International Finance Discussion Papers

Number 146

July 1979

The U.S. Sector of the Multi-Country Model and Its Multipliers

by

Sung Y. Kwack

July 1979

The U.S. Sector of the Multi-Country Model and Its Multipliers

by

Sung Y. Kwack*

I. Introduction

The Multi-Country Model (MCM) was developed at the Federal Reserve Board by the Quantitative Studies Section of the Division of International Finance. The model links separate econometric models of the U.S., Canada, Germany, Japan, U.K., and the rest of the world. In contrast to the Project LINK system, individual country models are linked, not only through trade and prices, but also through capital flows, interest rates, and exchange rates. Thus, the model is designed to capture, more accurately than previously available models the economic interdependence of national economies.

While some allowance is made for peculiar characteristics found within individual economies, each country model is constructed so as to fit the specifications of the prototype model described in [4], [3], [8], [12], and [19]. The results of various experiments derived from the MCM were presented in [5], [7], and [13].

The purpose of this paper is to present the structure of the quarterly model of the U.S. economy in the MCM model. Section II discusses the error statistics for selected variables inside and outside the sample period 1962-1975. Section III summarizes the multipliers

---

*I am very grateful to members of the Board's Division of International Finance, Ralph Bryant, and Jared Enzler for their contribution to the construction of the MCM. Assistance from Cheol Park and Steven Schooler is acknowledged. The views expressed in this paper are those of the author and do not necessarily represent the views of the Board of Governors of the Federal Reserve System.

for fiscal and monetary policy instruments as well as the changes in exports and exchange rates when the U.S. model is not linked with other country models in the MCM. A brief concluding remark is made in Section IV on the limitations of the model and directions in which the current research can be extended.

II. The Analysis of Errors

The equations of the prototype model specified in [5] are applied to quarterly U.S. data to obtain the econometric model of the U.S. economy. The sample period for the estimation of equations is from the first quarter of 1962 through the fourth quarter of 1975. Ordinary least squares are employed for the estimation, and thus, all the equation estimates may be subject to simultaneous equation bias. The estimated equations and the identities defining GNP, wealth, the balance of payments, and the monetary bases are given in the Appendix.

In an attempt to see how much of the variation of the endogenous variables can be explained by the model, the model is simulated dynamically starting from the fourth quarter of 1964 to the fourth quarter of 1975. In addition, it is simulated from the second quarter of 1973. The second simulation is undertaken to examine the performance of the model during a period of managed floating exchange rates. The results of the two dynamic simulations for selected variables are summarized in Table 1. The values of the root-mean-square percentage errors for real GNP are 2.39 for the entire period

and 1.89 for the period of a managed floating exchange rate. The root-mean-square percentage error values for the price variables, measured in rate of changes, are in the range of 0.83 to 1.65. Moreover, the values of the errors during the floating exchange rate period are lower than the values that occurred during the entire period. It is worth pointing out that the percentage error value for U.S. Treasury bill rate is substantially reduced to 8.54 during the floating rate period from 19.3. All the statistics indicate that the errors are in acceptable ranges, when compared to the performance of other models of the U.S. economy.

Table 2 presents the statistics of errors for export forecast outside the sample period, from the first quarter of 1976 through the first quarter of 1977. The actual observed values for the exogenous variables during this post-sample period are the values used in the forecast. The values of root-mean-square percentage errors for the selected variables given in the table are not different from those predicted by the model during the period of the floating rate regime. In other words, the errors revealed for the model outside the sample period are close to the error estimates for the sample period. This shows that the coefficients and structure of the model can be claimed to be a first approximation of the U.S. economy for the period from the middle of the 1960s to the middle of the 1970s.

Table 1 : Statistics of Errors from Dynamic Simulation within the Sample Period

Variables	1962: 4 to 1975: 4	1973: 2 to 1975: 4
GNP	2.39 (-0.70)	1.89 (1.32)
P	0.94 (-0.59)	0.83 (0.75)
RS1	19.3 (-15.8)	8.54 (4.90)
MG	7.88 (-1.64)	9.06 (4.22)
MGV	7.99 (-2.28)	9.05 (4.22)
PMGUV	1.79 (-0.64)	1.25 (-0.14)
XGV	1.65 (-0.65)	1.01 (0.66)
PXGUV	1.65 (-0.65)	1.01 (0.66)
CU	4.91 (0.06)	4.36 (2.01)
UN	23.1 (5.57)	14.1 (-9.91)
DFLP	206.5 (-10.8)	190.0 (-63.0)
DFCP	223.0 (11.0)	37.68 (11.6)
GBAL	133.9 (163.1)	586.5 (56.4)
PKBAL	179.5 (-357)	184.7 (-76.8)
DLO	286.1 (33.8)	413.0 (-79.7)

Note: Statistics are root-mean-square percentage errors, and, in parenthesis, mean percentage errors.

Table 2 : Statistics of Errors from Dynamic Simulation Outside the Sample Period

Variables	1976: 1 to 1977: 1
GNP	5.53 (-5.40)
P	0.52 (-0.27)
RS1	9.87 (-6.66)
MG	6.69 (-5.80)
MGV	7.96 (-6.85)
PMGUV	1.65 (-1.13)
XGV	2.97 (-2.86)
PXGUV	2.97 (-2.86)
CU	5.44 (-5.4)
UN	50.7 (49.7)
DFLP	57.9 (-32.1)
DFCP	73.4 (-61.9)
GBAL	39.9 (-36.4)
PKBAL	158.3 (-96.3)
DLO	124.9 (-101.0)

Note: Statistics are root-mean-square percentage errors and, in parenthesis, mean percentage errors.

III. Multipliers of the Model

Normally the multipliers of a policy instrument are calculated by comparing the solutions of the model with and without a change in the policy instruments, assuming that all other things remain unaffected. The multipliers are subject to the errors of the coefficient estimates resulting from either imperfectly estimated or specified equations. Multipliers for long time horizons are less reliable than those for short time horizons. In addition, multipliers depend on the magnitudes of economic activities and price levels existing at the time the multipliers are calculated. In what follows, the multipliers over a period of two years from 1973 through 1975 will be presented. We will consider the multipliers of the four variables that represent major fiscal monetary instruments and the multipliers for two representative foreign variables.

Table 3 presents the multipliers for a rise in real government expenditures by $10 billion. The real GNP multipliers starts from 2.3 and goes to a maximum of 2.7 in the fourth quarter after the shock and then tends to fall to 1.4 after a period of two years. The shape of the multipliers over the period of two years largely reflects the dependence of real investment flows on changes in real GDP and interest rates, rather than levels of real GDP and interest rates. The inflation rate in the U.S., as measured by the price deflator for absorption, decreases in the first quarter and thereafter tends to rise to 0.5%. The negative effect of the first quarter is due to the fact that an

Table 3 : Effects of a $10 Billion Rise in U.S. Government Real Expenditures

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	23.621	21.483	20.483	23.766	23.638	20.797	16.686	13.262
P	-0.049	0.011	0.077	0.133	0.227	0.337	0.446	0.551
UN	-0.668	-0.556	-0.515	-0.642	-0.692	-0.690	-0.556	-0.457
CU	1.414	2.300	2.768	3.089	3.217	2.957	2.193	1.304
RS1	0.175	0.329	0.477	0.638	0.784	0.894	0.959	0.940
XGSNI	0.0	0.099	0.094	0.109	0.101	0.118	0.096	0.139
MGSNI	-0.004	1.512	2.418	2.740	2.901	3.195	3.328	2.895
XGV	-0.004	-0.215	-0.014	0.233	0.408	0.563	0.875	0.967
XG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PXGUV	-0.005	-0.312	-0.017	0.256	0.403	0.607	0.807	0.887
MGV	0.0	1.448	2.575	3.011	3.949	4.492	4.788	4.037
MG	0.0	1.229	2.026	2.119	2.348	2.510	2.571	2.101
PMGUV	0.0	-0.048	-0.103	-0.244	-0.119	-0.146	-0.128	-0.039
GBAL	-0.004	-1.663	-2.589	-2.778	-3.541	-3.929	-3.913	-3.070
DFLP	2.406	2.205	1.790	1.547	1.225	0.216	-0.724	-2.143
DFCP	-0.014	-2.229	-0.228	0.173	0.660	1.169	1.788	2.004
PKBAL	2.297	2.864	2.698	1.858	1.286	-0.111	-1.873	-3.866
DLO	-2.283	-0.913	0.273	1.468	3.110	5.162	7.009	8.271

Note: 1. Figures for prices and umemployment rate are in percent.
2. Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .
3. Figures for activity and balance of payments are in billion of U.S. dollars.

increase in labor productivity outweighs increases in cost factors such as wage rates. One notices that the aggregate import price is negatively affected, despite the fact that foreign export prices and exchange rates are treated as exogenous variables. This surprising outcome results from changes in the relative importance of U.S. imports from individual foreign countries. The increases in U.S. interest rates lead to a surplus in the capital account over a period of one year from the change. The capital account surplus in the first two quarters more than offsets the current account deficits. As time passes, however, the current account deficit tends to dominate the change in the balance of payments. This is because the balance of the capital account reflects the theory of portfolio choice, i.e., that capital flows are related to changes in the demand for foreign assets.

Table 4 contains the multipliers for a $10 billion reduction in U.S. tax revenue. The real GNP multiplier is smaller than the multiplier obtained when the real government expenditure is increased by $10 billion. This is due to the fact that the reduction of U.S nominal tax revenue by $10 billion is less than $10 billion in real terms and that a reduction in tax revenue affects GNP indirectly by changing disposable income. Comparing the results in Table 3 and Table 4, the movements of the two types of multipliers are found to be similar to each other. This is what we expected from a priori theoretical reasoning.

Table 4 : Effects of a $10 Billion Reduction in U.S. Tax Revenues

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	4.584	10.908	18.030	22.185	23.788	22.410	18.132	12.885
P	-0.010	-0.013	0.0	0.030	0.093	0.184	0.245	0.385
UN	-0.133	-0.303	-0.487	-0.598	-0.661	-0.675	-0.620	-0.519
CU	0.275	0.847	1.658	2.375	2.927	3.098	2.612	1.749
RS1	0.087	0.227	0.418	0.627	0.833	1.009	1.132	1.14
XGSNI	0.0	0.020	0.047	0.104	0.120	0.125	0.091	0.103
MGSNI	-0.001	0.316	0.959	1.898	2.500	2.941	3.316	3.035
XGV	-0.001	-0.043	-0.078	-0.055	0.059	0.245	0.564	0.819
XG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PXGUV	-0.001	-0.063	-0.094	-0.061	0.058	0.264	0.510	0.751
MGV	0.0	0.278	0.943	1.952	3.198	3.990	4.624	4.047
MG	0.0	0.236	0.744	1.410	1.962	2.229	2.475	2.104
PMGUV	0.0	-0.009	-0.041	-0.221	-0.193	-0.130	-0.111	-0.035
GBAL	-0.001	-0.322	-1.022	-2.008	-3.139	-3.746	-4.060	-3.228
DFLP	1.228	2.123	2.881	3.016	2.762	1.922	0.974	-0.795
DFCP	-0.004	0.238	-0.021	-0.169	-0.213	0.059	0.636	1.250
PKBAL	1.208	1.933	3.105	3.574	3.589	2.632	1.067	-1.554
DLO	-1.205	-1.524	-1.859	-1.139	0.306	2.212	4.284	6.264

Note: 1. Figures for prices and umemployment rate are in percent.
2. Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .
3. Figures for activity and balance of payments are in billion of U.S. dollars.

In contrast to the multipliers for the fiscal policy instrument, Table 5 gives the multipliers for a $1 billion rise in the unborrowed monetary reserves of the Federal Reserve System. The real GNP multipliers for the monetary policy instruments are much larger than those for the fiscal policy instruments discussed above. The multiplier starts from 0 reaching a maximum of 8.1 at the end of two years. This shows that changes in the monetary policy will have a long-lasting effect. This is consistent with the expectation that the effects of changes in interest rates on real investment and GNP, tend to be distributed over time. The effects on the price variables seem to be neglible. The U.S. interest rate is reduced by 0.8 percentage point in the initial quarter. As time goes on, the effect of the monetary policy change on the interest rate tend to diminish. This is because of the increasing demand for money. The capital account exhibits a deficit of $12 billion in the first quarter and falls to a range of 0.5 in the second quarter to $2 billion. Our results therefore confirm that the asset-shift effect would be greater than the wealth-growth effect, when a change in monetary policy is implemented (see Branson [6]). Reductions in interest rates at home and increases in U.S. GNP and wealth cause an increase in U.S. liabilities to official foreigners. But, the effect on the U.S. balance of payments of the monetary policy, in contrast to the effect of changes in the fiscal policy, is short-lived.

