

L.5.2

RFD 660

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Division of International Finance

REVIEW OF FOREIGN DEVELOPMENTS

October 8, 1970

George B. Henry

United States Merchandise Trade  
1965-69

25 Pages

This paper reflects the personal opinion of the author and must not be interpreted as representing the opinion of the Board of Governors.

United States Merchandise Trade, 1965-1969\*

by

George B. Henry

The period 1965-1969 witnessed a dramatic decline in the United States' foreign balance on merchandise account. A surplus for merchandise transactions (census basis, excluding military grant shipments) of about \$7 billion in 1964 was reduced to \$0.8 billion by 1968 (\$1.3 billion in 1969). The severity of the decline has necessarily become a matter of concern. However, it appears that a crucial distinction for policy-making -- that between cyclical and longer-run fundamental changes in the U.S. trade position -- has not been adequately drawn. In particular, it is important to know to what extent the trade deterioration can be attributed to the inflationary conditions which prevailed in the United States during the period in question. An estimate can be obtained by simulating trade equations.

---

\*I am grateful for helpful suggestions from Fred B. Ruckdeschel, Charles J. Siegman and Robert Solomon. Readers may be interested in noting the similar study by F. Gerard Adams (University of Pennsylvania) and Helen B. Junz (Board of Governors), "A Note on the Effect of the 1965-69 Boom in the United States on World Trade," September 25, 1970.

This paper reports some simulations that have been generated using forecasting equations.<sup>1/</sup> On the basis of these simulations, the entire deterioration of the trade balance from 1964 to 1969 can be explained by the excess demand and price inflation that prevailed in the United States during the period. The analysis implies that, had the economy followed a non-inflationary, full-employment growth path, the trade balance would not have weakened.

The paper is divided into two sections. Section I describes the equations and the data employed in their estimation. Section II provides a general summary and analysis of the simulation exercise.

## I

The equations that are employed in this paper have variables expressed in current dollars, having been expressly designed for short-term forecasting. Thus they provide estimates of trade flows for any period expressed in prices of that period and do not require companion estimates of traded goods prices. The import equations are estimated using data from the first quarter of 1955 to the fourth quarter of 1968.

---

<sup>1/</sup> Most of the basic work which underlies these equations has been done by Evelyn Parrish at the U.S. Department of Commerce, with significant contributions by Donald Curtis of the U.S. Treasury Department and others. The form of the export equation has been borrowed without modification; the import equation has been substantially modified. In the near future, the Survey of Current Business will publish some results of the work done by analysts at the Commerce and Treasury Departments.

They fit that data very well.<sup>2/</sup> The export equation is estimated using data from the first quarter of 1958 to the fourth quarter of 1968 and is also quite respectable, although somewhat less reliable than the import equations.

Before we describe the individual equations and the reasoning behind each independent variable, one general comment on methodology should be made. The essential characteristic of a forecasting equation is that reasonably accurate estimates of its independent variables be available for a year or more into the future. This requirement inhibits disaggregation, that is, it inhibits forecasting by commodity groups and/or geographical areas and typically forces work to a very high level of aggregation, as in this paper. It does more. One may desire a measure of the pressure on manufacturers' capacity, but settle for the much grosser concept of the GNP gap; one may desire a variable for inventories of materials, yet settle for all manufacturers' inventories; one may desire to estimate using capital flows to particular areas of the world, yet settle for

---

<sup>2/</sup> All such equations should be interpreted as applying to experience within the limits of the sample. This caveat is more important the less is the theoretical plausability of the equation, since if we do not know the mechanism underlying the explanation, we cannot be very confident of its applying under other circumstances. The equations used in this paper employ entirely reasonable explanatory variables and exhibit reasonable elasticities. The mean income elasticity of demand for imports is around 1.6; the mean price elasticity is around 1.3.

the total U.S. direct investment outflow. In general, one has to compromise somewhat more on the selection of variables than if an historical study were being undertaken. On the other hand, the resultant equation must predict changes in the dependent variable rather closely. So, while forecasting equations are by no means uniquely suited for simulation exercises, they are not disqualified either.

