quarter	Third quarter	Fourth quarter
Imports[a]									
Total value (billions of dollars)	4.9	8.3	25.5	28.5	37.1	46.3	50.3	48.6	44.3
Petroleum value	4.3	7.6	24.3	27.0	34.6	44.1	48.0	45.8	41.5
Unit-value index									
Crude oil	100.0	123.1	419.3	434.0	464.1	483.6	499.6	501.2	505.8
Refined products	100.0	131.7	419.6	449.1	447.4	533.2	540.0	525.3	521.8
Exports[a]									
Total value (billions of dollars)	1.7	1.9	3.6	4.8	4.7	4.2	5.2	5.3	4.3
Total unit-value index	100.0	112.0	224.4	263.9	265.2	285.1	279.0	282.4	282.3
Addendum[b]									
Total petroleum consumption (mbd)[c]	16.4	17.3	16.7	16.3	17.4	19.7	17.7	17.8	18.7
Domestic crude	9.4	9.2	8.8	8.4	8.1	8.0	8.0	8.3	8.6
Imported	4.7	6.3	6.1	6.1	7.3	9.4	8.5	8.5	8.1
Imports as percent of total	28.7	36.1	36.7	37.1	41.8	47.6	48.2	47.6	42.9

Sources: Dollar values, *Survey of Current Business*, various issues, and Bureau of Economic Analysis, unpublished data; unit-value indexes, Bureau of the Census, Foreign Trade Division; quantities, U.S. Department of Energy, *Monthly Energy Review*, various issues, and unpublished data.

a. Census Bureau basis (1972–74) and balance-of-payments basis (1975–77).

b. Bureau of Mines basis.

c. Total consumption includes processing gain, natural gas liquids, and other hydrocarbon supplies.

The growth in fuel demand in 1977 was extraordinary. Given the 6.0 percent growth in U.S. real GNP between 1975 and 1976, the 6.9 percent rise in domestic demand for petroleum products in 1976 was not unexpected. In the first nine months of 1977, however, the rise in refined petroleum demand of 8.0 percent, accompanied by an increase of 24.3 percent in oil imports, occurred despite a rise of only 4.7 percent in real GNP over the same period. An exceptionally cold winter and poor rainfall in the Northwest, which led to a dramatic loss in hydroelectric power, accounted for this extraordinary rise in demand.

U.S. imports averaged 8.8 million barrels a day (mbd) for the first nine months of 1977.[4] My estimates would attribute about 0.36 mbd in the first quarter to the effects of the cold winter on the demand of residential and commercial establishments for extra heating oils; perhaps 0.1 mbd over the winter because increased demand by high-priority residential users reduced natural gas available to commercial, industrial, and utility establishments; and 0.43 mbd for the full nine months because of the loss of hydroelectric power. Together these unusual events raised imports by 0.57 mbd over the nine months, or a total of 154 million barrels. At $13.26 a barrel, the implied increase in U.S. dollar imports was $2.0 billion, or an annual rate of $2.7 billion.[5] In addition, demand was apparently enlarged by an unusual buildup of oil inventories in 1977. Total stocks of crude oil and refined products in the third quarter of 1977 were about 11 percent greater than those a year earlier.

Realistic projections put 1985 oil imports at about 12 mbd. These projections imply an average annual growth in the volume of oil imports of

directly, however, OPEC spending would raise incomes abroad and thus increase U.S. exports to third countries. A rough estimate adds an additional 3.4 cents of U.S. exports from this source. There would also be some additional OPEC purchases of services.

4. The calculations here use U.S. Bureau of Mines figures from the *Monthly Energy Review*. Measured on a balance-of-payments basis, imports tend to be about one-half million barrels a day larger.

5. Additional demand for heating oil was estimated using a method suggested by Heywood Fleisig of the Federal Reserve Board. An elasticity of a 9 percent increase in fuel use for a 10 percent increase in degree-days was obtained from American Society of Heating, Refrigerating and Air-Conditioning Engineers, *ASHARE Guide and Data Book: Systems, 1970* (ASHARE, 1970), p. 628. The effect of the natural gas curtailment on industry was derived by comparing actual demand with an estimate by the U.S. Department of Energy, which assumes normal weather conditions. The estimate of the loss of hydropower assumes that the entire shortfall in power production from its 1975 level was met by oil imports.

between 3.5 and 4.5 percent from 1977 to 1985. Thus the 1976 and 1977 growth rates of over 20 percent seem to be transitory. If the real value of total imports grows at historic rates and real oil prices are held to a 2 percent annual increase through 1985, the oil component will not grow more rapidly than the overall value of imports.

Manufactured-Goods Trade

Manufactured goods account for approximately two-thirds of U.S. merchandise exports and about half of U.S. imports. Because most components in the remainder of U.S. trade (agriculture, fuel, and other crude materials—primarily lumber and ores) have low income and very low price elasticities of demand and supply, manufactured goods are even more significant than these proportions would suggest in determining the overall responsiveness of the trade balance to changes in incomes and prices. As indicated in table 3, export unit values have risen more rapidly since 1975 than import unit values. This improvement in the terms of trade has been overwhelmed by a stagnation in export volumes and a rapid growth in import volumes, resulting in a steady decline in the balance of trade in manufactured goods from $20.0 billion in 1975, to $5.2 billion in the first half of 1977, and $0.7 billion in the second half of 1977.

There is almost unanimous agreement that the disparity in the rates of cyclical expansion between the United States and its trading partners has been a major factor in this deterioration. However, the contribution made by a decline in the U.S. competitive position has been the subject of considerable debate. In particular, some administration spokesmen have strongly denied that there is any evidence of a "competitive decline." I turn first to this issue.

THE U.S. COMPETITIVE SITUATION

A change in competitiveness between two economies can arise either from a change in the relative prices of their tradable goods or a change in their relative exchange rates. In a world of multilateral trade and many tradable commodities, no simple measure can accurately portray a nation's competitiveness. Several indicators are presented in table 4.

Although the measures differ in order of magnitude, they indicate an

improvement in U.S. competitiveness between 1970 and 1974 and a subsequent erosion of competitiveness between 1975 and 1976. If prices have their effects with some lag, this erosion should provide part of the explanation for the recent growth in the trade deficit; it is still too early for the improved competitiveness of recent quarters to have affected trade flows.