The discount rate is one of the monetary policy instruments. We analyzed the effect of a one percentage point rise in the discount

Table 5 : Effects of a $1 Billion Rise in U.S. Unborrowed Monetary Reserves

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	0.0	0.862	2.824	5.162	7.104	8.106	8.141	7.610
P	0.0	-0.004	-0.010	-0.015	-0.013	-0.002	0.014	0.035
UN	0.0	-0.012	-0.062	-0.127	-0.180	-0.210	-0.225	-0.234
CU	0.0	0.052	0.205	0.439	0.713	0.940	0.993	0.889
RS1	-0.828	-0.710	-0.693	-0.617	-0.554	-0.498	-0.426	-0.372
XGSNI	0.0	-0.008	-0.002	0.019	0.046	0.067	0.071	0.077
MGSNI	0.0	-0.390	-0.463	0.247	0.098	0.301	0. 95	0.519
XGV	0.0	0.0	-0.019	-0.041	-0.053	-0.025	0.035	0.120
XG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PXGUV	0.0	0.0	-0.022	-0.045	-0.052	-0.027	0.032	0.110
MGV	0.0	0.0	0.056	0.245	0.607	0.978	1.371	1.406
MG	0.0	0.0	0.044	0.179	0.382	0.556	0.741	0.737
PMGUV	0.0	0.0	-0.003	-0.033	-0.054	-0.049	-0.046	-0.023
GBAL	0.0	-0.0	-0.075	-0.285	-0.659	-1.003	-1.336	-1.286
DFLP	-11.912	-0.040	-1.328	-0.479	-0.962	-0.968	-0.585	-0.536
DFCP	0.0	0.579	0.873	0.907	0.765	0.669	0.515	0.290
PKBAL	-11.912	-0.624	-2.195	-1.340	-1.604	-1.436	-0.858	-0.609
DLO	11.912	0.191	1.692	1.074	1.838	2.030	1.764	1.506

Note: 1. Figures for prices and umemployment rate are in percent.
2. Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .
3. Figures for activity and balance of payments are in billion of U.S. dollars.

Table 6 : Effects of a One Percentage Point Rise in U.S. Discount Rate

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	0.0	-0.808	-2.434	-4.300	-5.804	-6.586	-6.612	-6.173
P	0.0	0.004	0.010	0.015	0.015	0.008	-0.004	-0.019
UN	0.0	0.009	0.049	0.101	0.145	0.169	0.181	0.188
CU	0.0	-0.048	-0.179	-0.371	-0.589	-0.767	-0.805	-0.717
RS1	0.677	0.593	0.578	0.519	0.468	0.424	0.365	0.325
XGSNI	0.0	0.006	0.0	-0.017	-0.038	-0.055	-0.057	-0.062
MGSNI	0.0	0.438	0.536	0.328	0.006	-0.157	-0.307	-0.330
XGV	0.0	0.0	0.019	0.039	0.048	0.024	-0.024	-0.092
XG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PXGUV	0.0	0.0	0.022	0.043	0.048	0.025	-0.022	-0.084
MGV	0.0	0.0	-0.052	-0.213	-0.507	-0.799	-1.106	-1.130
MG	0.0	0.0	-0.041	-0.156	-0.319	-0.453	-0.597	-0.591
PMGUV	0.0	0.0	0.002	0.028	0.045	0.039	0.037	0.018
GBAL	0.0	0.0	0.071	0.252	0.555	0 822	1.082	1.038
DFLP	15.811	0.171	1.016	0.396	0.797	0.818	0.462	0.499
DFCP	0.0	-0.473	-0.710	-0.737	-0.623	-0.550	-0.428	-0.244
PKBAL	15.811	0.649	1.718	1.091	1.317	1.204	0.095	0.568
DLO	-15.811	-0.250	-1.196	-0.796	-1.464	-1.628	-1.356	-1.230

Note: 1. Figures for prices and umemployment rate are in percent.
2. Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .
3. Figures for activity and balance of payments are in billion of U.S. dollars.

rate by the Federal Reserve Board as presented in Table 6. As expected, it lowers real GNP by $1 billion in the first quarter increasing to $6 billion at the end of two years. The short-term rate is increased by 0.5 percentage point on the average. The increases in interest rates reduce capital outflows and incrase capital inflows, thus leading to a surplus in the capital account balance as well as the over-all balance of payments in a very short period of time.

Now, let us turn to the effect of changes in foreign conditions on U.S. economy. For this purpose, we have selected two exercises, namely an increase in U.S. real exports by $10 billion and a 10% devaluation of the U.S. dollar. As shown in Table 7, the rise in U.S. real exports by $10 billion results in a rise in U.S. real GNP, starting from $14 billion to a maximum of $40 billion at the end of the fourth quarter. Thus, the multiplier effect from 1.4 to 4 is much higher than the real GNP multiplier that U.S. real government spending would generate. The main reason for this is that the rise in U.S. exports causes a surplus in the current account, while the rise in government spending results in a deficit in the current account. Moreover, higher interest rates lead to a surplus in the capital account. As a result, the U.S. export expansion causes the balance of payments surplus. By creating pressure on the economy, the rise in the U.S. exports would raise the domestic inflation rate by 0.8 percent at the end of two years.

Table 7 : Effects of a $10 Billion Rise in U.S. Export Volume

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	14.629	26.275	36.342	39.059	36.879	34.618	27.608	21.210
P	-0.031	-0.020	0.033	0.117	0.263	0.434	0.613	0.783
UN	-0.417	-0.703	-0.941	-1.011	-1.003	-1.057	-0.945	-0.806
CU	0.877	2.194	3.677	4.655	5.099	5.006	3.947	2.520
RS1	0.088	0.266	0.524	0.793	1.032	1.236	1.369	1.366
XGSNI	10.166	11.314	10.264	10.818	10.367	11.325	10.468	10.945
MGSNI	0.383	1.489	2.887	4.632	5.384	5.846	6.300	5.886
XGV	11.208	11.812	12.626	13.838	14.715	16.100	17.634	18.560
XG	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
PXGUV	-0.0	-0.197	-0.180	-0.003	0.313	0.735	1.107	1.397
MGV	0.0	0.893	2.459	4.288	6.180	6.927	7.626	6.571
MG	0.0	0.758	1.937	3.081	3.749	3.840	4.078	3.425
PMGUV	0.0	-0.030	-0.103	-0.445	-0.297	-0.172	-0.173	-0.072
GBAL	11.208	10.919	10.167	9.550	8.536	9.173	10.008	11.990
DFLP	9.490	12.343	14.095	14.680	14.150	13.794	13.535	12.134
DFCP	5.127	0.214	0.122	0.403	0.566	1.595	2.761	3.364
PKBAL	3.593	12.301	14.522	15.103	14.764	13.459	11.911	9.496
DLO	-14.815	-23.215	-24.707	-24.527	-22.761	-21.769	-21.091	-20.742

Note: 1. Figures for prices and umemployment rate are in percent.
2. Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .
3. Figures for activity and balance of payments are in billion of U.S. dollars.

Table 8 : Effects of a 10% Devaluation of U.S. Dollar

Variables	Period 7302	7303	7304	7401	7402	7403	7404	7501
GNP	10.651	16.738	22.039	29.847	32.816	31.086	25.734	17.904
P	0.266	0.558	0.745	0.911	1.142	1.424	1.728	2.014
UN	-0.455	-0.707	-0.841	-1.054	-1.159	-1.175	-1.096	-0.904
CU	0.638	1.453	2.306	3.220	3.973	4.213	3.582	2.388
RS1	0.096	0.266	0.490	0.778	1.092	1.386	1.628	1.704
XGSNI	2.417	3.406	4.336	5.920	5.734	5.181	5.036	5.346
MGSNI	-2.379	-2.572	-1.231	-0.065	1.061	2.112	2.822	3.105
XGV	1.722	3.823	7.605	11.402	13.276	12.598	15.267	15.885
XG	1.518	2.808	4.849	6.578	7.053	6.055	6.668	6.490
PXGUV	0.027	0.639	1.554	2.293	2.830	3.266	3.715	4.152
MGV	0.464	1.028	1.839	2.946	4.784	6.122	7.272	6.606
MG	-1.871	-2.125	-1.604	-1.061	-0.405	0.247	0.600	0.630
PMGUV	3.862	5.395	5.213	5.251	5.202	5.234	5.387	5.336
GBAL	1.258	2.795	5.766	8.456	8.492	6.476	7.995	9.278
DFLP	19.026	31.268	26.625	26.431	23.387	17.965	11.662	11.624
DFCP	-18.860	-24.708	-24.965	-21.760	-15.791	-6.848	8.179	5.930
PKBAL	37.735	55.901	51.652	48.509	39.822	25.638	3.841	5.635
DLO	-40.523	-60.008	-58.022	-56.957	-47.475	-30.835	-9.975	-12.893

Note: 1. **Figures for prices and umemployment rate are in percent.**
2. **Figures for interest rate are in percentage point, whereas those for capacity utilization are in percentage points .**
3. **Figures for activity and balance of payments are in billion of U.S. dollars.**

Finally, the effect of the U.S. dollar depreciating by 10% against major foreign currencies is given in Table 8. The dollar exchange rate changes are treated here as affecting other economic variables rather than caused by them. At the two years following the depreciation, rises in the domestic inflation rate is increased by 2 percent. This estimate is in the range of estimates reported by others (see Hooper and Lowrey [11], and Kwack [16]). The devaluation increases the balance of U.S. trade accounts by $1 billion in the first quarter, U.S. real imports being decreased by $2 billion and exports being increased by $1.5 billion. This generates, through the multiplier effect, initially a $10 billion rise in U.S. real GNP and a $18 billion rise over the two year period. The increases in real income over time, stimulated by the devaluation, cause the U.S. interest rate to rise. The U.S. rate is increased by 1.7 percentage points after two years from the devaluation. The increase in the interest rate causes a capital account surplus. Consequently, the dollar devaluation leads to both U.S. current account and balance of payments surpluses. One notices, however, that the effect on U.S. official liabilities to foreigners, as measured by the U.S. balance of payments, tends to diminish after one and a half years.

IV. Concluding Remarks

The analysis of the multipliers shows that an expansionary fiscal policy leads to higher levels of real GNP and interest rates. It causes a balance of current account to become a deficit over time, but results in a surplus in the capital account balance temporarily. The over-all

balance of payments tends to remain deficit over the period of two years, starting from a surplus. An expansionary monetary policy results in higher levels of real GNP and lowers the rates of interest. The impact of the policy change directs largely on the capital accounts and brings about a deficit in the balance of payments. In contrast to the fiscal policy action, the impact of the monetary policy changes on the balance of payments is rather temporary. Increased exports and a U.S. dollar devaluation have expansionary impacts on U.S. real GNP and price levels. Both cases result in balance of payments surpluses. One interesting finding of the exercises is that the impact of external factors on U.S. activity and inflation are much greater than anticipated. This finding is very interesting and deserves further investigation.

All foreign variables and exchange rates are taken as given. The U.S. export equation is not the behavior equation estimated. Rather, it is defined by utilizing the parameter estimates given by the equations for foreign imports from the United States in the MCM along with relevant empirical studies of U.S. exports. This is done in order to make the U.S. export equation consistent with foreign import equations from the U.S. in the MCM. All these shortcomings of a model of the U.S. economy when seen as a country in the interdependent world will, of course, be remedied when the entire MCM model is analyzed.

REFERENCES

1. Board of Governors of the Federal Reserve System, Quarterly Econometric Model (MPS), May 1977, unpublished

2. Ball, R.J., (ed), International Linkage of National Economic Models, North-Holland Publishing Co., 1975

3. Berner, Richard, The Good Market and the Labor Market of the Multi-Country Model, International Finance Discussion Papers, No. 97, December 1976

4. Berner, Richard, Peter Clark, Howard Howe, Sung Kwack and Guy Stevens, Modeling the International Influences on the U.S. Economy: A Multi-Country Approach, International Finance Discussion Papers, No. 93, November 1976, Board of Governors of the Federal Reserve System, Washington, DC.

5. Berner, Richard, Peter Clark, Ernesto Hernandez-Cata, Howard Howe, Sung Kwack, and Guy Stevens, A Multi-Country Model of the International Influences on the U.S. Economy: Preliminary Results, International Finance Discussion Papers No. 115, December 1977, Board of Governors of the Federal Reserve System, Washington, DC

6. Branson, William H., "Stocks and Flows in International Monetary Analysis" in Albert Ando, R. Herring and R. Marston (eds) International Aspects of Stabilization Policies (Boston: The Federal Reserve Bank of Boston, 1974), pp. 27-50

7. Hernandez-Cata, E., H. Howe, Sung Y. Kwack, G. Stevens, R. Berner, and P. Clark, Monetary Policy Under Alternative Exchange Rate Regimes: Simulations with a Multi-Country Model. International Finance Discussion Papers No. 130, February 1979 and published in Managed Exchange Rate Flexibility: The Recent Experience, Conference Series No. 20, Federal Reserve Bank of Boston, October 1979, pp 127-142.