### Imports

Table I presents the equations used in this paper. Table II describes each variable and the data employed. The first equation (Total Import Equation) is the best forecasting equation that I have been able to develop.<sup>3/</sup> The equation predicts the seasonally adjusted quarterly values of all U.S. imports except for imports of Canadian automotive products. The U.S.-Canadian agreement of 1965 vastly stimulated trade of automotive goods in both directions; we eliminated these items since their rapid growth has not depended on the course of the general economy but on an exogenous factor, the negotiated agreement.

The two most important factors affecting U.S. imports are the level of U.S. national income and the relationship between foreign

---

<sup>3/</sup> The remarks below apply with only minor modification to equation II (Non-regulated Goods Import Equation) as well.

Table I  
Trade Equations

(t statistic in parentheses)

(I) "Total" Import Equation

$$\begin{aligned} M = & -7.7223 & + & & 0.0128 & \text{GNP} & + & & 0.0146 & \text{RP} \\ & & & & (27.256) & & & & (1.850) & \\ & & + & & 0.0499 & \text{USWPI} & + & & 0.0062 & \text{GAP} \\ & & & & (3.520) & & & & (5.076) & \\ & & -0.0087 & \text{I/O} & + & & 0.0640 & \text{CIP} \\ & & (1.954) & & & & (2.251) & \\ & & -0.0449 & \text{T} & -0.2319 & \text{D} \\ & & (11.360) & & (4.372) & \end{aligned}$$

$\bar{R}^2 = .998$   
Standard Error = \$0.067 billion

Durbin-Watson = 1.74  
Degrees of Freedom = 47

Table I (continued)

Trade Equations

(t statistic in parentheses)

(II) Non-Regulated Goods Import Equation

$$\begin{aligned} \text{NRM} = & -7.5589 & + & & 0.0128 & \text{FS} & + & & 0.0228 & \text{CBI} \\ & & & & (28.490) & & & & (6.414) & \\ & + & & 0.0263 & \text{RP} & + & & 0.0214 & \text{USWPI} \\ & & & (3.664) & & & & (2.021) & \\ & + & & 0.0040 & \text{GAP} & + & & 0.0371 & \text{CIP} \\ & & & (2.805) & & & & (1.341) & \\ & & & -0.0422 & \text{T} & & & -0.1820 & \text{D} \\ & & & (11.110) & & & & (3.526) & \end{aligned}$$

$$\begin{aligned} \bar{R}^2 & = .997 & \text{Durbin-Watson} & = 1.76 \\ \text{Standard Error} & = \$0.066 \text{ billion} & \text{Degrees of Freedom} & = 47 \end{aligned}$$

Table I (continued)

Trade Equations

(t statistic in parentheses)

(III) Export Equation

$$\begin{aligned} \text{NX} = & 1.5070 & + & 0.0592 & \text{FIP} & -0.0254 & \text{RPX}_{-2} \\ & & & (6.787) & & (2.575) & \\ & + & 0.0036 & \text{FUTL}_{-2} & + & 0.172 & \text{M}_{-4} \\ & & (2.611) & & & (3.819) & \\ & + & 0.171 & \text{USDIO}_{-3} & -0.0491 & \text{T} \\ & & (1.299) & & (3.144) & \end{aligned}$$