Assuming raw-materials costs in different countries increase by similar amounts, relative export prices will be determined by standard unit labor costs (wages in relation to normal productivity), profit margins, and exchange rates.[6] Although the relative price of U.S. exports fell sharply between 1970 and 1974 (column 1), it did not decline by the same order of magnitude as the dollar-denominated standard unit labor costs (column 6). This suggests that U.S. exporters enjoyed an improvement in their profit margins relative to those of other exporters. About half the decrease in relative standard unit labor costs over this period can be attributed to changes in exchange rates and half to a smaller rise in standard unit labor costs in the United States.

The turnaround of roughly 15 percent in relative export prices from 1975:1 to 1976:2 (column 1) parallels exchange rates remarkably; in domestic currencies, relative standard unit labor costs did not change appreciably, and the similarity of changes in prices and standard unit labor costs suggests that relative profit margins remained constant. The rise from 1975 appears to have been smaller in relative import prices than in relative export prices, but more persistent; relative import prices increased only in the third quarter of 1977. This could reflect a greater willingness on the part of foreign sellers to maintain their dollar prices in the U.S. market or the larger role that developing countries (with weaker currencies) have in U.S. imports of manufactured goods.[7]

6. Standard unit labor costs were estimated using the method described by Charles L. Schultze, "Falling Profits, Rising Profit Margins, and the Full-Employment Profit Rate," *BPEA, 2:1975,* pp. 449–69. The cyclical variables used in this estimation were those of Jacques R. Artus, "Measures of Potential Output in Manufacturing for Eight Industrial Countries, 1955–78," International Monetary Fund, *Staff Papers,* vol. 24 (March 1977), pp. 1–35, and an unpublished update of the Artus material, provided by the IMF.

7. From June 1976 to June 1977, the Department of Commerce's index of the effective dollar exchange rate, which uses the U.S. import-weighted exchange rates of fourteen developed countries, indicated a 4 percent depreciation of the dollar; a similar index using the exchange rates of sixty-seven countries showed an appreciation of 1 percent. Calculated from data in U.S. Department of Commerce, *International Economic Indicators,* vol. 3 (September 1977).

Table 3. Trade in U.S. Manufactured Goods, 1974–77

Values in billions of U.S. dollars, annual data or seasonally adjusted annual rates

Type of trade	1974	1975		1976		1977		
		First half	Second half	First half	Second half	First half	Third quarter	Fourth quarter
Exports[a]								
Value[b,c]	63.7	68.7	73.6	74.9	79.4	79.3	82.8	80.6
Quantity index[d]	203.0	195.9	194.1	204.2	195.8	203.9	189.7	193.4
Unit-value index[d]	153.1	177.3	180.0	187.1	193.6	197.0	202.8	206.7
Imports[a]								
Value[b]	55.3	51.1	51.2	61.1	67.8	74.1	80.6	81.4
Quantity index	189.8	156.2	161.8	195.5	210.9	225.8	230.6	237.8
Unit-value index	188.0	212.1	208.6	210.2	214.8	218.0	226.1	227.6
Balance								
Value[b,c]	8.4	17.6	22.4	13.8	11.6	5.2	2.2	−0.8
Ratios								
Quantity index, exports to imports	1.07	1.25	1.20	1.04	0.93	0.90	0.82	0.81
Unit-value index, exports to imports (terms of trade)	0.81	0.84	0.86	0.89	0.90	0.90	0.90	0.91

Major manufactures value[e]								
Capital goods, except automotive								
Exports	29.9	34.5	36.4	36.9	39.8	37.8	40.5	...
Imports	9.3	9.4	9.7	10.4	11.5	12.5	14.2	...
Iron and steel products								
Exports	3.0	3.1	2.7	2.4	2.4	2.2	2.1	...
Imports	5.6	5.8	3.4	4.0	4.8	5.4	6.8	...
Automotive vehicles, parts and engines								
Exports	8.2	9.3	10.8	11.0	11.5	12.1	11.9	...
Imports	12.0	10.4	12.9	15.8	16.5	17.6	19.2	...
Consumer goods (nonfood) except automotive								
Exports	6.3	6.1	6.8	7.6	8.2	8.5	9.4	...
Imports	14.8	13.2	14.2	17.3	19.5	22.0	22.6	...

Sources: U.S. Bureau of the Census, *Highlights of U.S. Export and Import Trade*, various issues; *Survey of Current Business*, various issues; and data from Bureau of the Census, Foreign Division, and Bureau of Economic Analysis.

a. Standard international trade classifications 5–8.
b. Free alongside ship.
c. Exports include grant-aid shipments of the Department of Defense, military assistance programs.
d. Excludes military grant-aid shipments. Indexes, 1967 = 100; not seasonally adjusted.
e. Census trade data. Exports include military grant-aid shipments.

Table 4. Indicators of the U.S. Competitive Position, 1970–77[a]

Year or quarter	$\frac{PX^{US}}{PX^{UN\$}}$ (1)	$\frac{PWPI^{US}}{PM^{US}}$ (2)	$\frac{PX^{US}}{PWPI^{US}}$ (3)	$\frac{PWPI^{US}}{PWPI^{ROW\$}}$ (4)	*Effective dollar exchange rate*[b] (5)	$\frac{SULC^{US}}{SULC^{ROW\$}}$ (6)
1970	100	100	100	100	100.0	100
1971	94	97	99	96	97.3	95
1972	87	93	98	90	90.3	85
1973	79	89	97	81	82.6	74
1974	79	83	97	81	84.7	72
1975	82	83	102	83	82.8	70
1976	88	86	104	86	90.3	76
1975:1	78	82	102	80	79.8	...
2	79	80	104	80	80.0	...
3	85	83	102	85	85.0	...
4	88	85	102	87	86.6	...
1976:1	89	86	104	87	87.9	...
2	90	85	104	87	91.1	...
3	87	85	104	86	91.0	...
4	86	86	106	86	91.4	...
1977:1	83	87	104	85	91.0	...
2	83	88	102	85	90.5	...
3	84	86	104	83	89.6	...
4	82	86	105	...	87.6	...

Sources: Derived from official series of the Department of Commerce, Bureau of Labor Statistics, the Federal Reserve Board, and the United Nations; standard unit labor costs were estimated as described in text note 6.

a. The symbols are defined as follows:

PX^{US} = unit-value index of U.S. exports of manufactured goods.

$PX^{UN\$}$ = United Nations unit-value index of exports of manufactured goods, with the United States removed, expressed in dollars.

PM^{US} = unit-value index of imports of U.S. manufactured goods.

$PWPI^{US}$ = wholesale price index of U.S. manufactured goods.