8. Clark, Peter and Sung Kwack, Asset Markets and Interest Rate Determination in the Multi-Country Model, International Finance Discussion Papers No. 94, December 1976

9. Fromm, G. and L. Klein (eds), The Brookings Model: Perspective and Recent Developments, North Holland Publishing Co., 1975

10. Hirsch, Albert A., "Policy Multipliers in the BEA Quarterly Econometric Model", Survey of Current Business, Vol 57, June 1977, pp 60-71

APPENDIX:

THE U.S. SECTOR OF THE MULTI-COUNTRY MODEL

Sung Y. Kwack

LIST OF BEHAVIORAL EQUATIONS

A. Domestic Expenditure Sector

Consumption function

Private fixed investment

Inventory investment

Capital consumption allowance

B. Government Sector

Tax receipts

Federal Reserve profits

Transfer payments for unemployment insurance

Government interest payments excluding Federal Reserve profits

Government interest payments to foreigners in NIA

C. Current Account

Bilateral import demand functions:

- Exports of Canada to the U.S.
- Exports of Japan to the U.S.
- Exports of U.K. to the U.S.
- Exports of West Germany to the U.S.
- Exports of the rest-of-the-world to the U.S., excluding fuel imports
- Domestic total petroleum consumption of the U.S.
- Imports of petroleum products

Bilateral bridge equations:

- U.S. imports from Canada

U.S. imports from Japan

U.S. imports from U.K.

U.S. imports from West Germany

U.S. imports from the rest-of-the-world

U.S. imports of non-petroleum goods

U.S. exports of goods

U.S. exports of agricultural goods

Export of services, other than income receipts

Imports of services other than income payments

Direct investment earnings abroad

Direct investment income receipts

Direct investment earnings in the U.S.

Direct investment income payments

Income receipts on private financial claims

Government investment income receipts

Income payments on private financial liabilities

Income payments to foreign official agencies

Private transfer payments to foreigners

D. Prices

Domestic price (absorbtion delfator)

Unit value index of export goods

Unit value index of non-fuel import goods

Price index for exports of U.S. goods and service

Price index of imports of U.S. goods and service

E. Labor Market

Wage rate

Labor force

Labor employed

Labor manhours worked

Capacity utilization rate

F. Domestic Asset Demands and Interest Rates

Demand for currency

Demand for demand deposits

Demand for non-CD time deposits

Rate on large negotiable certificates of time deposits

Supply of large negotiable certificates of time deposits

Demand for free reserves

Interest rate on new issues of AAA utility bonds

Interest rate on long-term government bonds

G. Capital Movements

Changes in U.S.'s direct investment value

Changes in long-term financial claims on foreigners

Changes in short-term claims on foreigners

Changes in foreign direct investment value in the U.S.

Changes in long-term financial liabilities

Changes in short-term liabilities excluding U.S. bank borrowings from branches

Changes in short-term liabilities of domestic banks to their foreign branches

Consumption function

$$C = \underset{(1.44)}{46.186} + \underset{(5.17)}{7.701}\,DMYEX - \underset{(3.24)}{6.132}\,DMYCR - \underset{(3.48)}{7.106}\,DMYOP + \underset{(2.17)}{6.538}\,\Delta DOPEC$$

$$+ \underset{(1.40)}{0.006}\,NW_{-1}/P_{-1} + \sum_{i=0}^{5} a_i (YDV/P)_{-i} + \sum_{i=0}^{7} b_i (YDV_{-2} \cdot DMYQ_{-4}/P_{-2})_{-i}$$

$$+ \sum_{i=0}^{3} c_i\, 0.5\,(RL_{-2} + RLGV_{-2})_{-i} + \sum_{i=0}^{3} d_i\,(WGP1_{-2} \cdot DMYQ_{-4})_{-i}$$

$\bar{R}^2 = 0.999$ SEE = 2.398 DW = 2.17

Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7	SUM
a_i	0.331	0.226	0.140	0.075	0.030	0.005			0.808
	(16.1)	(30.6)	(33.3)	(8.58)	(3.04)	(0.72)			(53.8)
b_i	0.003	0.004	0.005	0.005	0.005	0.004	0.003	0.002	0.035
	(1.47)	(3.68)	(8.36)	(7.77)	(5.52)	(4.41)	(3.81)	(3.44)	(9.20)
c_i	-3.057	-1.761	-0.819	-0.232					-5.870
	(2.32)	(4.94)	(0.12)	(0.36)					(4.94)
d_i	1.860	1.121	0.564	0.190					3.736
	(2.17)	(4.21)	(1.35)	(0.49)					(4.21)

Private fixed investment

$$IFP = \underset{(0.72)}{6.65} + \sum_{i=0}^{3} a_i \, KP_{-1-i} + \sum_{i=0}^{3} b_i \, \Delta(GNP - G - XSYV/PXGSNI + (MSYV - MSYGV)/PMGSNI)_{-i} + \sum_{i=o}^{3} c_i \, \Delta II_{-i} + \sum_{i=o}^{3} d_i \, \Delta RL_{-i-1} + \underset{(4.33)}{4.179} \, DMYQ_{-2} \, \Delta WGP1 + \underset{(1.77)}{1.737} \, DMYQ_{-3} \, \Delta WGP1_{-1}$$

$\bar{R}^2 = 0.873$ SEE = 1.803 DW = 1.82 $\rho = 0.863$
Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	1.061 (8.05)	0.020 (11.1)	-0.504 (7.68)	-0.510			0.067 (11.2)
b_i	0.262 (7.26)	0.245 (5.39)	0.195 (4.38)	0.114 (1.77)			0.817 (7.10)
c_i	-0.236 (4.26)	-0.237 (3.50)	-0.199 (2.71)	-0.120 (2.31)			-0.793 (3.49)
d_i	-1.102 (1.41)	-1.661 (2.02)	-1.921 (1.94)	-1.887 (1.82)	-1.554 (1.73)	-0.925 (1.67)	-9.051 (1.99)

Inventory investment

$$
\begin{aligned}
II - IIF = {} & 1.709 - 0.537\ (C + IFP + XGSA - XGA - MG) \\
& (0.24) \quad (5.57) \\
& + 0.666 \sum_{i=1}^{2} 0.5\ (C + IFP + XGSA - XGP - MG)_{-i} + 0.336\ (GNP - XSYV/PXGSNI \\
& (6.17) \\
& + (MSYV - MSYGV)/PMGSNI) - 0.404 \sum_{i=1}^{2} 0.5\ (GNP - XSYV/PXGSNI \\
& (5.11) \\
& + (MSYV - MSYGV)/PMGSNI)_{-i} + 5.174\ DMYJ - 3.297\ WGP1 \\
& (3.07) \quad (5.10) \\
& + 0.896\ (400 \cdot LOG(P/P_{-1})) - 2.715\ UN \\
& (2.60) \quad (4.37)
\end{aligned}
$$

$\bar{R}^2 = 0.867$ SEE = 2.783 DW = 1.40
Period 62:1 to 75:4

Capital consumption allowance

$$CCAV = \underset{(-3.61)}{-14.661} + \sum_{i=0}^{3} a_i \, (KP_{-1} \cdot P \cdot 0.015397 \cdot 4)$$

$\bar{R}^2 = 0.949$ SEE = 0.909 DW = 2.60 $\rho = 0.956$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.070	0.367	0.455	0.333	1.225
	(0.33)	(30.9)	(4.22)	(3.12)	(30.6)

Tax receipts

$$\text{Log(TV)} = \underset{(8.18)}{-2.124} \underset{(6.81)}{-0.072}\ \text{DMY752} + \underset{(29.8)}{1.135}\ (0.5*(\text{LOG(GNP)} + \text{LOG}\ (\text{GNP}_{-1})))$$

$\bar{R}^2 = 0.945$ SEE = 0.014 DW = 1.54 $\rho = 0.891$

Period 62:1 to 75:4

Federal Reserve Profits

$$YFRPV = \underset{(0.75)}{-0.077} + \sum_{i=0}^{5} a_i \cdot (RS1_{-1}^{0.5} \cdot RLGB_{-1}^{0.5} \cdot NDA_{-1})_{-i}$$

$\bar{R}^2 = 0.952$ SEE = 0.112 DW = 1.49 $\rho = 0.726$

Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.0041 (9.51)	0.0028 (18.13)	0.0017 (19.6)	0.0009 (4.87)	0.0003 (1.64)	0.0001 (0.29)	0.010 (33.3)

Transfer payments for unemployment insurance

$$\underset{}{\text{TRANV-GFPV}} = \underset{(24.3)}{-16.150} - \underset{(7.59)}{1.948}\ \Delta\text{DOPEC}_{+1} \underset{(6.99)}{-2.231}\ \Delta\text{DOPEC} \underset{(8.64)}{-2.805}\ \Delta\text{DOPEC}_{-1} - \underset{(10.9)}{2.884}\ \Delta\text{DOPEC}_{-2}$$

$$+ \underset{(3.51)}{0.128}\ \text{GUIBV} + \underset{(20.11)}{2.595} \sum_{i=0}^{1} 0.5 \cdot (\text{LF-LE})_{-i} + \sum_{i=o} a_i\ \text{GV}_{-i}$$

$\bar{R}^2 = 0.994$ SEE = 0.241 DW = 1.78 $\rho = 0.742$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.030 (1.91)	0.023 (10.8)	0.016 (2.13)	0.008 (1.09)	0.076 (10.7)

Government interest payment excluding federal reserve profits

$$GIV-YFRPV = \underset{(0.73)}{8.032} + \underset{(2.38)}{0.634}\ DMY721_{+4} + \underset{(0.85)}{0.261}\ DMY721_{+3} - \underset{(-1.63)}{0.429}\ DMY721_{+2}$$

$$+ \underset{(2.88)}{0.766}\ \Delta DMYFLT + \underset{(4.21)}{1.295}\ \Delta DMYFLT_{-1} + \underset{(4.57)}{1.210}\ \Delta DMYFLT_{-2} \underset{(-3.61)}{-0.775}\ \Delta DOPEC$$

$$+ \underset{(1.76)}{0.380}\ DMYFLT_{+1} + \sum_{i=0}^{18} a_i\ (RS1_{-1}^{0.4} \cdot RLGB_{-1}^{0.6} \cdot GDSV_{-1})_{-i}$$

$\bar{R}^2 = 0.515$ SEE = 0.301 DW = 2.02 $\rho = 0.999$
Period 62:1 to 75:4

i	0	1	2	3	4	5	6
a_i	-0.00204 (3.47)	-0.00202 (3.59)	-0.00205 (3.14)	-0.00211 (2.68)	-0.00220 (2.37)	-0 00230 (2.16)	-0.00241 (2.08)

i	7	8	9	10	11	12
a_i	-0.00251 (1.92)	-0.00260 (1.84)	-0.00267 (1.78)	-0.00271 (1.73)	-0.00270 (1.68)	-0.00264 (1.64)

i	13	14	15	16	17	18
a_i	-0.00253 (1.60)	-0.00234 (1.57)	-0.00207 (1.54)	-0.00171 (1.51)	-0.00125 (1.49)	-0.00068 (1.46)

	SUM
a_i	-0.042 (2.00)

Government interest payment to foreigners in NIA

INTGF = -0.002 + 1.001 MSYGVSA
(-0.3) (359.2)

$\bar{R}^2$ = 0.999 SEE = 0.031 DW = 2.01
Period 62:1 to 75:4

Exports of Canada to U.S.

$$\underset{}{\text{LOG}(XCUV/((PXGUV \cdot CE))} = \underset{(8.20)}{-14.585} - \underset{(4.14)}{0.067\ Q1} + \underset{(1.41)}{0.025\ Q2} - \underset{(4.62)}{0.073\ Q3} + \underset{(4.19)}{1.518\ \text{LOG}(P_{-1})}$$

$$\underset{(5.36)}{-1.013\ \text{LOG}((PXGUV \cdot CE) + \sum_{i=0}^{2} a_i\ \text{LOG}(GNP)_{-(1+i)}}$$

$\bar{R}^2 = 0.955$ SEE = 0.052 DW = 1.92 $\rho = 0.486$
Period 62:1 to 75:4

i	0	1	2	SUM
a_i	1.225	0.817	0.409	2.452
	(9.75)	(9.75)	(9.75)	(9.75)

Exports of Japan to U.S.

$$\underset{}{\text{LOG}(\text{XJUV}/(\text{JPXGUV} \cdot \text{JE}))} = \underset{(4.48)}{-19.972} - \underset{(9.37)}{0.157}\ Q1 - \underset{(1.32)}{0.024}\ Q2 + \underset{(2.35)}{0.028}\ Q3$$

$$+ \underset{(2.35)}{1.786}\ \text{LOG}(P_{-1}) + \underset{(4.95)}{3.135}\ \text{LOG}(GNP_{-1}) + \sum_{i=0}^{3} a_i\ \text{LOG}(\text{JPXGUV}_{-i} \cdot \text{JE})$$

$\bar{R}^2 = 0.887$ SEE = 0.060 DW = 1.41 $\rho = 0.816$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	-0.940	-0.372	-0.026	0.098	-1.241
	(3.38)	(3.33)	(0.12)	(0.54)	(3.33)

Exports of U.K. to U.S.

$$\begin{aligned}\text{LOG}(\text{XEUV}/(\text{EPXGUV1} \cdot \text{EE})) = {} & -17.513 \underset{(12.6)}{} - 0.085 \underset{(3.41)}{\text{Q1}} - 0.027 \underset{(1.06)}{\text{Q2}} - 0.065 \underset{(2.57)}{\text{Q3}} - 0.067 \underset{(3.73)}{\text{DILST}} \\ & + 2.647 \underset{(13.5)}{\text{LOG}(\text{GNP}_{-1})} + 0.140 \underset{(0.47)}{\text{LOG}(\text{P}_{-1})} \\ & + \sum_{i=0}^{4} a_i \, \text{LOG}(\text{EPXGUV1} \cdot \text{EE})_{-i}\end{aligned}$$