$$\frac{\bar{R}^2}{R} = .992$$

Standard Error = \$0.087 billion

Durbin-Watson = 1.93  
Degrees of Freedom = 37

Table II

Definition of Variables

M	=	U.S. imports in billions, quarterly, seasonally adjusted and adjusted for strike distortions, excluding imports of automotive products from Canada.
GNP	=	Gross National Product in billions, seasonally adjusted annual rates.
RP	=	U.S. wholesale price index for manufactures over weighted foreign wholesale price index of manufactures, 1963 = 100.
USWPI	=	U.S. wholesale price index of manufactures, 1963 = 100.
GAP	=	$[(\text{Actual real GNP}/\text{potential real GNP}) - 0.97]^2$ with appropriate sign added.
I/O	=	Ratio: (All manufacturers' inventories to orders) x 100.0.
CIP	=	Dummy variable (=1.0 in quarter when change in industrial production index [for all manufactures] becomes negative; = 0.0 elsewhere).
T	=	Trend: 1,2,3, . . . (1955-I = 1).
D	=	Dummy for Mideast war of 1967: 1967-II = 1; 1967-III = 1; zero elsewhere.
NRM	=	U.S. imports in billions, quarterly, seasonally adjusted and adjusted for strike distortions, excluding imports of automotive products from Canada, and less imports of fuel and lubricants and less imports of coffee, cocoa and sugar.
FS	=	U.S. final sales (demand) in billions: GNP less changes in business inventories (CBI), seasonally adjusted annual rates.
CBI	=	Changes in business inventories in billions, seasonally adjusted annual rates.
NX	=	U.S. nonagricultural exports in billions, quarterly, seasonally adjusted and adjusted for strike distortions. Data exclude exports of automotive products to Canada and exports of aircraft.
FIP	=	Industrial production in Western Europe, Canada, and Japan, weighted by U.S. exports, 1963 = 100.
RPX	=	U.S. wholesale price index of manufactured goods over weighted foreign wholesale price index of manufactures, 1963 = 100.
FUTL	=	Reciprocal of the weighted average of unused capacity in Western Europe, Canada and Japan; thus, FUTL = 100/unused capacity.
USDIO	=	U.S. private foreign direct investment net outflow in billions, quarterly.

prices and U.S. prices. The level of GNP (at seasonally adjusted, annual rates) is our measure of national income. We expect that a change in it will cause a change in imports in the same direction. Table I indicates a coefficient for the GNP variable of +0.0128. Since we are predicting quarterly imports with quarterly GNP expressed at annual rates, this implies that, if all other factors remain unchanged, a \$1 billion increase in GNP in any quarter (i.e., an annual rate of \$4 billion) will result in approximately a \$50 million increase in U.S. imports in that quarter.

Two price variables enter the equation. The first, RP, is simply the ratio of the domestic wholesale price index of manufactures to a weighted average of foreign price indices. It measures relative movements in prices; when U.S. prices are higher relative to foreign prices, we expect imports to be greater. The coefficient of the RP variable, +0.0146, indicates that for a one point increase in the relative price of U.S. goods, some \$15 million in additional U.S. imports are induced. There is also entered separately the level of U.S. wholesale prices (USWPI). Thus, for a given level of relative prices, the higher are domestic prices, the greater will be the value of imports. Since the dependent variable is in value terms, even if the physical quantities demanded remained unchanged, a higher level of world prices would increase the value of imports. Moreover, a constant relative price, with widening absolute differential, may

well result in an increase in the quantity of imports. The coefficient of the USWPI variable, +0.0499, indicates that for a one point increase in the price of U.S. goods, some \$50 million in additional U.S. imports are induced.

Three cyclical variables, each serving a somewhat different function, are included in the equation. The GAP is a proxy for the pressure of demand in the United States (the variable is based on the Council of Economic Advisers' calculation of the difference between actual and potential GNP). The pressure of demand variable is assumed to reflect changes in non-price competitiveness, i.e., changes in delivery lags, credit terms, quality of product and quality of after-sales service, etc. Thus, an increase in the pressure of demand (i.e., adverse movements in the non-price "product characteristics") results in an increase in U.S. imports. The coefficient of the GAP variable, +0.0062, indicates that for a one point increase in the variable, about \$6 million in additional U.S. imports are induced. The variable itself is a non-linear function of the gap, however. If, for example, actual GNP moves from 94 per cent to 95 per cent of potential, over \$30 million in imports are induced.