$PWPI^{ROW\$}$ = wholesale prices of manufactured goods of six major industrial countries (ROW = Canada, France, Germany, Italy (except 1977:3), Japan, United Kingdom), weighted by 1970 shares in world manufactured-goods trade, converted to dollars.

$SULC^{US}$ = U.S. standard unit labor costs.

$SULC^{ROW\$}$ = standard unit labor costs for six major industrial countries (ROW), converted to dollars.

b. Effective dollar exchange rate of the Federal Reserve System.

As column 3 indicates, export prices have risen faster than the U.S. wholesale price index in the 1974–76 period. But the hypothesis that the increase in the relative prices of U.S. manufactured exports is due to a relative rise in the demand for these goods is rejected by data on the U.S. share of world export markets for manufactured goods. This share provides a rough measure of U.S. performance in competing for the available

demand, and automatically corrects for the relatively slower growth in U.S. export markets by excluding U.S. imports from the total. On this basis, the U.S. share of manufactured-goods export trade for 1960 and for the 1970s until the first quarter of 1977 was as follows:[8]

1960	*1970*	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977:1*
0.235	0.190	0.181	0.180	0.189	0.199	0.197	0.183	0.181

The share has declined by nearly 2 percentage points since 1974, largely between 1975 and 1976.

Table 5 illustrates the widespread nature of the decline in U.S. market shares. That table shows the U.S. share of the total dollar value of exports of industrial countries to individual major areas. Only the share of exports to Canada improved between 1975 and 1977. As might be expected, the improvement in U.S. shares from 1972 to 1974 and the decline in the most recent period are smaller for values than for volumes. But such data on value shares should not be used as indicators of short-run changes in competitiveness. Indeed, value measures might even improve temporarily in the face of a competitive deterioration because of relatively low short-run price elasticities; but the evidence suggests that, over longer periods of time, price elasticities are significantly greater than unity.

It would be helpful to have volume-shares data on manufactured goods for particular markets to test the hypothesis that U.S. trade is relatively more concentrated in areas that are stagnating than is trade of other major exporters of manufactured goods. Unfortunately, no detailed recent information on manufactured-goods exports to particular markets is available.

Several analysts have argued that the weakness in U.S. exports stems from the large proportion of capital goods in the total. In fact, weak capital-goods exports have not been an unusual factor in the deterioration of the manufactured-goods balance. In volume terms, U.S. capital goods have indeed performed poorly, changing for three successive half years at annual rates of 4.6 percent in the first half of 1976, −10.5 percent in

8. The share is computed as the ratio of the quantity index of U.S. manufactured-goods exports to the quantity index of manufactured-goods exports of ten major industrialized countries. U.S. manufactured-goods imports from those ten countries have been removed from the denominator. United Nations, *Monthly Bulletin of Statistics,* various March, June, September, and December issues, "Manufactured Goods Exports" tables.

Table 5. Ratio of Value of Imports from the United States to Value of Imports from Industrial Countries, by Area, 1972–77

Import market	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	
						First quarter	*Second quarter*
Industrial countries,[a] excluding Canada	0.146	0.150	0.158	0.153	0.146	0.146	0.146
Canada	0.781	0.809	0.810	0.823	0.830	0.834	0.839
Western Hemisphere,[b,c] excluding Canada	0.435	0.454	0.469	0.481	0.484	0.468	0.474
Asia[c,d]	0.278	0.303	0.314	0.322	0.299	0.292	0.298
Africa[c,e]	0.114	0.126	0.127	0.134	0.107	0.096	0.105
Oil-exporting countries[c,f]	0.244	0.229	0.233	0.230	0.230	0.220	0.224

Sources: 1972–76, International Monetary Fund, *Direction of Trade: Annual 1970–76* (IMF, August 1977); 1977, IMF, unpublished data.

a. Austria, Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Norway, Sweden, Switzerland, and the United Kingdom.

b. The Caribbean, Central and South America (excluding Venezuela), and Mexico.

c. Quarters in 1977 are calculated using exports from the United States and industrial countries to the area.

d. Excludes Asian oil-exporting countries (see note *f*) and Japan.

e. Excludes African oil-exporting countries (see note *f*) and South Africa.

f. Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela.

the second half of 1976, and 4.4 percent in the first half of 1977. But the unit values of U.S. exports of capital goods increased by 8.1, 10.1, and 0.5 percent, with the surprising result that in 1976 the share of capital goods in the total value of U.S. exports was 33.3 percent—the highest since 1972.[9]

No single index can adequately capture the numerous factors that determine a country's success in international markets. "Competitiveness" is influenced by nonprice factors that defy easy measurement. Some of the factors that complicate the task of predicting performance are the heterogeneous nature of the goods entering international trade; differences in marketing, servicing, reputation for quality; and the availability of trade financing. Nonetheless, these are unlikely to change radically in the short run, and the analysis in this section leads to the conclusion that, after dramatic improvement from 1970 to 1974, U.S. price competitiveness deteriorated to a position similar to that at the time of the 1973 dollar devaluation. The data on effective exchange rates, market shares, and relative export prices point consistently to this conclusion. I now turn to making quantitative estimates of the effect on the trade balance of both this changing competitiveness and the effect of the differing relative growth rates experienced here and abroad.

Econometric Evidence

Equations estimating the volume of exports and imports of manufactured goods are reported in table 6. Semiannual data are used, and all variables are entered as logarithms so that the coefficients may be interpreted as elasticities. Equations 6-1 and 6-3 are estimated through the first half of 1977; equations 6-2 and 6-4 are estimated through the first half of 1975, when the trade balance peaked.

EXPORTS

The volume of U.S. exports of manufactured goods, X, is explained by three determinants: the ratio of actual output to potential output in the "rest of the world" $(Q/Q^*)^{ROW}$; distributed-lagged values of the ratio of prices of manufactured goods in the United States to the United Nations

9. In the first half of 1977, however, this share declined to 32.1 percent.

Table 6. Equations for Volume of U.S. Exports and Imports of Manufactured Goods, Selected Sample Periods, 1962–77[a]