$\bar{R}^2 = 0.957$ SEE = 0.065 DW= 1.53
Period 62:1 to 75:4

i	0	1	2	3	4	SUM
a_i	-0.336	-0.205	-0.106	-0.039	-0.004	-0.691
	(1.87)	(3.82)	(1.60)	(0.42)	(0.05)	(4.09)

Exports of Germany to U.S.

$$\begin{aligned}\text{LOG(XGUV/(GPXGUV} \cdot \text{GEI))} = {} & -18.416 \underset{(6.08)}{} - 0.083 \underset{(3.03)}{Q1} - 0.076 \underset{(2.46)}{Q2} - 0.091 \underset{(3.28)}{Q3} - 0.078 \underset{(3.51)}{\text{DILST}} \\ & + 2.826 \underset{(6.58)}{\text{LOG}(GNP_{-1})} + 1.546 \underset{(2.46)}{\text{LOG}(P_{-1})} \\ & + \sum_{i=0}^{4} a_i \, \text{LOG(GPXGUV} \cdot \text{GEI)}_{-1}\end{aligned}$$

$\bar{R}^2 = 0.918$ SEE = 0.086 DW = 2.04 $\rho = 0.372$
Period 62:1 to 75:4

i	0	1	2	3	4	SUM
a_i	-0.416	-0.345	-0.267	-0.184	-0.095	-1.308
	(1.75)	(4.32)	(2.52)	(1.32)	(0.90)	(4.48)

Exports of ROW to U.S., excluding fuel imports

$$\text{LOG(XRUV/ROWPXG - MGFL)} = \underset{(3.37)}{-6.854} + \underset{(0.77)}{0.026}\,Q1 + \underset{(0.85)}{0.029}\,Q2 - \underset{(0.18)}{0.006}Q3 + \underset{(1.97)}{0.787}\,\text{LOG}(P_{-1}) + \underset{(1.94)}{0.198}\,\text{LOG(PMGFL)} + \sum_{i=0}^{3} a_i \text{LOG(ROWPXG)}_{-i}$$

$\bar{R}^2 = 0.866$ SEE = 0.088 DW = 2.22
Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	-0.478	-0.198	-0.025	0.041	-0.659
	(1.97)	(1.93)	(.23)	(0.43)	(1.94)

Domestic total petroleum consumption of U.S.

$$\underset{}{\text{LOG(FLC)}} = \underset{(12.9)}{-10.741} + \underset{(4.41)}{0.032}\ Q1 - \underset{(11.6)}{0.093}\ Q2 - \underset{(12.7)}{0.086}\ Q3 - \underset{(4.29)}{0.240}\ \text{LOG(PMGFL)}$$

$$+ \underset{(3.93)}{0.493}\ \text{LOG(WPIFL)} + \sum_{i=0}^{3} a_i\ \text{LOG(GNP)}_{-(1+i)}$$

$\bar{R}^2 = 0.911$ SEE = 0.025 DW = 2.28 $\rho = 0.770$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	-0.084	0.282	0.418	0.324	0.941
	(0.24)	(7.88)	(2.44)	(1.90)	(7.91)

Imports of petroleum products

$$\underset{}{MGFL} = \underset{(4.37)}{0.601} - \underset{(6.88)}{0.811}\ Q1 + \underset{(0.62)}{0.155}\ Q2 + \underset{(5.90)}{0.786}\ Q3 + \underset{(7.57)}{616.377}\ FLM + \underset{(4.23)}{350.805}\ FLM_{-1}$$

$\bar{R}^2 = 0.970$ SEE = 0.284 DW = 1.59

Period 62:1 to 75:4

U.S. imports from Canada: delivery-shipment equation

$$MUCV = \underset{(3.39)}{0.433} \underset{(0.49)}{-0.066\ Q1} \underset{(0.79)}{- 0.106Q2} \underset{(1.55)}{- 0.207\ Q3} + \underset{(138.8)}{1.078\ XUCV}$$

$\bar{R}^2 = 0.997$ SEE = 0.352 DW = 1.93
Period 62:1 to 75:4

U.S. imports from Japan: delivery-shipment equation

$$MUJV = \underset{(2.40)}{-0.261} + \underset{(0.91)}{0.108}\ Q1 + \underset{(4.32)}{0.513}\ Q2 + \underset{(2.55)}{0.301}\ Q3 + \underset{(94.7)}{1.078}\ (0.5 \cdot (XJUV + XJUV_{-1}))$$

$\bar{R}^2 = 0.994$ SEE = 0.312 DW = 2.43
Period 62:1 to 75:4

U.S. imports from U.K.: bridge equation

$$\begin{array}{lccccccc} MUEV = & 0.091 & + 0.070\ Q1 & -0.023Q2 & - 0.030\ Q3 & - 0.090\ DILST & + 1.002\ XEUV \\ & (1.66) & (1.47) & (0.49) & (0.63) & (2.68) & & (61.2) \end{array}$$

$\bar{R}^2 = 0.987$ SEE = 0.124 DW = 2.09
Period 62:1 to 75:4

U.S. imports from Germany: Delivery-shipment equation

$$MUGV = \underset{(1.41)}{0.104} + \underset{(0.76)}{0.057}\ Q1 + \underset{(1.66)}{0.126}\ Q2 - \underset{(1.23)}{0.093}\ Q3 - \underset{(3.85)}{0.202}\ DILST$$

$$+ \underset{(69.0)}{1.021}\ (0.65 \cdot XGUV + 0.35 \cdot XGUV_{-1})$$

$\bar{R}^2 = 0.989$ SEE = 0.195 DW = 2.24

Period 62:1 to 75:4

U.S. imports from ROW: Delivery-shipment equation

$$MURV = \underset{(0.32)}{-0.124} \underset{(4.92)}{-0.540\ Q1} \underset{(0.50)}{-\ 0.291\ Q2} \underset{(4.49)}{-\ 0.285\ Q3} + \underset{(77.7)}{1.101}\ (0.55 \cdot XRUV + 0.45 \cdot XRUV_{-1})$$

$\bar{R}^2 = 0.991$ SEE = 1.547 DW = 1.08

Period 62:1 to 75:4

U.S. Imports of non-petroleum goods: bridge equation

$$\begin{aligned}\text{LOG(UMGV - UMGFLV)} = {} & -0.178 + 0.011\ Q1 + 0.004\ Q2 + 0.013\ Q3 \\ & (12.5) \quad (1.89) \quad (0.73) \quad (2.37) \\ & + 1.027\ \text{LOG(MUCV + MUEV + MUJV + MURV - UMGFLV)} \\ & (271.7)\end{aligned}$$

$\bar{R}^2 = 0.999$ SEE = 0.015 DW = 1.95

Period 62:1 to 75:4

U.S. Exports of goods: shipment-delivery equation

$$\begin{aligned} LOG(XGV) = {} & -0.056 + 0.011\ Q1 + 0.005\ Q2 + 0.002\ Q3 \\ & (1.18) \quad (2.28) \quad (0.96) \quad (0.49) \\ & + 1.009\ LOG(XUC + SUEV + XUGV + SUJV + XURV) \\ & (80.3) \end{aligned}$$

$\bar{R}^2 = 0.992$ SEE = 0.017 DW = 1.82 $\rho = 0.686$
Period 62:1 to 75:4

U.S. Exports of Agricultural goods

$$\begin{aligned} LOG(XGAV/PXAG) = {} & -5.861 \underset{(2.49)}{} - 0.017 \underset{(0.80)}{Q1} - 0.0004 \underset{(0.02)}{Q2} - 0.050 \underset{(2.28)}{Q3} - 0.122 \underset{(6.53)}{DILST} \\ & + 1.604 \underset{(3.48)}{LOG(FGNP)} + 0.928 \underset{(1.93)}{LOG(ROWIP_{-1})} \end{aligned}$$

$\bar{R}^2 = 0.677$ SEE = 0.074 DW = 2.57 $\rho = 0.676$
Period 62:1 to 75:4

Exports of services other than investment income receipts

$$\begin{aligned}\text{LOG(XSOPV/PXGSNI)} = {} & \underset{(0.66)}{-0.251} \underset{(1.67)}{-0.014Q1} + \underset{(6.35)}{0.060Q2} + \underset{(1.55)}{0.128Q3} + \underset{(7.08)}{0.442}\ \text{LOG((XGV + MGV)/} \\ & \text{PXGSNI)} + \underset{(1.29)}{0.120}\ \text{LOG}(FGNP_{-1}) + \underset{(3.93)}{0.891}\ \text{LOG(FP} \cdot \text{XFPE/PXGSNI)}\end{aligned}$$

$\bar{R}^2 = 0.907$ SEE = 0.030 Dw = 2.68 $\rho = 0.771$
Period 62:1 to 75:4

Imports of services other than investment income payments

$$\begin{aligned}\text{LOG(MSOPV/PMGSNI)} = {} & \underset{(3.34)}{3.947} - \underset{(2.03)}{0.024Q1} + \underset{(18.1)}{0.232Q2} + \underset{(32.1)}{0.407Q3} + \underset{(2.76)}{0.053}\ \text{DEXP67} + \\ & + \underset{(2.97)}{0.056}\ \text{DEXP70} + \underset{(3.79)}{0.397}\ \text{LOG((XGV + MGV)/PMGSNI)} + \underset{(2.65)}{0.611}\ \text{LOG}(GNP_{-1}) \\ & + \sum_{i=0}^{3} a_i\ \text{LOG(P/PMGSNI)}_{-i}\end{aligned}$$

$\bar{R}^2 = 0.973$ SEE = 0.038 DW = 2.13 $\rho = 0.500$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.566	0.191	-0.028	-0.092	0.639
	(3.02)	(7.09)	(0.28)	(0.95)	(7.10)

Direct investment earnings abroad

$$XSYPEV = \underset{}{-1.911} - \underset{(0.98)}{1.411Q1} - \underset{(3.63)}{1.661Q2} - \underset{(3.76)}{2.161Q3} + \underset{(2.11)}{0.952}\ DMYDIC + \underset{(1.38)}{0.020}\ (1-DOPEC) \cdot$$

$$DIC_{-1} + \underset{(6.97)}{0.173}\ DIC_{-1}$$

$\bar{R}^2 = 0.619$ SEE = 1.418 DW = 2.45 $\rho = 0.748$

Period 62:1 to 75:4

Direct investment income receipts

$$XSYPDV = \underset{(7.64)}{1.473} - \underset{(2.29)}{0.407}Q1 - \underset{(3.41)}{0.630}Q2 - \underset{(5.59)}{1.01}Q3 - \underset{(5.66)}{1.031}\ DOPEC \cdot PMGFL$$

$$+ \underset{(16.5)}{0.730}\ XSYPEV + \sum_{i=0}^{3} a_i\ ((1-DOPEC) \cdot XSYPEV)_{-1}$$

$\bar{R}^2 = 0.974$ SEE = 0.436 DW = 1.51
Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	-0.250	-0.068	0.035	0.057	-0.225
	(6.30)	(5.06)	(3.45)	(5.34)	(5.11)

Direct investment earnings in the United States

$$MSYPEV = \underset{(6.80)}{0.637} + \sum_{i=0}^{3} a_i \, DIL_{-(1+i)}$$

$\bar{R}^2 = 0.920$ SEE = 0.157 DW = 1.37

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.076	0.035	0.008	-0.003	0.117
	(1.83)	(14.2)	(0.40)	(0.14)	(14.3)

Direct investment income payments

$$MSYPDV = \underset{(1.61)}{0.069} - \underset{(3.99)}{0.399}\ \Delta DOPEC - \underset{(3.03)}{0.324}\ \Delta DOPEC_{+1} - \underset{(4.70)}{0.470}\ \Delta DOPEC_{-1} + \underset{(10.7)}{0.387}\ MSYPEV$$

$\bar{R}^2 = 0.725$ SEE = 0.099 DW = 2.03 $\rho = 0.383$
Period 62:1 to 75:4

Income receipts on private financial claims

$$XSYPFV/FE = \underset{(5.34)}{-0.679} + \sum_{i=0}^{3} a_i \left((FRS \cdot STC + FRL \cdot LTPC)/FE\right)_{-(1+i)} + \sum_{i=0}^{3} b_i \, DMYFB_{-i}$$

$\bar{R}^2 = 0.962$ SEE = 0.234 DW = 1.9 $\rho = 0.448$

Period 62:1 to 75:4

i	0	1	2	3	Sum
a_i	0.007	0.003	0.0001	-0.0007	0.009
	(6.60)	(29.7)	(0.26)	(1.45)	(29.0)
b_i	0.637	-0.007	-0.327	-0.325	-0.023
	(2.83)	(0.04)	(1.8)	(2.68)	(0.04)

Government investment income receipts

$$XSYGV = \underset{(12.4)}{0.566} - \underset{(10.9)}{0.366}Q1 - \underset{(6.56)}{0.237}Q2 - \underset{(11.4)}{0.379}\,Q3 + \sum_{i=0}^{7} a_i \,(SNGKA \cdot RS1^{0.5} \cdot RLGR^{0.5})_{-(1+i)}$$