Imports of materials can be expected to respond rather quickly to changes in inventories of materials. Some materials are not available domestically so that all changes in demand are reflected in changes in imports. The movement of the inventory/order ratio (I/O)

is an indicator of the relationship between desired and actual inventories (on the assumption that some desired norm exists). Thus, we expect the resultant negative relationship between imports and the level of I/O. The coefficient of the I/O variable,  $-0.0087$ , indicates that for a one per cent increase in inventories as a percentage of orders, there is a \$9 million reduction in U.S. imports.

The change in industrial production variable (CIP) improves the performance of the equation around turning points. It takes the value 1.0 when industrial production initially turns down and is zero elsewhere. In the first quarter that industrial production turns down, imports tend to be greater than would be expected on other factors alone by \$64 million. It appears that the result is simply another aspect of the "inflationary psychology" phenomenon. That is, businessmen have tended, at least recently, to be disbelieving about the prospects for a downturn in the economy. Thus imports, which require ordering some time before delivery, will be unusually high until the fact of a downturn becomes inescapable.

The equation includes two additional dummy variables. The trend dummy (T) assumes the value of 1.0 in the first quarter of 1955 and increases by one in each subsequent quarter. The coefficient of  $-0.0449$  indicates that if the level of GNP, prices, and everything else remained absolutely the same from one quarter to the next, imports would fall by some \$45 million per quarter. One can devise

explanations for this phenomenon. But in all honesty, the primary justification is the much superior predictive ability of the equation when the trend dummy is included. The final dummy variable (D) takes the value of 1.0 in 1967-II and 1967-III and is zero elsewhere. It purports to capture the unusual effects on imports of the Mideast war of 1967. The coefficient of -0.2319 indicates that imports were reduced to \$232 million below what they would otherwise have been in each of the two periods.

The total result is a good forecasting equation for imports. The  $\bar{R}^2$  is high (0.998), the Durbin-Watson statistic good (1.74) and the t statistics are all acceptable (a 95 per cent significance level is 2.02; a 99 per cent significance level is 2.69). The equation's performance was excellent at turning points. There were five major peaks of actual imports during the sample period. At four of these, predicted imports peaked in the same period as actual imports. For the last, predicted imports were virtually unchanged in the quarter subsequent to the actual peak. For the conventional measure of the equation's accuracy, we look at the standard error of the estimate, about \$67 million. Thus, a prediction by the equation will be within \$134 million of the actual value of quarterly imports (\$4.4 billion, on average, for the period of fit) about 95 per cent of the time.

Simulations are presented for two alternative import equations. The first (Total Import Equation) has been described in detail

above. The second (Non-Regulated Goods Import Equation) is similar to the first except that it excludes imports of coffee, cocoa and sugar, and fuels and lubricants, items whose entry to the United States is restricted by quotas. To the extent that quotas are effective, changes in United States economic activity and price performance will not affect the amount of regulated goods imported.

### Exports

The export equation predicts quarterly values of U.S. exports of goods except for agricultural exports, automotive exports to Canada, and exports of aircraft.

The most important factor affecting U.S. exports is the level of foreign economic activity. A weighted average of foreign industrial production indices (FIP) is our index of foreign activity and is analogous to U.S. GNP in the import equation. Table I indicates a coefficient for the FIP variable of +0.0592. This implies that if all other factors remain unchanged, a one point increase in FIP in any quarter will induce approximately \$60 million in U.S. exports.

The relative price variable is lagged two quarters with the implication that foreign importers react to changes in relative prices about six months after the fact. The coefficient of -0.0254 indicates that, for a one point increase in the relative price of U.S. goods, there is a \$25 million reduction in U.S. exports.

The foreign utilization variable (FUTL) is a proxy for the pressure of demand abroad and is analogous to the GAP variable in the import equations. Thus, an increase in the pressure of demand abroad (i.e., adverse movements in the non-price "product characteristics" of foreign goods) results in an increase in U.S. exports. As with relative prices, FUTL is estimated to have its impact on U.S. exports two quarters after it changes. The coefficient of +0.0036 indicates that for a one point increase in the variable, about \$4 million in additional U.S. exports are induced. FUTL, however, is a non-linear function of the utilization rate. If, for example, the foreign utilization rate moves from 94 to 95 per cent of capacity, almost \$12 million in U.S. exports are induced.