Equation, period of estimation, and dependent variable	Independent variable									Summary statistic		
	Constant	$(Q/Q^*)^{ROW}$	Q^{*ROW}	ΣRPX[b]	$(Y/Y^*)^{US}$	Y^{*US}	ΣRPM[b]	*D65*	*DS*	$\bar{R}^2$	Standard error	Durbin-Watson
6-1 First half 1962 to first half 1977, *X*	−1.00	1.43	1.32	−1.85	...	...	...	−0.08	−0.05	0.991	0.0346	1.96
	(−6.9)	(6.0)	(41.9)	(−9.2)				(−2.3)	(−3.6)			
6-2 First half 1962 to first half 1975, *X*	−1.08	1.44	1.34	−1.93	...	...	...	−0.09	−0.05	0.998	0.0356	2.10
	(−6.4)	(5.5)	(35.1)	(−8.8)				(−2.2)	(−3.4)			
6-3 Second half 1963 to first half 1977, *M*	−16.93	...	...	...	2.17	3.08	−1.52	...	...	0.983	0.0439	1.75
	(−21.5)				(4.9)	(27.0)	(−4.7)					
6-4 Second half 1963 to first half 1975, *M*	−16.85	...	...	...	2.08	3.07	−1.35	...	...	0.984	0.0418	1.96
	(−16.7)				(4.0)	(20.9)	(−4.2)					

Sources: *X* is the volume of exports of manufactured goods (standard international trade classifications 5–8) from Department of Commerce data. Q^{ROW} is actual manufacturing output in six major industrial countries (ROW) weighted by their 1970 shares in world manufactured-goods trade; Q^{*ROW} is derived by similarly weighting the Artus estimates of the potential manufactured-goods output of these countries (see text note 6). *RPX* is the ratio of unit values of U.S. exports of manufactured goods (from the Department of Commerce) to the United Nations unit-value index for exports of manufactured goods (from various issues of United Nations, *Monthly Bulletin of Statistics*). *M* is the volume of manufactured-goods imports adjusted to exclude automobile imports from Canada. Prior to 1968 it is formed from quantity indexes of imports of semifinished and finished manufactured goods. Y^{US} is GNP for the United States measured in 1972 dollars, from Comets Databank; Y^{*US} is derived from Perry's annual estimates of potential GNP (George L. Perry, "Potential Output and Productivity," *BPEA, 1:1977*, pp. 11–47). The numerator of *RPM* is the import-unit-value index for manufactured goods (standard international trade classifications 5–8). The 1963–67 values were estimated using coefficients from a 1968–77 regression of the import-unit-value index on finished and semifinished manufactured goods. The denominator is the U.S. manufactured-goods wholesale price index with refined petroleum products removed. Both are from the Department of Commerce; *RPM* is multiplied by a tariff variable, which reflects the Kennedy Round reductions and 1971 import levy (obtained from Peter Hooper of the Federal Reserve System). *D65* is a dummy variable for the dock strike equal to one in the first half of 1965. *DS* is a seasonal dummy variable equal to one in the second half of each year.

a. Equations are estimated using semiannual data; all variables are entered as logarithms. All price variables are estimated as five-period Almon lags using a third-degree polynomial. The numbers in parentheses are *t* statistics.

b. The individual coefficients from *t* through *t* − 4 and the mean lags for selected variables are as follows:

Equation and variable	Period					Mean lag (half-years)
	t	*t* − 1	*t* − 2	*t* − 3	*t* − 4	
6-1, *RPX*	0.02	−0.19	−0.48	−0.65	−0.55	2.9
	(0.2)	(−2.8)	(−9.2)	(−6.3)	(−5.0)	
6-2, *RPX*	0.12	−0.12	−0.50	−0.76	−0.68	3.2
	(1.0)	(−1.3)	(−8.8)	(−5.6)	(−4.5)	
6-3, *RPM*	0.02	−0.16	−0.39	−0.54	−0.45	2.9
	(0.1)	(−1.1)	(−4.7)	(−5.3)	(−3.8)	
6-4, *RPM*	−0.01	−0.16	−0.35	−0.46	−0.38	2.8
	...	(−0.6)	(−4.2)	(−1.8)	(−1.2)	

index of unit values of manufactured-goods exports, ΣRPX; and the level of potential output in the rest of the world, Q^{*ROW}. Unfortunately, consistent estimates of potential output in manufacturing were available on a semiannual basis for only the major industrial countries—the United States, Canada, Japan, Germany, France, the United Kingdom, and Italy—which together accounted for 63.7 percent of world manufactured-goods trade in 1970.[10] The estimates for these countries (excluding the United States) were weighted by their 1970 shares in world manufactured-goods trade and used as a proxy for the rest of the world in forming both Q^{ROW} and Q^{*ROW}.

Output Effects. Both potential output and the ratio of actual to potential output were used as explanatory variables to capture cyclical effects as well as conventional secular elasticities. The coefficient of Q^* indicates the net effect of foreign long-run supply and demand elasticities of U.S. exports. Q/Q^* would be positive if foreign demand for U.S. exports were especially influenced by small or negative output gaps or if tightening supply constraints abroad expanded imports of U.S. substitutes. The similar magnitude of the coefficients of Q^* and Q/Q^* in both equations 6-1 and 6-2 suggests that foreign output alone is a sufficient explanatory variable for U.S. manufactured exports, and that, surprisingly, there are no extraordinary cyclical effects.

Some attempts to introduce other variables in explaining exports failed, but are worth reporting. The U.S. manufactured-goods output gap was not statistically significant. This supports the notion that the United States is a large, inward-directed economy, in which low levels of capacity utilization do not stimulate exports, independent of the effect reflected in prices, and high levels are not a constraint on supplying the foreign market. Attempts to model explicitly the demand of less developed countries did not improve the results. The most ambitious of these was the construction of an industrial production index for the rest of the world that combined the OECD indexes of industrial production for Europe, Japan, and Canada with an industrial production index for developing market economies.[11] Specifications of nonlinearity in the ratio of actual

10. These estimates use a modified Cobb-Douglas production function, by Artus, "Measures of Potential Output."

11. To mitigate the omission of an explicit LDC demand variable, the shares variable reported above was used as the dependent variable; independent variables were specified in the same manner as those in the export equations. This yielded results and out-of-sample forecasts very similar to equations 6-1 and 6-2.

to potential output or division of the cycle into phases—according to whether the ratio was rising or falling and whether it was above or below the long-run average—did not yield significant results. A weighted average of the volume of investment in machinery and equipment in Canada, Japan, the United Kingdom, and Germany was not significant in capturing cyclical effects. Finally, lagged output variables were not significant.

Price Effects. The relative-price term in the equations measures the effect of price competitiveness and is entered with a distributed lag. The sum of ocefficients (and each individual coefficient) is expected to be negative. The inclusion of U.S. export prices in the denominator and numerator of the relative-price term makes these coefficients about 16 percent larger (absolute value) than conventional elasticities. Thus, if an increase in competitiveness is to generate an increase in export values, the sum of coefficients should be greater than 0.84 in absolute value.