$\bar{R}^2 = 0.861$ SEE = 0.097 DW = 2.03 $\rho = 0.226$
Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7	SUM
a_i	0.0005	0.0005	0.0005	0.0004	0.0004	0.0003	0.0003	0.0001	0.003
	(1.39)	(2.85)	(9.50)	(6.00)	(3.10)	(2.20)	(1.77)	(1.52)	(12.5)

Income payments on private financial liabilities

$$MSYPFV = \underset{(5.28)}{-0.615} - \underset{(2.21)}{0.156}\,Q1 \; \underset{(0.13)}{-0.010}\,Q2 + \underset{(1.71)}{0.121}\,Q3 + \sum_{i=0}^{3} a_i (RLGB \cdot LTPL + RS1 \cdot STL)_{-(1+i}$$

$\bar{R}^2 = 0.960$ SEE = 0.225 DW = 1.68 $\rho = 0.436$
Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.010	0.003	-0.001	-0.002	0.010
	(13.6)	(33.0)	(2.78)	(5.42)	(33.3)

Income payments on government liabilities to foreign official agencies

$$MSYGV = \underset{(7.13)}{-0.304} + \underset{(2.90)}{0.208}\ DMY721_{+3} + \underset{(5.18)}{0.411}\ DMY721_{+2} + \underset{(3.13)}{0.223}\ DMY721_{+1}$$

$$+ \underset{(4.67)}{0.287}\ \Delta DOPEC + \underset{(2.22)}{0.139}\ DMY752_{+1} + \underset{(13.2)}{0.038}\ LO_{-1} + \underset{(8.19)}{0.003}\ (RS1^{0.6} RLGB^{0.4}$$

$$LO)_{-1}$$

$\bar{R}^2 = 0.988$ SEE = 0.072 DW = 2.28 $\rho = 0.603$
Period 62:1 to 75:4

Private transfer payments to foreigners in BOP

$$\underset{(2.94)}{\text{MTRANPV}} = \underset{(4.71)}{0.253 + 0.380\,\text{DMECPR}} + \underset{(7.18)}{0.0006\,\text{GNPV}}$$

$\bar{R}^2 = 0.563$ SEE = 0.193 DW = 1.16

Period 62:1 to 75:4

Domestic Price (absorption deflator)

$$LOG(P) = \underset{(4.87)}{-0.419} + \underset{(2.69)}{0.051}\ Log(CU_{-1}) + \underset{(1.80)}{0.001}\ TIME70 + \sum_{i=0}^{3} a_i\ LOG(W)_{-i}$$

$$+ \sum_{i=0}^{7} b_i\ LOG(GNP/(LE \cdot LH))_{-i} + \sum_{i=0}^{3} c_i\ log\ (PMGSNI)_{-i}$$

$\bar{R}^2 = 0.999$ SEE = 0.003 DW = 1.78 $\rho = 0.644$
Period 62:1 to 76:4

i	0	1	2	3	4	5	6	7	SUM
a_i	0.220 (3.02)	0.220 (26.8)	0.182 (4.76)	0.109 (2.91)					0.731 (27.1)
b_i	-0.080 (2.31)	-0.082 (4.16)	-0.081 (6.62)	-0.077 (5.69)	-0.068 (4.13)	-0.057 (3.24)	-0.041 (2.72)	-0.022 (2.39)	-0.508 (6.68)
c_i	0.071 (3.51)	0.028 (5.64)	0.002 (0.27)	-0.007 (0.84)					0.094 (5.53)

Export goods unit value index

$$\begin{aligned}\text{LOG(PXGUV)} = {} & \underset{(1.77)}{-0.434} + \underset{(0.91)}{0.0027}\ Q1 - \underset{(0.74)}{0.0025}\ Q2 - \underset{(1.96)}{0.0058}\ Q3 \\ & - \underset{(2.87)}{0.489}\ \text{LOG}(GNP_{-1}/(LH_{-1} \cdot LE_{-1})) + \underset{(7.24)}{0.207}\ \text{LOG(PXAG)} \\ & + \underset{(6.09)}{0.344}\ \text{LOG}(W_{-1}) + \sum_{i=0}^{3} a_i\ \text{LOG(PMGUV)}_{-(1+i)} + \sum_{i=0}^{3} b_i\ \text{LOG(CU)}_{-(1+i)}\end{aligned}$$

$\bar{R}^2 = 0.994$ SEE = 0.009 DW = 1.96 $\rho = 0.499$

Period 62:1 to 75:4

i	0	1	2	3	SUM
a_i	0.156	0.124	0.087	0.046	0.414
	(2.57)	(9.84)	(3.34)	(1.75)	(9.80)
b_i	0.067	0.060	0.046	0.026	0.199
	(1.15)	(3.10)	(1.90)	(1.13)	(3.11)

Non-fuel import goods unit value index

$$\begin{aligned} LOG(PMGNFL) = {} & 0.005 - \underset{(3.77)}{0.036}\ \Delta(DMYFLT_{-1}) - \underset{(4.21)}{0.050}\ \Delta(DOPEC)_{+1} - \underset{(2.71)}{0.028}\ \Delta(DOPEC) \\ & + \underset{(1.17)}{0.014}\ DMY752 + \underset{(0.72)}{0.011}\ DMY752_{-1} + \underset{(5.62)}{0.734}\ LOG(PPL) \\ & + \underset{(2.45)}{0.332}\ LOG(PPL_{-1}) \end{aligned}$$

$\bar{R}^2 = 0.953$ SEE = 0.012 DW = 1.87 $\rho = 0.854$

Period 62:1 to 75:4

Price index for U.S. goods and service exports

$$\underset{(6.61)}{\text{LOG(PXGSNI)} = -0.008} + \underset{(19.9)}{0.784\ \text{LOG(PXGUV)}} + \underset{(5.26)}{0.160\ \text{LOG(PMGUV)}}$$

$\bar{R}^2 = 0.999$ SEE = 0.005 DW = 1.79 $\rho = 0.453$
Period 62:1 to 75:4

Price index of U.S. goods and service imports

$$LOG(PMGSNI) = \underset{(2.06)}{0.002} + \underset{(3.53)}{0.958}\ LOG(PMGUV)$$

$\bar{R}^2 = 0.999$ SEE = 0.006 DW = 1.65
Period 62:1 to 75:4

Wage rate

$$
\begin{aligned}
DLNUW = {} & 0.868 + 1.235\ Q1 - 0.621\ Q2 - 0.478\ Q3 - 2.002\ DMY632 - -3.913\ DMY651 \\
& (0.87)\ (2.78)\ (1.48)\ (1.14)\ (1.81)\ (3.57) \\
& + 3.553\ DMY6704_{-1} - 1.766\ DMY6904 + 2.542\ DMY6904_{-1} + 3.423\ DMY702_{-1} \\
& (3.22)\ (1.57)\ (2.18)\ (2.88) \\
& -4.381\ DMY721_{+1} + 3.189\ \Delta DMYFLT_{+1} + 1.688\ (DMY752_{+3} + DMY752_{+4}) \\
& (4.03)\ (2.89)\ (2.00) \\
& + 14.318 \cdot 1/UN + 0.647\ WGP1 \cdot DMY7175 + 0.352\ WGP1\ (1-DMY7175) \\
& (3.01)\ (9.33)\ (2.23)
\end{aligned}
$$

$\bar{R}^2 = 0.829$ SEE = 1.031 DW = 1.73

Period 62:1 to 75:4

Labor force

$$\underset{(19.49)}{\text{LOG (LF/POP)} = 7.448} \underset{(5.40)}{- 0.004\ \text{TIME}} + \sum_{i=0}^{11} a_i \log(W/P)_{-i} + \sum_{i=0}^{5} b_i \text{LOG(LE/POP)}_{-i}$$

$$+ \sum_{i=0}^{11} c_i \log(NW/(POP \cdot P))_{-i}$$

$\bar{R}^2 = 0.997$ SEE = 0.003 DW = 2.12

Period 62:1 to 75:4

	0	1	2	3	4	5	6	7	8	9	10	11	SUM
a_i	0.031	0.032	0.032	0.032	0.031	0.029	0.027	0.024	0.020	0.016	0.011	0.006	0.292
	(1.05)	(1.55)	(2.39)	(3.48)	(3.52)	(2.74)	(2.14)	(1.76)	(1.51)	(1.34)	(1.21)	(1.11)	(3.65)
b_1	0.228	0.147	0.083	0.036	0.007	-0.005							0.495
	(4.42)	(8.82)	(5.13)	(1.27)	(0.22)	(0.24)							(9.00)
c_1	-0.043	-0.047	-0.049	-0.049	-0.049	-0.047	-0.044	-0.039	-0.034	-0.027	-0.019	-0.010	0.459
	(1.61)	(2.58)	(4.59)	(9.62)	(10.9)	(6.46)	(4.52)	(3.56)	(3.01)	(2.65)	(2.40)	(2.21)	(12.4)

Labor Employed

$$\text{Log}(LH \cdot LE/(GNP - XSYV/PXGSNI + (MSYV - MSYGV)/PMGSNI) \cdot W/P) =$$

$$\underset{(1.72)}{-3.571} + \underset{(3.09)}{0.002}\ \text{TIME67} - \underset{(7.02)}{0.004}\ \text{TIME70} + \underset{(1.54)}{0.248}\ \text{log}(LF/(POP \cdot 1000))$$

$$+ \sum_{i=0}^{4} a_i\ \Delta\text{log}((GNP-XGSYV/PXGSNI) + (MSYV - MSYGV)/PMGSNI))_{-i}$$

$\bar{R}^2 = 0.812$ SEE = 0.0005 DW = 1.87 $\rho = 0.515$
Period 62:1 to 75:4

i	0	1	2	3	4	SUM
a_i	-0.430	-0.339	-0.251	-0.165	-0.081	1.266
	(5.90)	(6.96)	(4.36)	(2.79)	(1.99)	(6.33)

Labor man hours worked

$$\text{LOG (LH)} = \underset{(0.04)}{0.004} - \underset{(3.38)}{0.0009}\ \text{TIME70} + \sum_{i=0}^{2} a_i\ \text{LOG(P/W)}_{-i} + \sum_{i=0}^{5} b_i\ \text{LOG((GNP-XSYV/PXGSNI}$$

$$+ \text{(MSYV - MSYGV)/PMGSNI)/LE)}_{-i}$$

$\bar{R}^2 = 0.508$ SEE = 0.004 DW = 1.64 $\rho = 0.618$
Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.132	0.088	0.044				0.264
	(3.06)	(3.06)	(3.06)				(3.07)
b_i	0.097	0.090	0.080	0.065	0.047	0.026	0.405
	(2.03)	(3.73)	(4.59)	(3.12)	(2.22)	(1.76)	(4.76)

Capacity utilization rate

$$\text{Log (CU)} = \underset{(0.47)}{0.217} - \underset{(4.97)}{0.004}\ \text{TIME67} + \sum_{i=0}^{11} a_i \log (\text{GNP})_{-i}$$

$\bar{R}^2 = 0.800$ SEE = 0.016 DW = 1.53 $\rho = 0.519$
Period 62:1 to 75:4

i	0	1	2	3	4	5	6
a_i	0.761 (11.4)	0.531 (11.9)	0.331 (12.9)	0.162 (14.8)	0.023 (2.63)	-0.086 (5.18)	-0.165 (7.10)

i	7	8	9	10	11	SUM
a_i	-0.213 (7.90)	-0.231 (8.34)	-0.218 (8.61)	-0.175 (8.80)	-0.103 (8.93)	0.615 (9.17)

Demand for currency

$$\underset{(62.8)}{\text{LOG(CUR/NW)} = -2.755} - \underset{(1.61)}{0.012\ \text{LOG(RTD)}} - \underset{(0.75)}{0.005\ \text{LOG(RTD}_{-1})} + \sum_{i=0}^{-11} a_i\ \text{LOG(C} \cdot \text{P/NW)}_{-i}$$

$\bar{r}^2 = 0.992$ SEE = 0.003 DW = 1.57 ρ = 0.887

Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7	8
a_i	0.162	0.124	0.095	0.077	0.065	0.059	0.056	0.055	0.052
	(3.23)	(4.47)	(4.08)	(3.03)	(2.67)	(2.87)	(3.39)	(3.26)	(2.51)

i	9	10	11	SUM
a_i	0.048	0.039	0.024	0.857
	(1.95)	(1.62)	(1.42)	(53.6)

Demand for demand deposits

$$\underset{}{LOG(DD/NW)} = \underset{(17.2)}{-2.136} - \underset{(1.10)}{0.010}\ LOG(RS1) - \underset{(3.03)}{0.034}\ LOG(RS1_{-1}) + \sum_{i=0}^{3} a_i\ LOG(RTD)_{-(1+i)}$$

$$+ \sum_{i=0}^{7} b_i LOG((GNPV-XGSNIV + MGSNIV)/NW))_{-(1+i)}$$

$\bar{R}^2 = 0.816$ SEE = 0.007 DW = 1.55 $\rho = 0.937$
Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7	SUM
a_i	0.012	-0.019	-0.031	-0.025					-0.062
	(0.71)	(2.12)	(2.68)	(2.53)					(2.14)
b_i	0.082	0.093	0.098	0.097	0.090	0.077	0.058	0.032	0.628
	(0.95)	(2.21)	(9.51)	(4.95)	(2.62)	(1.92)	(1.58)	(1.38)	(12.3)