The value of U.S. imports (M), lagged one year, is a proxy variable for the availability of foreign exchange abroad. Its coefficient of +0.172 indicates that a \$1 million increase in U.S. imports will result in a \$172 thousand increase in U.S. exports four quarters later.

The value of U.S. net direct investment outflow (USDIO) is entered as a separate variable in the belief that U.S. exports are intimately related to such investments. The coefficient of +0.171 indicates that a \$1 million increase in the U.S. net direct investment outflow will result in a \$171 thousand increase in U.S. exports three quarters later.

The equation includes a trend dummy variable (T) which assumes the value of 1.0 in the first quarter of 1958 and increases by one in each subsequent quarter. The coefficient of -0.0491 indicates that if all else remained constant from one quarter to the next, exports would fall by some \$49 million per quarter. As with the import equation, the primary justification is the much superior predictive ability of the equation when the trend dummy is included.

The equation has an  $\bar{R}^2$  of about 0.99 and a Durbin-Watson statistic of 1.93. It does have one low t statistic. The standard error of the estimate of \$87 million implies that a prediction by the equation will be within \$174 million of the actual value of quarterly exports (\$4.3 billion, on average, for the period of fit) about 95 per cent of the time.

## II

One of the virtues of this simulation exercise is that its procedures are readily understandable. Having estimated equations that appear to capture the major forces affecting U.S. trade performance, we simply make alternative hypothetical assumptions about the course of the U.S. economy and permit the equations to generate alternative estimates of what the U.S. trade performance would have been.

Assumptions

(1) Base Case; Inflationary, excessive real growth: All independent variables are entered in the trade equations at their actual values. The predicted values for imports and exports are the base with which we will compare the equations' predictions under alternative assumptions.

(2) Assumption 1; Non-inflationary, full employment growth: The foreign experience remains as it actually occurred. In general, the U.S. economy is assumed to pursue a non-inflationary, full-employment growth path from the second quarter of 1964 through 1969. Specifically, U.S. GNP expands at a rate of 5-1/4 per cent per annum from the third quarter of 1964. This reflects real growth of 3-3/4 per cent<sup>4/</sup> and an increase in the GNP deflator of 1-1/2 per cent per annum. Wholesale prices hold constant (as they did in the early 1960's).

(3) Assumption 2; Non-inflationary, excessive real growth: In an attempt to derive an estimate of the impact of inflation, as conceptually, if not always practically, separate from extraordinary real growth rates, a substitute assumption has been introduced (this has been employed only for the Total Import Equation, giving us a total

---

<sup>4/</sup> This is a slightly conservative estimate of the real growth potential of the nation. The Council of Economic Advisers estimates that, around the beginning of 1966, real U.S. output potential began expanding at a 4 per cent annual rate.

of three simulations). Assumption 1 is modified by assuming real GNP growth to be what it actually was in 1964-69, but with an increase in the price deflator of only 1-1/2 per cent per year. In general, the U.S. economy is assumed to pursue an excessive real, but non-inflationary, growth path from the second quarter of 1964 through 1969. As a first approximation, we may consider the improved trade balance under Assumption 2 (relative to the Base Case) as the result of avoiding price inflation. The trade deterioration which does occur under Assumption 2 (relative to Assumption 1) might thus be considered the consequence of excessive real growth.

#### Simulation Results

The results are displayed below in Tables III-V for the years 1964-1969.<sup>5/</sup> Column 1 (BASE) of each table gives the import results for the base case. Column 2 (SIMUL.) gives the import results for the simulation of Assumption 1 or Assumption 2. Column 3 (B-SIM) is the difference between columns 1 and 2. Column 4 ( $X^S$ ) is the simulation for exports, consistent with Assumption 1 or 2, since it uses column 2 as one of the inputs. Column 5 ( $X^B$ ) is the base case result for exports. Column 6 ( $X^S - X^B$ ) is the difference between columns 4 and 5. Column 7

---

<sup>5/</sup> For the purposes of the simulation exercise, the constant terms of the equations have been adjusted to equalize actual and predicted values for the full year 1964.