The price effects from both equations sum to approximately −1.9 with a mean lag of eighteen months. (The absolute values of the price coefficients are largest and most significant after a year to eighteen months.) The 16 percent reduction needed to make these estimates comparable to elasticities of other studies in which the denominator contains only non-U.S. prices implies a long-run export price elasticity in equation 6-1 of −1.6. The long-run elasticity and timing of the effects are very similar to those found by Dornbusch and Krugman in their market-shares equations and by Magee, who reports an annual equation for U.S. finished manufactures fitted for the period from 1951 to 1969 with a price elasticity of −1.76.[12]

Allowing for lags of only a year to eighteen months detracted substantially from the explanatory power of the equations. Equations with one and two lagged price terms had standard errors of 0.052 and 0.044, respectively, as compared with 0.035 in the specification used here. They also had a significant degree of serial correlation in the error term. Extending the lags on prices slightly worsened the in-sample fit of equations

12. Dornbusch and Krugman estimate an elasticity of −1.72 for U.S. manufactured exports in Rudiger Dornbusch and Paul Krugman, "Flexible Exchange Rates in the Short Run," *BPEA, 3:1976,* p. 565. Magee's estimate appears in Stephen P. Magee, "Prices, Incomes, and Foreign Trade," in Peter B. Kenen, ed., *International Trade and Finance: Frontiers for Research* (London: Cambridge University Press, 1975), p. 182. Mordechai E. Kreinin also estimates an elasticity for U.S. exports of −1.7 in "The Effect of Exchange Rate Changes on the Prices and Volume of Foreign Trade," International Monetary Fund, *Staff Papers,* vol. 24 (July 1977), p. 321.

6-1 and 6-2; it substantially worsened the out-of-sample predictions of equation 6-2, which are discussed below. Thus the lags shown were chosen even though the coefficients for the longest lag used, or for an additional lag when it was added, were not negligible. This suggests that the ultimate price elasticity may be somewhat larger than the estimates shown here.

IMPORTS

The import equations relate the volume of U.S. manufactured imports, M, to potential GNP in the United States, Y^{*US};[13] the ratio of actual to potential GNP in the United States $(Y/Y^*)^{US}$; and distributed-lagged values of the ratio of import unit values of manufactured goods, multiplied by a tariff variable, to the price of domestic manufactured goods excluding refined petroleum products, ΣRPM.

Output Effects. The estimates shown in both equations 6-3 and 6-4 tell a similar story relating import volumes to U.S. output. Given that the economy grows along its potential path, imports will grow about three times as fast as potential. For each percent deviation from this path, imports will deviate by about 2 percent in the same direction.

Numerous attempts to develop other cyclical variables were unsuccessful. Disaggregation of the cycle into phases according to whether the gap was above or below its long-run average or whether it was closing or widening contributed little additional explanation, nor did modeling nonlinearity into the cyclical response. Attempts to capture inventory restocking and plant and equipment expenditures were also unsuccessful, and lagged cyclical variables were insignificant.

Price Effects. The long-run price elasticity in both equations 6-3 and 6-4 of 1.5 and 1.4, respectively, are quite similar to the 1.6 price elasticity for exports. The mean lags are also similar. The most powerful effects again come after a year to eighteen months.

RECENT PERIODS

Equations 6-2 and 6-4, estimated with data through the first half of 1975, permit a closer examination of manufactured-goods trade during

13. Potential GNP was taken from George L. Perry, "Potential Output and Productivity," *BPEA, 1:1977,* "Potential I," p. 40.

recent half-years. The first point to note is that the equations estimated for both import and export volumes are not greatly changed by the two latest years of data despite large changes in trade volumes. The output and price effects do a satisfactory job of explaining the changes that occurred.

The percentage prediction errors (actual minus predicted) from equations 6-2 and 6-4 for the half-years beyond the sample period are:

	1975	*1976*		*1977*
	Second half	*First half*	*Second half*	*First half*
Export volume	−1.0	−6.9	−5.8	−2.8
Import volume	−12.6	−3.6	−1.3	−3.3

Except for the large overprediction of imports in the second half of 1975, the out-of-sample prediction errors are not large when compared with the in-sample standard errors of 3.6 in the export equation and 4.2 in the import equation. Apparently U.S. merchandise trade in recent quarters has been close to what should have been expected, given price and cyclical developments in the United States and abroad. In particular, the data do not support the notion that there has been an unusually large influx of manufactured imports.

Although the aggregate changes in manufactured imports can be explained in terms of output and relative-price changes, a number of factors account for the recent concern over imports into the United States. First, the total volume of manufactured imports rose 40.8 percent from 1975 to 1977—a large increase that followed declines in import volumes between 1973 and 1975. Although understandable in terms of the recession and recovery in the United States and the changing competitiveness of U.S. goods over this period, the reversals during this time are still conspicuous. Second, the recent increase in imports has corresponded with a decline in the overall current-account balance. Third, imports have risen at a time of relatively low utilization of U.S. capacity in industries such as steel. Although weak total demand for steel in the United States is the primary reason for low utilization rates, steel imports receive the major share of the blame. Fourth, and perhaps most important for understanding perceptions, was the change in import composition: the values of imports of manufactured goods from developing countries and Japan rose far more sharply than the overall value of manufactured imports, particularly in 1976. In 1975, the value of U.S. imports of manufactured goods from LDCs ($11.0 billion) and from Japan ($11.2 billion)

accounted for 40.6 percent of the total value of manufactured-goods imports. In the following year the value of manufactured imports from LDCs increased by 40.6 percent, and those from Japan, 37.4 percent; together they made up 45.1 percent of the total value of manufactured imports.[14]

Recent Goods Trade

I now use equations developed for explaining exports and imports of manufactured goods to estimate the effects on the U.S. trade balance of changing competitiveness and weak cyclical recovery abroad. These estimates must be understood as relevant to the hypothetical question of what would have happened if output and price developments had each followed some other, specified course. Without a fully integrated model of the world economy, it is not possible to determine whether the specified course could have been maintained or whether exchange-rate changes or responses within individual economies would have led to price-output combinations different from those modeled here. Given this limitation, the present exercise is instructive in understanding the contribution to the U.S. trade balance of those output and relative-price developments that actually occurred.