Demand for non-CD time deposits

$$\begin{aligned}\text{LOG}((\text{TD}-\text{MCD})/\text{NW}) = {} & -1.081 - \underset{(6.15)}{} \; \underset{(1.90)}{0.085}\ \text{LOG}(\text{RLGB}_{-1}) - \underset{(4.61)}{0.061}\ \text{LOG}(\text{RS1}) \\ & \underset{(1.46)}{-0.021}\ \text{LOG}(\text{RS1}_{-1}) + \underset{(0.84)}{0.020}\ \text{LOG}(\text{RCB}) - \underset{(3.55)}{14.340}\ \text{MCDRQ/NW} \\ & + \underset{(2.61)}{0.014}\ \text{DMYNCD} \cdot \text{LOG}((\text{GNPV} - \text{XGSNIV} + \text{MGSNIV})/\text{NW}) \\ & + \sum_{i=0}^{5} a_i\ \text{LOG}((\text{GNPV}-\text{XGSNIV}-\text{MGSNIV})/\text{NW})_{-i}\end{aligned}$$

$\bar{R}^2 = 0.865$ SEE = 0.0098 DW = 1.45 $\rho = 0.988$

Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.356 (3.03)	0.313 (7.40)	0.264 (11.7)	0.208 (4.26)	0.145 (2.62)	0.076 (1.93)	1.361 (16.8)

Interest rate on large negotiable certificates of time deposits

$$\underset{}{\text{LOG(RCD)}} = \underset{(1.15)}{0.116} + \underset{(3.29)}{0.043}\ \text{LOG(MCD/NW)} + \underset{(11.3)}{0.857}\ \text{LOG(RS)} + \underset{(2.67)}{0.214}\ \text{LOG(RS1)}$$

$\bar{R}^2 = 0.977$ SEE = 0.025 DW = 2.09 $\rho = 0.669$

Period 62:1 to 75:4

Supply of large negotiable certificates of time deposits

$$\Delta MCD/(DD + TD - MCD) = \underset{(1.10)}{-0.008} - \underset{(1.45)}{0.002Q1} + \underset{(0.38)}{0.001Q2} + \underset{(1.26)}{0.002Q3} - \underset{(1.19)}{0.005}\ DMY721_{+1}$$

$$+ \underset{(3.32)}{0.015}\ \Delta DMYFLT_{+1} + \underset{(4.10)}{-0.018}\ \Delta DOPEC_{+2}$$

$$\underset{(3.01)}{-0.690}\ \Delta MCDRQ/(DD + TD - MCD) - \underset{(1.32)}{0.005}\ \Delta DMYRQ$$

$$\underset{(1.52)}{-1.048}\ \Delta RF/(DD + TD - MCD) + \underset{(1.76)}{0.075}\ (IFP*P - CCAV)/(DD + TD - MCD)$$

$\bar{R}^2 = 0.559$ SEE = 0.005 DW = 1.90 $\rho = 0.595$

Period 62:1 to 75:4

Demand for free reserves

$$RS1 = \underset{(2.18)}{1.004} - \underset{(0.39)}{0.082}\,Q1 - \underset{(2.36)}{0.332}\,Q2 + \underset{(0.10)}{0.012}\,Q3 - \underset{(2.45)}{0.895}\,DMYFB - \underset{(1.19)}{0.354}\,MDY721$$

$$+ \underset{(0.44)}{0.135}\,DMY721_{-1} + \underset{(1.88)}{74.852}\,\Delta DMYFLT_{-1}/NDD + \underset{(7.25)}{0.760}\,RD + \underset{(0.87)}{13.734}\,\Delta\,(BU - CUR)/I$$

$$- \underset{(0.40)}{7.075}\,(MDS_{-1}\,\Delta\,BSMAL + TD_{-1}\,\Delta ASMAL)/NDD - \underset{(4.46)}{125.758}\,RF/NDD$$

$\bar{R}^2 = 0.829$ SEE = 0.301 DW = 1.87 $\rho = 0.679$

Period 62:1 to 75:4

Interest rate on new issues of AAA utility bonds

$$RL = \underset{(1.13)}{0.276} + \underset{(1.11)}{0.073}\ DMYRQ + \underset{(2.71)}{0.483}\ DMY702 + \underset{(1.98)}{0.385}\ \Delta DOPEC + \underset{(2.25)}{0.494}\ \Delta DOPEC_{-1}$$

$$+ \underset{(2.24)}{0.429}\ DMY752 - \underset{(2.94)}{0.572}\ DMY721_{+1} - \underset{(2.05)}{0.413}\ DMY721_{+2} + \underset{(1.58)}{0.078}\ WGP1_{-1}$$

$$+ \sum_{i=0}^{3} a_i\ (RS1 - RSMEAN)_{-i} + \sum_{i=0}^{11} b_i\ RS_{-i}$$

$\bar{R}^2 = 0.980$ SEE = 0.181 DW = 1.95 $\rho = 0.329$
Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7
a_i	0.139 (1.77)	-0.070 (1.27)	-0.163 (3.09)	-0.140 (3.69)				
b_i	0.238 (4.86)	0.172 (5.77)	0.125 (6.56)	0.094 (5.97)	0.076 (4.64)	0.066 (3.79)	0.063 (3.38)	0.063 (3.19)

i	8	9	10	11	SUM
a_i					-0.234 (1.28)
b_i	0.063 (3.07)	0.060 (2.98)	0.050 (2.91)	0.031 (2.85)	1.102 (14.7)

Interest rate on long-term government bonds

$$RLGB = \underset{(17.2)}{2.507} + \underset{(3.35)}{0.449}\ DMY702 + \underset{(2.34)}{0.312}\ DMY702_{-1} - \underset{(2.16)}{0.311}\ DMY721_{+2} \underset{(3.21)}{-0.432}$$

$$DMY721_{+1} + \underset{(2.34)}{0.316}\ \Delta DOPEC + \underset{(1.78)}{0.255}\ \Delta DOPEC_{-1} + \underset{(3.36)}{0.508}\ DMY6704 + \underset{(2.55)}{0.350}$$

$$DMY6704_{+1} + \sum_{i=0}^{5} a_i\ (DMYQ_{-3} \cdot WGP1_{-1})_{-i} + \sum_{i=0}^{3} b_i\ (RS1-RSMEAN)_{-i}$$

$$+ \sum_{i=0}^{5} c_i\ RS1_{-i}$$

$\bar{R}^2 = 0.987$ SEE = 0.125 DW = 2.01
Period 62:1 to 75:4

Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.015 (0.96)	0.028 (4.62)	0.035 (7.49)	0.035 (4.56)	0.030 (3.55)	0.018 (3.08)	0.160 (0.84)
b_i	0.021 (0.29)	-0.065 (3.57)	-0.097 (4.01)	-0.075 (2.99)			-0.216 (-3.60)
c_i	0.202 (3.86)	0.139 (7.03)	0.088 (8.21)	0.048 (2.27)	0.021 (0.85)	0.005 (0.26)	0.503 (11.7)

Change in U.S. direct investment value

$$DDIC = \underset{(2.67)}{1.682} + \underset{(1.69)}{1.238Q1} + \underset{(1.63)}{1.103\,Q2} + \underset{(0.18)}{0.162\,Q3} + \underset{(13.5)}{8.073\,DMYDIC} + \underset{(0.98)}{0.061\,\Delta(XGV)}$$

$$+ \sum_{i=0}^{6} a_i \,(0.6246 \cdot 1.00937 \cdot CE \cdot \Delta CGNPV + 0.1436 \cdot 0.3136 \cdot GEI \cdot \Delta GGNPV$$

$$+ 0.2318 \cdot 2.50091 \cdot EE \cdot \Delta EGDPV)_{-(2+i)}$$

$\bar{R}^2 = 0.857$ SEE = 1.739 DW = 1.76
Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.070	0.301	0.436	0.473	0.413	0.255	1.948
	(0.36)	(4.48)	(9.93)	(5.39)	(4.22)	(3.71)	(12.8)

Change in long-term financial claims

$$DLTPC = \underset{(8.00)}{1.419} - \underset{(2.20)}{2.230}\ DMY651_{-1} + \underset{(2.28)}{2.306}\ DMY651_{+1} - \underset{(2.07)}{2.199}\ DMY702$$

$$+ \underset{(2.24)}{0.065}\ \Delta XGV + \sum_{i=0}^{5} a_i\ \Delta\ (FRL \cdot NW)_{-(1+i)} + \sum_{i=0}^{5} b_i\ \Delta(RLGB \cdot NW)_{-(1+i)}$$

$$+ \sum_{i=0}^{5} c_i\ \Delta\ ((LOG(PXGUV/FPXGUV) - LOG(FE))\ NW \cdot (1-DMYEXO))_{-i}$$

$\bar{R}^2 = 0.831$ SEE = 0.989 DW = 1.99
Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	0.00007	0.0003	0.0004	0.0004	0.0003	0.0002	0.002
	(0.45)	(2.82)	(4.21)	(4.06)	(3.73)	(3.57)	(5.0)
b_i	-0.00005	-0.0002	-0.0002	-0.0003	-0.0002	-0.0001	-0.001
	(0.35)	(1.66)	(2.22)	(2.17)	(2.06)	(1.98)	(1.92)
c_i	0.00002	0.00006	0.00008	0.00009	0.00008	0.00005	0.0004
	(3.27)	(10.7)	(11.7)	(11.4)	(11.1)	(10.9)	(12.5)

Change in short-term claims

$$DSTC = \underset{(0.61)}{-0.838} + \underset{(4.11)}{23.841}\ \Delta DOPEC + \underset{(3.80)}{12.817}\ \Delta DOPEC_{+1} + \underset{(3.05)}{7.606}\ \Delta DMYFLT_{+1}$$

$$\underset{(2.90)}{-7.045}\ DMY651_{-1}\ \underset{(1.32)}{-3.160}\ DMY651_{-2} + \underset{(5.24)}{0.393}\ \Delta XGV + \underset{(2.37)}{0.050}\ DNW_{-1}$$

$$+ \sum_{i=0}^{5} a_i\ \Delta(FRS \cdot NW)_{-(1+i)} + \sum_{i=0}^{5} b_i\ \Delta(RLGB \cdot NW)_{-(1+i)} + \sum_{i=0}^{5} c_i\ \Delta(LOG$$

$$(PXGUV/FPXGUV) - LOG(FE))\ NW \cdot (1 - DMYEXO))_{-i}$$

$\bar{R}^2 = 0.887$ SEE = 2.298 DW = 2.00
Period 62:1 to 75:4

i	0	1	2	3	4	5	SUM
a_i	-0.00004 (0.32)	0.00018 (1.78)	0.00032 (3.16)	0.00037 (3.68)	0.00034 (3.86)	0.00021 (3.92)	0.001 (2.04)
b_i	-0.00063 (1.64)	-0.00075 (2.51)	-0.00078 (2.57)	-0.00072 (2.32)	-0.00057 (2.11)	-0.00033 (1.96)	-0.004 (3.07)
c_i	0.00009 (3.39)	0.00009 (5.11)	0.00008 (3.56)	0.00007 (2.59)	0.00006 (2.11)	0.00003 (1.82)	0.0004 (3.63)

Change in foreign direct investment values in the U.S.

$$DDIL = \underset{(4.56)}{-0.913} \underset{(3.48)}{-2.240}\ DMY721_{+2} \underset{(2.82)}{-1.844}\ DMY721 + \underset{(9.28)}{3.054}\ DMYDIL + \underset{(4.36)}{0.715}\ DMYFLT \cdot \Delta MUJV$$

$$+ \sum_{i=0}^{7} a_i\ \Delta(GNPV + MGV)_{-i}$$

$\bar{R}^2 = 0.850$ SEE = 0.633 DW = 1.69

Period 62:1 to 75:4

i	0	1	2	3	4	5	6	7	SUM
a_i	-0.005	0.008	0.017	0.023	0.025	0.024	0.020	0.011	0.123
	(0.80)	(2.25)	(10.2)	(12.4)	(9.74)	(8.36)	(7.60)	(7.14)	(12.3)