Table III

Non-Inflationary, Full Employment Growth  
Total Import Equation

(In billions of dollars)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	BASE	SIMUL.	B-SIM.	$X^S$	$X^B$	$X^S - X^B$	ATTRIBUTABLE DETERIORATION
1964	18.5	18.4	0.1	18.1	18.1	0.0	0.1
1965	20.9	19.3	1.6	19.3	19.2	0.1	1.7
1966	24.4	20.2	4.2	20.8	20.8	0.0	4.2
1967	25.4	21.0	4.4	21.5	21.7	-0.2	4.2
1968	29.7	22.7	7.0	23.4	23.5	-0.1	6.9
1969	33.0	24.0	9.0	26.5	26.7	-0.2	8.8

Table IV  
 Non-Inflationary, Full Employment Growth  
 Non-Regulated Goods Import Equation

(In billions of dollars)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	BASE	SIMUL.	B-SIM.	$X^S$	$X^B$	$X^S - X^B$	ATTRIBUTABLE DETERIORATION
1964	18.5	18.3	0.2	18.1	18.1	0.0	0.2
1965	20.9	19.1	1.8	19.3	19.2	0.1	1.9
1966	24.4	20.1	4.3	20.7	20.8	-0.1	4.2
1967	25.2	20.9	4.3	21.4	21.7	-0.3	4.1
1968	29.7	23.1	6.6	23.4	23.5	-0.1	6.5
1969	32.8	24.3	8.5	26.5	26.7	-0.2	8.3

Table V

Excessive Real Growth Only  
Total Import Equation

(In billions of dollars)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	BASE	SIMUL.	B-SIM.	$X^S$	$X^B$	$X^S - X^B$	ATTRIBUTABLE DETERIORATION
1964	18.5	18.4	0.1	18.1	18.1	0.0	0.1
1965	20.9	20.3	0.6	19.3	19.2	0.1	0.7
1966	24.4	22.7	1.7	20.9	20.8	0.1	1.8
1967	25.4	22.8	2.6	21.9	21.7	0.2	2.8
1968	29.7	25.1	4.6	23.7	23.5	0.2	4.8
1969	33.0	25.8	7.2	26.9	26.7	0.2	7.4

(ATTRIBUTABLE DETERIORATION) is equal to the sum of columns 3 and 6, and is the trade balance deterioration attributable to expansion in the base case relative to the alternative.

The inflationary boom of 1965-1969 is seen to have been an extremely important influence on U.S. merchandise trade during that period (as may be seen in Tables III and IV). Inflation and excessive real growth are estimated to have impaired the annual trade balance by \$6.5-6.9 billion by 1968.<sup>6/</sup> Contributing to the total, imports were \$6.6-7.0 billion greater in 1968 under the base case than they would have been under Assumption 1. This import deterioration was slightly offset by induced exports of \$100 million. The lower ends of these estimates are based on the assumption that trade restrictions render certain categories of U.S. imports independent of general economic activity (Table IV).

The actual deterioration in the balance between 1964 and 1968 was just under \$6.0 billion, having fallen from a deficit of \$400 million to a deficit of \$6.4 billion.<sup>7/</sup> Thus the simulations

---

<sup>6/</sup> The results are included for 1969, but are not very helpful. All sets of equations predict a further move toward deficit, when in fact, a small improvement occurred in the balance on these items. This results in large measure from the inability of the export equation to predict exports at a cyclical peak, partially because of the absence of cyclical explanatory variables. The equation was well off in predicting exports for 1969, although it had been reasonably close until that point.