As indicated below in the tabulation of manufactured-goods output by years and half-years, the United States and the rest-of-the-world aggregate used in this paper both experienced severe recessions in 1975 when judged by the ratio of actual to potential manufactured-goods output (Q/Q^*).[15] The recovery in the United States preceded that in the rest of the world and, as of the first half of 1977, the U.S. recovery had brought output much nearer to its potential level than was the case abroad. The most recent figures for industrial production indicate that output gaps widened further (Q/Q^* fell) in the rest of the world during the second half of 1977, while they narrowed slightly in the United States. The following

14. Data from the Bureau of the Census, *Highlights of U.S. Export and Import Trade,* table I-8A, various issues. The Japanese penetration is explained by a dramatic improvement in competitiveness: between 1975:1 and 1976:1 the ratio of Japanese manufactured-goods export unit values to U.S. manufactured-goods import unit values fell by 12.5 percent.

15. The data in the tabulation are from Artus' estimates referred to in text note 6; index for Q^{US} and Q^{ROW}, 1970 = 100.

table shows output and output relative to potential of manufactured goods for the period since 1972:

	Q^{US}	Q^{ROW}	$(Q/Q^*)^{US}$	$(Q/Q^*)^{ROW}$
1972	111	107	0.96	0.96
1973	120	117	1.02	0.99
1974	114	117	0.95	0.96
1975: First half	100	108	0.82	0.85
Second half	110	109	0.89	0.83
1976: First half	116	115	0.92	0.87
Second half	118	118	0.93	0.87
1977: First half	121	121	0.94	0.87

In addition, as table 4 showed, relative prices of tradable goods changed during the 1975–77 period, sharply reducing the competitiveness of U.S. goods through mid-1976 and improving it thereafter.

Cyclical output effects are calculated by estimating what would have happened to U.S. exports and imports of manufactured goods if recovery in the rest of the industrialized world had kept pace with that in the United States—if, in other words, the rest of the world had achieved the U.S. ratio of actual to potential output from the second half of 1975 through the first half of 1977. The estimate, derived from equations 6-1 and 6-3, is given in simulation A of table 7. By the first half of 1977, the value of manufactured exports would have been $8.4 billion higher than it actually was. Because U.S. imports are unaffected, the trade balance is also $8.4 billion higher in this case.

Competitive effects are calculated by estimating what would have happened if U.S. relative import and export prices had been maintained at their levels of the first half of 1975. In this case, equations 6-1 and 6-3 indicate that U.S. export volumes would have been 11.2 percent higher and import volumes 5.0 percent lower than they actually were in the first half of 1977. There are, however, numerous ways in which U.S. relative prices could have remained constant; all yield the same estimate with respect to the volume of trade, but the dollar value of trade differs in each case. I consider two polar cases. In the first, foreign prices expressed in dollars are raised to match the changes in U.S. prices (simulation B in table 7). In the second, U.S. prices are lowered to match the change in foreign prices (simulation C).

In simulation B, U.S. exports of manufactured goods would have been $8.9 billion higher in the first half of 1977. Imports, however, would have

Table 7. Simulations of Change in U.S. Manufactured-Goods Trade, Based on Equations 6-1 and 6-3, Alternative Scenarios, 1975–77, by Half Years

Billions of dollars, seasonally adjusted annual rate

Item in trade balance and simulation	*1975*	*1976*		*1977*
	Second half	*First half*	*Second half*	*First half*
Actual				
Exports	73.6	74.9	79.4	79.3
Imports	51.2	61.1	67.8	74.1
Balance	22.4	13.8	11.6	5.2
Simulation A				
Change in exports	6.4	6.5	7.2	8.4
Change in imports	0	0	0	0
Change in balance	6.4	6.5	7.2	8.4
Simulation B				
Change in exports	−0.1	0.9	4.2	8.9
Change in imports	2.1	3.2	2.0	1.8
Change in balance	−2.0	−2.3	2.2	7.1
Simulation C				
Change in exports	−5.5	−6.8	−2.6	4.4
Change in imports	*	−0.3	−1.6	−3.7
Change in balance	−5.5	−6.5	−1.0	8.1

Source: Text table above. In simulation A, $(Q/Q^*)^{ROW} = (Q/Q^*)^{US}$; in simulation B, foreign prices are raised to match the change in U.S. prices; and in simulation C, U.S. prices are lowered to match the change in foreign prices.

*Less than 0.05 billion.

increased by $1.8 billion and the trade balance would have risen by $7.1 billion. In simulation C, lower U.S. prices would have reduced import values by $3.7 billion in the first half of 1977. Exports would have increased by $4.4 billion. And the balance would have risen by $8.1 billion.

The time profile of these effects suggests that the short-run inelastic nature of demand can induce fairly substantial J-curve effects. Looking at data on nominal trade-value shares could prove very misleading. In particular, simulation C implies that if the U.S. competitive position had not declined as a result of higher relative U.S. prices, the trade balance would have been *less* than it actually was through the second half of 1976. By the first half of 1977, however, the competitive and cyclical effects on the manufactured-goods trade balance were similar in size.

Factors in the 1977 Deficit

In a rough way, one can compare the factors behind the decline of $39.4 billion in the trade balance, as measured on a balance-of-payments basis (annual rate) from the first half of 1975 to the first half of 1977. The measured drop in the balance for fuels and lubricants was $21.6 billion. If the cyclical recovery in the rest of the world had matched that in the United States, exports would have been $10.2 billion higher.[16] If the United States had maintained its relative competitive position according to the partial-equilibrium analysis above, the balance would have risen by $7.1 billion. In short, about half the decline in the balance is associated with oil, a quarter with the failure of cyclical recovery abroad, and roughly one-fifth with competitive deterioration.[17]

A sizable part of the trade deficit can be attributed to temporary factors that could well disappear within one and one-half to two and one-half years—the relevant horizon for adjustment through exchange-rate changes. In the first half of 1977, for example, in addition to exports of $10.2 billion that would have been forthcoming if recovery abroad had matched that in the United States, the cost of U.S. coffee imports would have been $3.0 billion lower if the coffee market had been normal (assuming coffee prices at real 1973 levels). And average weather conditions would have reduced the cost of oil imports by $3.5 billion.

However, these temporary effects will have a permanent impact: they will change the distribution and total stock of assets in the international economy. Foreign holdings of dollar assets will be higher than they otherwise would be. To hold dollar assets, foreigners will require higher yields that are explicitly built into interest rates or implicitly into anticipated exchange-rate changes.

16. In addition to the $8.4 billion increase in manufactured-goods exports derived from estimates in the previous section, this calculation assumes unitary income elasticity for U.S. exports of agricultural products (nonfoods) and nonagricultural crude materials.