Change in long-term financial liabilities

$$DLTPL = \underset{(0.11)}{-0.004} - \underset{(2.17)}{1.012}\,Q1 - \underset{(1.44)}{0.672}Q2 - \underset{(2.11)}{0.885}\,Q3 + \underset{(7.59)}{4.197}\,DYFL689$$

$$\underset{(2.21)}{-2.407}\,DMY6704 + \underset{(3.02)}{3.359}\,DMY6704_{-1} \quad \underset{(3.66)}{-4.753}\,\Delta DMYFLT + \underset{(2.36)}{2.981}\,\Delta DMYFLT_{+1}$$

$$+ \underset{(5.43)}{5.919}\,\Delta DMYFLT_{+2} + \underset{(0.89)}{1.242}\,DMY721_{-1} - \underset{(1.43)}{1.695}\,DMY721_{+3} + \underset{(4.60)}{6.935}\,\Delta DOPEC_{+1}$$

$$+ \underset{(2.02)}{2.856}\,\Delta DOPEC_{-1} - \underset{(2.08)}{2.841}\,DMY752 + \sum_{i=0}^{3} a_i\,\Delta(FNW \cdot FE)_{-i}$$

$$+ \sum_{i=0}^{7} b_i\,\Delta\,(RLGB \cdot FNW \cdot FE)_{-i} + \sum_{i=0}^{5} c_i\,\Delta\,(FRL \cdot FNW \cdot FE)_{-i}$$

$$+ \sum_{i=0}^{5} d_i\,\Delta\,(RED \cdot FNW \cdot FE)_{-i}$$

$\bar{R}^2 = 0.832$ SEE = 0.996 DW = 1.64
Period 62:4 to 75:4

i	0	1	2	3	4	5	6	7	SUM
a_i	0.238 (5.94)	0.170 (7.77)	0.107 (5.08)	0.051 (3.05)					0.566 (7.77)
b_i	0.012 (3.73)	0.013 (5.86)	0.014 (6.20)	0.013 (5.34)	0.012 (4.58)	0.010 (4.06)	0.008 (3.70)	0.004 (3.44)	0.087 (5.80)
c_i	-0.012 (3.79)	-0.012 (5.20)	-0.011 (6.13)	-0.009 (5.67)	-0.008 (4.68)	-0.006 (3.87)	-0.005 (3.29)	-0.002 (2.88)	0.066 (6.00)
d_i	-0.0002 (0.23)	-0.0007 (1.23)	-0.001 (2.14)	-0.001 (2.50)	-0.001 (2.54)	-0.0005 (2.49)			-0.004 (1.74)

Change in Short-term liabilities excluding borrowings from branches

$$
\begin{aligned}
DSTL - DSTLFB = {} & \underset{(1.81)}{1.881} - \underset{(3.77)}{4.672}\,Q1 + \underset{(0.64)}{0.856}\,Q2 + \underset{(0.02)}{0.026}\,Q3 - \underset{(0.77)}{2.122}\,DMY632 \\
& \underset{(1.10)}{-2.958}\,DMY632_{-1} - \underset{(1.31)}{3.557}\,DMY632_{-2} \underset{(1.37)}{-3.788}\,DMY702 - \underset{(0.73)}{1.995}\,DMY651_{-1} \\
& \underset{(0.79)}{-2.246}\,DMY6904 + \underset{(0.56)}{1.698}\,DMY721_{+4} - \underset{(1.50)}{4.583}\,DMY721_{+1} \underset{(3.41)}{-15.436}\,\Delta DOPEC_{+1} \\
& + \underset{(3.84)}{18.787}\,\Delta\,DOPEC + \underset{(5.58)}{27.938}\,\Delta DOPEC_{-1} + \underset{(3.53)}{0.482}\,DSTC + \underset{(5.20)}{6.994}\,\Delta RS1 \\
& \underset{(5.91)}{-5.210}\,\Delta RED + \underset{(1.62)}{0.251}\,\Delta MGV + \underset{(1.35)}{0.113}\,\Delta\,(FNW_{-1} \cdot FE_{-1}) \\
& + \underset{(3.90)}{0.174}\,(DNFAEOQ - DLO) \cdot (1 - DMYFLT) \\
& + \underset{(2.69)}{0.451}\,(DNFAEOQ-DLO).\ DMYFLT
\end{aligned}
$$

$\bar{R}^2 = 0.788$ SEE = 2.553 DW = 1.80
Period 62:1 to 75:4

Change in Short-term liabilities of domestic banks to their foreign branches

$$\begin{aligned}
DSTLFB = {} & 0.066 - \underset{(0.13)}{} 60.624 \underset{(2.86)}{} \Delta REGM + 3.963 \underset{(1.47)}{} \Delta DMYRQ + 9.939 \underset{(2.76)}{} DMY6904 + 13.080 \underset{+3\ (3.67)}{} DMY6904_{+2} \\
& -13.891 \underset{(4.23)}{} DMY702_{-2} + 0.392 \underset{(0.68)}{} \Delta MCDRQ + 0.561 \underset{(2.11)}{} (4 \cdot \Delta TB) + 3.338 \underset{(1.81)}{} \Delta RD \\
& -1.750 \underset{(2.63)}{} \Delta RED + 1.163 \underset{(1.34)}{} (\Delta BSMAL \cdot MDS_{-1} + \Delta ASMAL \cdot TD_{-1})
\end{aligned}$$

$\bar{R}^2 = 0.619$ SEE = 3.215 DW = 1.91

Period: 62:1 to 75:4

LIST OF IDENTITIES

GNP Identities

1. GNP = C+IFP+II+G+XGSNI-MGSNI
2. GNPV = P·(C+IFP+II+G)+XGSNI·PXGSNI-MGSNI·PMGSNI
3. GNPVNSA = PGNP·GNPNSA
4. MGSNIV =-MSYGVSA + JMGSNIV·MGSV
5. MGSNI = MGSNIV/PMGSNI
6. XGSNIV = JXGSNIV·XGSV
7. XGSNI = XGSNIV/PXGSNI
8. VFOR = MTRAVSA +EVFOR
9. IFORNP = XGSNIV-MGSNIV-VFOR+CAPGR-MSYGVSA
10. CAPGR = ECAP+DNFASDR-DNFASDA

Disposable Income, Net Worth and Capital Stocks

11. YDV = GNPV-TV+TRANV+GIV-INTGF-CCAV+YFRPV
12. DNW = YDV-C·P
13. $NW = 0.25 \cdot DNW + NW_{-1}$
14. $KP = IFP \cdot 0.25 + (1-0.015397) \cdot KP_{-1}$
15. $SII = II \cdot 0.25 + SII_{-1}$
16. $DIC = 0.25 \cdot DDIC + DIC_{-1}$
17. $DIL = 0.25 \cdot DDIL + DIL_{-1}$
18. $FCP = 0.25 \cdot DFCP + FCP_{-1}$
19. $FLP = 0.25 \cdot DFLP + FLP_{-1}$
20. $LTPC = 0.25 \cdot DLTPC + LTPC_{-1}$

21. $STC = 0.25 \cdot DSTC + STC_{-1}$

22. $LTPL = 0.25 \cdot DLTPL + LTPL_{-1}$

23. $STL = 0.25 \cdot DSTL + STL_{-1}$

24. $SNGKA = 0.25 \cdot NGKA + SNGKA_{-1}$

25. $LO = LO_{-1} + 0.25 \cdot DLO$

26. $EDNFA = NFAEOQ_{-1} - NFAEOQ - 0.25 \cdot DNFAEOQ$

27. $EDNFAC = NFACCQ_{-1} - NFACCQ - 0.25 \cdot DNFACC$

28. $EDNFAG = NFAGLDQ_{-1} - NFAGLDQ - 0.25 \cdot DNFAGLD$

29. $EDNFAI = NFAIMFQ_{-1} - NFAIMFQ - 0.25 \cdot DNFAIMF$

30. $EDNFAS = NFASDRQ_{-1} - NFASDRQ - 0.25 \cdot DNFASDR + 0.25\ DNFASDA$

31. $DNFACC = DNFAEOQ - DNFAGLD - DNFAIMF - DNFASDR$

32. $NFA = 0.5 \cdot (NFAEOQ + NFAEOQ_{-1})$

Balance of Payments Account

33. $XGSV = XSV + XGV$

34. $MGSV = MGV + MSV$

35. $XGSA = XGVSA / PXGUV$

36. $XGVSA = XGNAV + XGAV$

37. $LOG(XG) = \sum_{i=o}^{3} 0.25 \cdot 0.25 \cdot (LOG((E) + LOG(EE) + LOG(GEI) + LOG(JE))_{-i} + XGLN\_ER$

38. $XG = JXG \cdot XGSA$

39. $XG = XGV / PXGUV$

40. $XGAV = XGA \cdot PXAG$

41. $PXNAG = XGNAV / (XGSA - XGA)$

42. $MGSA = MGFL + MGNFL + MGSA\_ER$

43. $MG = JMG \cdot MGSA$

44. MGV = PMGUV·MG

45. MGVSA = PMGUV·MGSA

46. MGVSA = MGNFLV + MGFLV

47. FLM = FLC-FLQ

48. MGFLV = MGFL·PMGFL

49. MGNFL = MGNFLV/PMGNFL

50. MSV = MSOV+MSYV

51. MSOV = MSOPV + MSOGV

52. MSYV = MSYGV + MSYPV

53. MSYPV = MSYPFV + MSYPDV

54. MSYPRV = MSYPEV - MSYPDV

55. XSV = XSOV + XSYV

56. XSOV = XSOPV + XSOGV

57. XSYV = XSYGV + XSYPV

58. XSYPV = XSYPFV + XSYPDV

59. XSYPRV = XSYPEV - XSYPDV

60. MTRANV = MTRANGV + MTRANPV

61. MTRAVSA = JMTR·MTRANV

62. DLTDL = DDIL - MSYPRV

63. DFLP = DLTPL + DSTL

64. DLTDC = DDIC - XSYPRV

65. DFCP = DLTPC + DSTC

66. DNFAEOQ + DLO = -(GSBAL-MTRANV-NGKA + PKBAL + EANDO + DNFASDA)

67. GBAL = XGV-MGV

68. SBAL = XSV-MSV

69. GSBAL = XGSV-MGSV

70. PKBAL = DLTDL-DLTDC+DFLP-DFCP

Government budget deficit

71. GV = G · P

72. GFRV = JTRANG·MTRANGV

73. MSYGVSA = JMSYG·MSYGV

74. GDSV = TV-(GV+TRANV+GFRV+GIV+GGV)

Monetary base, reserves, and interest rates

75. NDA = BU-NFA

76. RR = BU-RF-CUR

77. MDS = (RR-ASMAL·TD)/BSMAL

78. DD = JMSA·JMSB·MDS-JMSA·DDG

79. $NDD = 0.25 \sum_{i=o}^{3} (1-BSMAL_{-i}) \cdot MDS_{-i}$

80. RTD = MCD/TD·RCD+(1-MDC/TD)·RCB

81. RS = JURS+RS1

82. $RSMEAN = \sum_{i=0}^{11} RS1_{-i}/12$

83. M1 = CUR + DD

84. $PCHM1 = 400*(M1-M1_{-1})/M1_{-1}$

Prices, Capacity and Unemployment Rate

85. PGNP = GNPV/GNP

86. DLNUP = 400* Δlog(P)

87. $WGP1 = (\sum_{i=o}^{6} 0.87^{(1+i)} \Delta Log(P_1)\ 400)/\sum_{i=1}^{7} 0.87^{i}$

88. $W = W_{-1}\, e^{DLNUW/400}$

89. $CU = GNP \cdot 100/GNPP$

90. $UN = 100. \cdot (LF-LE)/LF$

91. $DLNGNP = 400 \cdot \Delta \log(GNP)$

Aggregated Foreign Variables

92. $FE = CE^{0.3114} \cdot GEI^{0.1788} \cdot EE^{0.2198} \cdot JE^{0.29}$

93. $FGNP = (1.00937 \cdot CGNP)^{WUC} \cdot (0.3136 \cdot GGNP)^{WUG} \cdot (2.50091 \cdot EGDP)^{WUE} \cdot (0.0033 \cdot JGNP)^{WUJ}$

94. $FGNPV = (1.00937 \cdot CGNPV)^{WUC} \cdot (0.3136 \cdot GGNPV)^{WUG} \cdot (2.50091 \cdot EGDPV)^{WUE} \cdot (0.0033 \cdot JGNPV)^{WUJ}$

95. $FNW = (1.00937 \cdot CNW)^{0.3114} \cdot (0.3136 \cdot GNW)^{0.1788} \cdot (2.50091\ ENW)^{0.2198} \cdot (0.0033 \cdot JNW)^{0.29}$

96. $FRS = CRS^{0.3114} \cdot GRS^{0.1788} \cdot ERSLA^{0.3198} \cdot JRS^{0.29}$

97. $FRL = CRL^{0.3114} \cdot GRL^{0.1788} \cdot ERL^{0.2198} \cdot JRL^{0.29}$

98. $FPXGUV = CPXGUV^{0.3114} \cdot GPXGUV^{0.1778} \cdot EPXGUV1^{0.2198} \cdot JPXGUV^{0.29}$

99. $ZUR = XURV/(XUCV+XUJV+XUEV+XUGV+XURV)$

100. $ZUC = XUCV/(XUCV+XUJV+XUEV+XUGV)$

101. $ZUJ = XUJV/(XUCV+XUJV+XUEV+XUGV)$

102. $ZUE = XUEV/(XUCV+XUJV+XUEV+XUGV)$

103. $ZUG = XUGV/(XUCV+XUJV+XUEV+XUGV)$

104. $WUC = MUCV/(MUCV+MUJV+MUEV+MUGV)$

105. $WUJ = MUJV/(MUCV+MUJV+MUEV+MUGV)$

106. $WUE = MUEV/(MUCV+MUJV+MUEV+MUGV)$

107. $WUG = MUGV/(MUCV+MUJV+MUEV+MUGV)$

108. $WUR = (MURV-MGLFV)/(MUCV + MUJV + MUEV + MUGV + MURV - MGFLV)$

109. $XFPX = CPXGUV^{ZUC} \cdot JPXGUV^{ZUJ} \cdot EPXGUV1^{ZUE} \cdot GPXGUV^{ZUG}$

110. $MFPX = CPXGUV^{WUC} \cdot JPXGUV^{WUJ} \cdot EPXGUV1^{WUE} \cdot GPXGUV^{WUG}$

111. $XFPE = CE^{ZUC} \cdot EE^{ZUE} \cdot JE^{ZUJ} \cdot GEI^{ZUG}$

112. $MFPE = CE^{WUC} \cdot EE^{WUE} \cdot GEI^{WUG} \cdot JE^{WUJ}$

113. $PPL = ((CE \cdot CPXGUV)^{WUC} (JE \cdot JPXGUV)^{WUJ} (GEI \cdot GPXGUV)^{WUG} (EE \cdot EPXGUV1)^{WUE})^{(1-WUR)} ((MURV-MG\ LV)/(MURV/ROWPXG - MGFL))^{WUR}$

114. $FP = CP^{ZUC} \cdot EP^{ZUE} \cdot GP \cdot ^{ZUG} \cdot JP^{ZUJ}$

DEFINITION AND SOURCES OF VARIBALES

All national product and income accounts variables are expressed at annual rate and are seasonally adjusted (unless indicated by the mnemonic "NSA"). All balance of payments variables are expressed at annual rates and are not seasonally adjusted (unless indicated by the mnemonic "SA"). All monetary stock variables are measured at end of quarter and are not seasonally adjusted.