<sup>7/</sup> Recall that we have reference to the balance of "non-agricultural exports less exports of aircraft and automotive products to Canada" and "imports less automotive imports from Canada".

indicate that if growth had proceeded as in Assumption 1, the U.S. merchandise trade balance would not have weakened.<sup>8/</sup>

Our estimates for the separate effects of excessive real and price growth can be seen in simulation Tables III and V. In 1968, the total deterioration attributable to inflation and excess real growth (Table III) is \$6.9 billion. Had only the excess real growth occurred (Table V), the deterioration would have been \$4.8 billion. Thus, some \$2.1 billion might be referred to as the "price effect".<sup>9/</sup>

#### Special Features of the Results

(1) The equations seem reliable. Comparisons have been drawn throughout between what the equations predicted under actual circumstances and what the equations predicted under alternative assumptions. But, in fact, the import equation predictions have been very close to the actual results. Indeed, the average error in predicting 1969 quarterly imports (i.e., four quarters beyond

---

<sup>8/</sup> We can compare the earlier period, 1960-1964, when the growth in nominal GNP was between 5 and 5-1/2 per cent per annum. The U.S. wholesale price index was virtually unchanged and the weighted foreign price index rose some 6 per cent in total (as it did from 1964-1968). The balance, defined the same way, improved by 700 million from 1960-1964. Of course, in the early 1960's, a sizable gap existed between potential and actual GNP.

<sup>9/</sup> These are crude guesses. Excessive real growth and inflation are related. Moreover, the import equations do not explicitly distinguish between changes in real GNP and movements in the GNP deflator.

the sample period) was only about \$30 million or less than 1/2 of 1 per cent. This inspires some confidence that we are doing more than simulating an arbitrary set of equations. These equations capture the actual movements of trade flows tolerably well. On the other side of the coin, it should be noted that the export equation does not perform nearly so well outside the sample period. The average underestimate of quarterly exports in 1969 was some \$200 million, or a little over 3 per cent. As noted in footnote 6, this has introduced error into the simulations for 1969.

(2) There are no lags in the import equations. A burst of inflation and rapid growth in GNP in 1965-1966 resulted in very rapid increases in imports. The relative slowdown in 1967 quickly halted the deterioration in the balance of trade. Exports are predicted more accurately, however, with most variables lagged two or more quarters.

(3) Finally, the trade deterioration caused by inflation has been on the import side. In fact, U.S. exports are found to depend in small part on prior levels of U.S. imports. After a short time, U.S. exports are thus stimulated by "excessive imports". Our simulations indicate that this stimulatory effect more than offsets the direct impact of the decline in price competitiveness on our exports, though to be entirely convincing, the result would have to be tested further.

Qualifications and Conclusion

Several qualifications must be offered with the results.

- (1) The standard errors of the equation coefficients have been ignored. Thus, the numbers generated in the simulation exercise are properly viewed as the midpoints of confidence intervals.
- (2) There is only one interrelationship between the U.S. economy and the rest of the world in the equations, i.e., U.S. imports induce U.S. exports with a lag. In fact, there are many others. For example, price increases abroad may have been "exported" by the United States. A 25 per cent variation in the dollar value of U.S. imports would surely have had some effect on foreign industrial production. Had the United States not expanded so rapidly, other countries might have taken steps to stimulate their exports and reduce their imports. Accounting for any of these factors would tend to reduce the trade balance deterioration attributed to our rate of expansion.
- (3) The results follow from the assumptions about the course of economic activity here and abroad. Different assumptions will yield different results. In particular, it is worth reiterating that a somewhat conservative annual growth rate for U.S. potential real output (3-3/4 per cent) has been assumed.<sup>10/</sup>

---

<sup>10/</sup> Had a 4 per cent growth rate been assumed, the trade balance deterioration attributable to inflation and excessive real growth would be reduced by about \$500 million (to a range of \$6.0-6.4 billion).

Despite these qualifications, the results are revealing. They caution against policy prescriptions based on the assumption that structural or fundamental changes in U.S. competitiveness have occurred. Instead, they argue for the efficacy of sensible U.S. demand management in achieving an adequate balance on merchandise trade.