17. Some observers argued that weak exports to Latin America are a further independent source of the declining U.S. trade balance. Exports to Latin America would have been $2.0 billion higher if Latin America had maintained the share of total U.S. export purchases it had in the first half of 1975. (The Latin American share actually fell from 18.6 percent to 16.5 percent, with Latin America defined by the Bureau of the Census category, Western Hemisphere, excluding Canada.) This would have raised U.S. manufactured goods by 2.6 percent.

Prospects for 1978

There is reason to suspect that the deficit might increase before it declines primarily because of developments in manufactured-goods trade. In 1978, the agricultural and fuels and lubricants balances will resemble those of 1977. The official forecast by the U.S. Department of Agriculture issued on November 14, 1977, predicts that the agricultural trade balance will be $2.1 billion lower in fiscal year 1978 than in fiscal year 1977, but this decline appears too large because it underestimates export prices.[18]

Allowing for higher grains prices and somewhat lower beverage costs leads to a prediction of little change in the agricultural trade balance. The increase in the net demand for oil in 1978 should be met by the new supplies from the Alaskan pipeline. Assuming normal weather conditions, therefore, 1978 oil import volumes should be the same as those in 1977.[19] It now appears that OPEC will keep prices at 1977 levels throughout 1978; thus the oil bill should not increase over 1977 levels.

Manufactured-goods export and import volumes were projected with equations 6-1 and 6-3. A forecast of 4.6 percent GNP growth for the United States and the forecasts of the other major industrial economies made in the December 1977 *OECD Economic Outlook* were used:[20] Allowance was also made for some improvements in U.S. relative prices as a result of the dollar devaluations through January 1978. These projections suggested that, overall, the U.S. trade balance would decline to about $39 billion in 1978.

18. Although the estimates include sales of about 15 million metric tons of wheat and feed grains to the Soviet Union, unit values for these grains of $100 and $95 a metric ton seem too low. Judging by futures prices (with an allowance for transportation costs), wheat unit values of $120 a metric ton and feed-grains unit values of $105 a ton are more realistic projections.

19. This forecast is based on the following assumptions: oil from the Alaskan pipeline will flow at its capacity rate of 1.2 mbd by spring 1978 as scheduled, and 0.5 mbd will be stored in the Strategic Petroleum Reserve; hydroelectric power shortages will decline to the equivalent of 0.19 mbd; and oil production in the lower forty-eight states will decline by 4 percent. The total demand for energy is assumed to increase to 105 percent of the estimated normal 1977 demand.

20. The GNP forecasts made by the OECD of 3 percent for the four major European economies, 3.75 percent for Canada, and 5 percent for Japan were used to predict manufacturing output in these countries on the basis of the historic relationship between the GNP and manufacturing output.

Concluding Comments

The nation's trade balance is a residual item that reflects the interaction of a number of domestic and foreign factors such as rates of growth, rates of inflation, tastes, factor endowments. There is no need for an economy to have exports equal in value to imports—by commodity category, by trading partner, or in total. Indeed, it is precisely because monetary exchange removes the need for bilateral balancing that it is superior to barter in facilitating specialization. What matters is not the trade balance itself but the factors that lie behind it. A particular value for the balance is satisfactory only if it is associated with an acceptable configuration of other, more important, national and international objectives.

Behind the 1977 U.S. trade balance lie some positive developments and others that policy should attempt to change. The sustained recovery in the United States, the rapid growth of productive capacities in developing countries, and the restoration of relative calm to the international grains market are all positive factors despite their contributions to the trade deficit. In these areas it is important that certain policies *not* be adopted.

An economy as closed as the United States should not reduce its aggregate demand in order to lower its imports, particularly when, as in December 1977, it is already operating with an unemployment rate of 6.4 percent and with only 83 percent of its industrial capacity utilized. A trade deficit entails a large government deficit at full employment (given private net savings), and this makes a balanced budget an even more unsuitable target for policy.

Economic expansion at home is also needed to assist in the absorption of workers who are inevitably displaced by secular changes in the U.S. comparative advantage, and to help ward off the adoption of protectionist measures such as tariffs, quotas, or so-called voluntary trade restrictions.[21] It is inappropriate to protect U.S. industries on a selective basis. Such pol-

21. Selective measures might actually worsen the trade balance in some cases. Despite a 36 percent increase in the volume of U.S. imports of iron and steel mill products from Japan in 1976, the value of U.S. steel imports from Japan rose by only 3 percent. Apparently the reduction in prices almost offset the volume sold. If steel demand from particular producers is inelastic (the apparent belief of domestic U.S. producers), Japanese price cutting would help the balance of trade; a "reference-price policy" that keeps import prices high could harm it.

icies harm the more efficient U.S. producers, particularly those who manufacture exportables, as they keep the exchange rate higher than it would be otherwise. Punishing the productive sector is obviously bad social policy. Adjustment assistance is the required response for workers whose industries can no longer compete. Devaluation is the appropriate method of improving an economy's competitive situation. In the long run, protectionism would prove counterproductive: it would encourage retaliation by other countries, which could further harm U.S. exporters, thereby reducing both the prospects for recovery and the gains from trade. In addition, Korea, Taiwan, Hong Kong, Brazil, and Mexico, which are at last rising from poverty, should not be deprived of the gains from trade-led growth.

On the agricultural front, an international agreement for providing adequate world stocks of wheat and grains should be concluded *before* large cutbacks in production are induced. High grain prices may help U.S. exports in the short run, but by raising domestic inflation and by encouraging other countries to aim at self-sufficiency, they harm exports in the long run.

In other areas, however, there are policies that must be adopted. The U.S. government has to decide upon an energy policy to remove the uncertainties that hinder energy conservation and encourage inefficient fuel use. The probable gains from an energy policy will take time to accrue, but in the short run the adoption of a plan could bolster confidence in the dollar. There are some measures that could have important effects even in the short run. In particular, the current bias that favors oil and gas imports over domestic production should be corrected. The refined-petroleum entitlements system and the practice of encouraging imports of natural gas at 50 to 100 percent above interstate price ceilings are inefficient because users do not pay the marginal cost, and this inefficiency is harmful to the trade balance.

There is a need for more expansionary policies in the major industrial nations abroad. Such policies would meet their own domestic as well as international requirements. The failure of major economies to achieve their own growth targets during 1977 signals the need for action. Such policies could directly wipe out one-third of the U.S. deficit over a few years. They could also alleviate some of the problems faced by the smaller industrial and developing economies. The simplest way for Japan and Germany to avoid the need for their own currencies to appreciate, thereby

penalizing their export industries, is to increase their own demand for goods from abroad by expansionary policies.

Probably the greatest controversy surrounds the appropriate U.S. exchange rate. It is easy to advocate an optimal exchange-rate intervention policy but nearly impossible to implement it in practice. Intervention is appropriate in response to disorderly markets or to disturbances that will reverse themselves, such as crop failures. However, when the change is fundamental, avoiding the need for adjustment will eventually mean having to do too much too late. Smaller adjustments are preferable to large discrete shocks. The large recent bilateral changes in exchange rates are in part the consequence of unwise intervention in the past.[22]

One of the best ways to undermine faith in the dollar and to induce a shift into other currencies is to support the value of the dollar when its long-run determinants signal a decline. The responsibility of the United States as the major reserve-currency country is to avoid having its international accounts approach a state of fundamental disequilibrium, rather than to avoid change at all costs. The United States should demonstrate its concern for the value of the dollar by its pursuit of policies that influence the dollar's basic determinants: policies to reduce domestic inflation, establish a long-run energy strategy, and promote a prosperous, coordinated, international economy.

Discussion

GARY SMEAL complimented Lawrence on his paper but disagreed with his analysis of the role of the U.S. competitive position. He noted that an index of relative wholesale prices compiled by the Treasury and one for relative prices of manufactured goods compiled by the International Monetary Fund showed considerably smaller competitive deteriorations than the index of relative export prices Lawrence had used. He also noted that

22. The necessity for a 22 percent change in the yen-dollar exchange rate from December 1976 to December 1977 (and the political friction that resulted as a consequence of Japanese market penetration into the United States) might have been avoided if the Japanese had not pegged the yen in 1975 and 1976. The change in the Japanese current account of −$0.7 billion and $3.8 billion in 1975 and 1976 were almost exactly reflected in changes in Japanese international reserves.

the shares of world trade in manufactured goods as calculated by the Department of Commerce on the basis of export values showed a much smaller decline in the U.S. share than did Lawrence's data. Smeal also stressed that administration officials have used these and other facts to show that there has been no significant loss of competitiveness between 1976 and 1977 or over a longer period such as 1970–77. By contrast, Lawrence had stressed the loss of competitiveness relative to 1975, a year of unusual strength for the dollar. He added that Lawrence's finding of substantial price effects on exports and imports in 1977 stemming from competitive effects dating back to 1975 placed his estimates near one extreme of the range of professional estimates, most of which indicated lower elasticities and shorter lags.

In response, Lawrence agreed that no single index should be relied upon to measure competitiveness, but noted that all indexes showed some erosion and that the relative-price index for manufactured-goods imports showed a steady deterioration right through mid-1977. He pointed out that value shares such as those computed by the Commerce Department were particularly unreliable indicators of competitiveness because of the inelastic response to prices in the short run. He defended his estimates of price elasticities, noting that in his paper he had reported other studies that corroborated the elasticities and timing of the price effects he had obtained.

Some suggestions were made for improving the specification of the import equations. George von Furstenberg suggested disaggregating GNP within an input-output formulation in order to capture the effects of changes in its composition among components with different import intensities. Robert Solomon believed it might be hard to disentangle cyclical swings in foreign investment demand from price effects; on closer analysis the recent weakness of investment abroad might explain more of the recent deterioration of U.S. manufactured exports, which are heavily weighted by capital goods. R. A. Gordon thought it was important in explaining recent trade flows to model explicitly the changes in long-run comparative advantage that lay behind the growing success of less developed countries in competing in manufactured-goods trade. Lawrence replied that while explaining individual country shares might require such an analysis, average price and income changes provided an adequate explanation for the aggregate changes in manufactured-goods trade without making special allowance for the export success of the less developed countries or other individual nations.

Hendrik Houthakker raised the issue of whether exchange rates reflect primarily the balance in the trade account, the current account, or the capital account. He had concluded that the trade account is far more important than a monetarist approach would imply: indeed, except for very short-term fluctuations, exchange rates among industrial nations primarily mirror export prices. He believed that an average of all export prices, as opposed to those for manufacturing alone that Lawrence had investigated, would show exchange rates moving so as to keep relative dollar prices among countries unchanged. Solomon observed that in both Germany and Japan in recent years, cyclical movements in the domestic economy had resulted in movements in exchange rates in the opposite direction. The upward pressure from the effects of economic slack on the current account had dominated the downward pressure from the effects of low interest rates on the capital account. The variations of the dollar since 1975 also follow this pattern, whereas in the 1960s, movements in the capital account had tended to dominate the current account. Walter Salant reasoned that wide publicity about the trade deficit was likely to lead to additional weakening of the capital account because it stimulated expectations of depreciation; but in its direct effect on exchange rates, he doubted that a dollar of trade deficit was different from a dollar of deficit elsewhere in the balance of payments. Houthakker observed that the current account had become more conspicuous because figures for other balances are no longer published. He suggested that at least a basic balance and an overall balance be reported.

Discussants were divided on the issue of whether the government ought to intervene to support the dollar. Lawrence Krause felt that Lawrence had offered a timely demonstration that there were fundamental reasons for some decline in the value of the dollar. He observed that foreign governments—anxious to enlarge the U.S. deficit and in the process reduce their own and stimulate their economies—had intervened in the past to support the dollar on the grounds that no change in basic competitiveness had occurred. But Lawrence had shown that a substantial loss of competitiveness had in fact occurred and that it was appropriate for the dollar to decline in response. Some other participants saw more merit in intervention. William Cline cautioned that because the dollar had moved down considerably further in recent months subsequent to Lawrence's data set, and because of the ambiguity of some of the measures of competitiveness, it might be inappropriate to conclude that intervention should be rejected.

The exchange rate reacts to the contemporary current-account balance, but trade flows respond to changes in the rate only after a lag. Excessive depreciation of the dollar now in response to a highly unfavorable current account could induce an excessive increase in the trade balance in the future. If this were the case, some intervention (at least enough to frustrate the "one-way bet" over the medium term) would be appropriate in order to avoid unnecessary cycling in the exchange rate and the current account. John Kareken reasoned that, with flexible exchange rates and free movements of capital, there might be no well-defined equilibrium exchange rate. Governments might have to intervene, or at least threaten to do so, if they wanted to keep rates from changing indiscriminately. Bruce MacLaury noted that, within a broad range of exchange rates, private markets might stabilize at whatever point governments indicated a willingness to intervene, while, in the absence of some intervention from the government, rates might fluctuate excessively, overshooting the equilibrium range. Others pointed out that it was impossible to determine when markets were overshooting and therefore when they could be stabilized profitably by intervention.