The letter "V" appended to a variable name indicates measurement in billions of U.S. dollars. When the "V" is absent, the variable is generally expressed in constant 1972 dollar. Exceptions to this rule are financial variables, such as capital account items and components of the monetary sector, which are all in nominal terms.

Interest rates are in per cent per annum; and price variables are indexes based 1 in 1972. Exchange rates and interest rates are averages of daily rates. The symbol "x" indicates an exogenous variable. The "*" indicates a variable endogenously determined within the multicountry model, but exogenous (or not included) in the isolated U.S. model. The data comes from the databank of MPS model and International Finance Division, whose main sources are Survey of Current Business and Federal Reserve Bulletin.

X ASMAL = Required reserve ratio on time deposits

X BSMAL = Required reserve ratio on demand deposits

X BU = Unborrowed reserves and currency holdings: monetary base

C = Personal consumption expenditures

CAPGR = Capital grants received by the U.S. (net)

CCAV = Capital consumption allowance with adjustment

* CE = Canadian spot exchange rate index - US$/C$

* CER = Canadian exchange rate--US$/C$

* CGNP = Canadian GNP, constant (1972) dollars

* CGNPV = Canadian gross national product, current value

* CNW = Canadian stock of private net worth

* CP = Canadian implicit deflator for domestic absorption (72=1.00)

* CPXGUV= Canadian unit value of merchandise exports, rebased (72=1.00)

* CRL = Long-term interest rate, GOC bonds--10YRS+

* CRS = Short-term interest rate, 90 day finance company paper

CU = U.S. capacity utilization rate, source: Wharton

CUR = Currency held by the non-bank public: M1

DD = Demand deposits: M1

X DDG = Demand deposits held by Government

DDIC = Outflow of direct investment: change in long-term direct claims plus direct investment retained earnings

DDIL = Inflow of direct investment: change in long-term direct laibilities plus foreign direct investment retained earnings

X DEXP67= Dummy variable for Expo '67 =1 for 62.2, =2 for 67:3, =0 elsewhere

X DEXP70= Dummy variable for Expo '70; =1 for 70:2, =2 for 70:3, =0 elsewhere

DFCP = Change in private financial claims on foreigners

DFLP = Change in private financial liabilities to foreigners

DIC = Value of U.S. direct investment stock abroad

CIL = Value of foreign direct investment stock in U.S.

X DILST = Dummy for international longshoremen's strikes: =1 for 62:4 + 68:4 2 for 63:1 65:1 69:1 71:4

DLNUP = Annual rate of price change from previous period (inflation)

DLNUW = Annual rate of current wage rate change from previous period

DLO = Increase in foreign official holdings of U.S. government liabilities

DLTDC = Change in long-term direct claims on foreigners

DLTDL = Change in long-term direct liabilities to U.S.

DLTPC = Change in long-term portfolio claims

DLTPL = Change in long-term portfolio liabilities

X DMECPR = Dummy variable for Middle-East crisis =2 for 67:2, =1 for 67:3 + 73:4, =0 elsewhere

X DMYCR = Dummy variable for wage-price controls, Phase I; =1 for 71:3 - 72:1 =0 elsewhere

X DMYDIC = Dummy for direct investment due to 76 benchmark survey: =1 for 73:1 + 74:3 + 74:4, = -1 for 74:2 + 74:3, = 2 for 74:1, =0 elsewhere

X DMYDIL = Bridge dummy for direct investment due to 74 benchmark survey: =1 for 74:1 + 75:4 = -1 for 74:2 = 75:3

X DMYEX = Dummy for uncertainty due to introduction of managed floating; =1 for 72:1 to 73:1, =0 elsewhere

X DMYEXO = Dummy for fixed U.S. exchange rate regime; =1 for 57:1 to 73:1, =0 elsewhere

X DMYFB = Dummy variable for Franklin Bank failure: =1 for 74:2 - 74:3, =0 elsewhere

X DMYFLT = Dummy for floating exchange rate regime = 1 for 73:2 and on =0 elsewhere

X DMYJ = Dummy variable for raw commodity shortage (74-75); =1 for 74:4 + 75:3, = -1 for 75:1 + 75:2, =0 elsewhere

X DMYNCD = Dummy reflecting early development of C.D. Market = 1 for 57:1 to 64:4, =0 elsewhere

X DMYOP = Dummy variable for anticipated oil price-hike and elimination of wage-price control; =1 for 73:4 = 74:2; = 0 elsewhere

X DMYQ = Dummy for consumer preference shift from 67; =1 from 67:1 and on, =0 before 67:1

X DMYRQ = Dummy for financial disintermediation due to regulation Q

X DMY632 = Dummy for initialization of interest equilization tax: =1 for 63:3, = 0 elsewhere

X DMY651 = Dummy for U.S. capital controls including direct investments = 1 for 65:1, = 0 elsewhere

X DMY6704 = Dummy for the official devaluation of the U.K. pound in 67:4; = 1 for 67:4, = 0 elsewhere

X DMY6904 = Dummy for the official appreciation of the German D.M. in 69:4; = 1 for 69:4, = 0 elsewhere

X DMY702 = Dummy for Canadian adoption of a fixed exchange rate system in 70:2; = 1 for 70:2, = 0 elsewhere

X DMY7175 = Dummy for shift in expected inflation rate after 70; =1 for 71:1 on, = 0 elsewhere

X DMY721 = Dummy for exchange rate uncertainty after the Smithsonian agreement 1 for 72:1, 0 elsewhere

X DMY752 = Dummy variable for end of wage-price controls: =1 for 75:2, = 0 elsewhere

DNFAFC = Decrease in the U.S. official reserve asset: Foreign currency

DNFAEOQ = Decrease in U.S. official reserve assets (Total), end of period

DNFAFL = Decrease in U.S. reserve assets under floating exchange rates

DNFAFX = Decrease in U.S. reserve assets under fixed exchange rates

DNFAGLD = Decrease in the U.S. official reserve asset: Gold

DNFAIMF = Decrease in the U.S. official reserve asset: IMF position

X DNFASDA = Allocation of special drawing rights

X DNFASDR = Decrease in the U.S. official reserve asset: SDR's

DNW = Change in stock of private net worth

X DOPEC = Dummy for OPEC Petroleum price increases; = 1 for 74:2 and on, = 0 before 74:2

DSTC = Change in short-term claims

DSTL = Change in short-term liabilities

DSTLFB= Short-term liabilities of U.S. banks to their branch banks abroad

DUUC1 = User cost of capital

X DYFL689= Dummy for UK + Germany exchange rate changes 68 + 69; = 1 for 68:2 to 69:1, =0 elsewhere

X EANDO = Errors and omissions

X ECAP = Discrepancy between BOP and NIA accounts for SDR flows

X EDNFA = Error in U.S. official reserve assets (total)

X EDNFAC= Error in U.S. official reserve assets (currency)

X EDBFAG= Error in U.S. official reserve assets (gold)

X EDNFAI= Error in U.S. official reserve assets (IMF position)

X EDNFAS= Error in U.S. official reserve assets (SDR)

* EE = U.K. Exchange rate index $/£

* EER = U.K. exchange rate - level (EE*2.50091) $/£

* EGDPV = U.K. gross domestic product at current prices, seasonally adjusted

* ENW = U.K. stock of net worth, seasonally adjusted

* EP = U.K. implicit deflator for domestic absorption (72=1.00)

* EPXGUV1= U.K. export unit value price index (72=1.00)

* ERL = U.K. long-term rate of interest (2 1/2% consols)

* ERSLA = U.K. interest rate of local authorities (3 months) (average)

X EVFOR = Discrepancy between NIA and BOP accounts for transfers

FCP = Stock of private financial claims on foreigners

* FE = Weighted average of foreign exchange rates

FGNP = Weighted average of foreign real GNP's in dollars (by import value trade share)

FGNPV = Weighted average of foreign nominal GNP's in dollars (by import value trade share)

FLC = U.S. total consumption of petroleum products, billion barrels per day

FLM = U.S. imports of petroleum products on B.O.M. basis, billion barrels per day

FLP = Stock of private financial liabilities to foreigners

X FLQ = U.S. domestic petroleum products, billion barrels per day

FNW = Weighted average of foreign net worth in billion of 72 U.S. dollars

FP = Weighted average of foreign prices

FPXGUV= Weighted average of foreign price of exports

FRL = Weighted average of foreign long-term interest rates

FRS = Weighted average of foreign short-term interest rates

X G = Government purchase of goods and services

GBAL = U.S. balance on goods (BOP)

GDSV = Government surplus in NIA accounts

* GEI = German spot exchange rate index US$/DM

* GER = German exchange rate level (spot) US$/DM

X GFPV = Federal Government transfer payments other than unemployment insurance

X GFRV = Government transfer payments to foreigners

* GGNP = German gross national product, real

* GGNPV = German gross national product, nominal

X GGV = Government subsidies less current surplus of Government enterprises

GIV = Government net interest payments

GNP = Gross national product, real

GNPNSA= Real gross national product, not seasonally adjusted

GNPP = U.S. capacity output (GNP/CU)

GNPV = Gross national product (nominal)

GNPVNSA= Gross national product (nominal), not seasonally adjusted

* GNW = German stock of net worth

* GP = German implicit deflator for domestic absorption (72=1.00)

* GRL = German long-term interest rate (in percent converted monthly to quarterly yield on fixed interest securities in circulation) (total).

* GRS = German short-term interest rate three month money-market rate in Frankfurt

GSBAL = U.S. balance on goods and services (BOP)

X GUIBV = Maximum weekly benefits under unemployment insurance

GV = Government purchases of goods and services

IFORNP= Net foreign investment in NIA

IFP = Private gross fixed investment flow

II = Change in business inventories

IIF = Change in farm business inventories

INTGF = Interest paid by Government to foreigners

* JE = Japanese spot exchange rate index - US$/Yen

* JGNP = Japanese gross national expenditure at market prices (1972 Yen)

X JGNPS = Seasonal elements for U.S. real GNP

* JGNPV = Japanese gross national expenditure at market prices (Yen)

X JMG = Seasonal factor for U.S. import volume

X JMGSNIV= Seasonal factor for U.S. imports for goods and services in NIA

X JMSA = Seasonal adjustment factor for demand deposits

X JMSB = Blow-up factor for demand deposits

X JMSYG = Seasonal factor for U.S. Government, interest payments to foreigners

X JMTR = Seasonal factor for U.S. transfer payments to foreigners

* JNW = Japanese stock of private net worth (Yen), end-of-period

* JP = Japanese domestic absorption deflator (1972=1.00)

X JPGL = Bridge factor between government and private wage rate

* JPXGUV = Japanese export unit value index (all commodities) (1972 = 1.00)

* JRL = Japanese long-term interest rate (average yield on interest-bearing bank debentures)

* JRS = Japanese short-term interest rate (call loan rate)

X JTRANG = Bridge factor between Government (net) transfer payments in NIA and BOP

X JURS = Discrepancy between URS1 and URS (two U.S. short-term interest rates)

X JXG = Seasonal factor for U.S. export volume

X JXGSNIV= Seasonal factor for U.S. exports of goods and services in NIA

KP = Private gross fixed capital stock

LE = U.S. employment level

LF = U.S. total labor force

LH = Manhours per employee in non-agricultural private domestic business sector

LO = Value of foreign official holdings of U.S. government liabilities

LTPC = Stock of long-term portfolio claims on foreigners

LTPL = Stock of long-term portfolio liabilities to foreigners

MCD = Large negotiable CD deposits at large commercial banks

X MCDRQ = CD value in the previous quarter in excess of actual CD value, when DMYRQ = 1

MDS = Demand deposits subjected to reserve requirement

MFPE = Weighted average of foreign exchange rates (by import trade share)

MFPX = Weighted average of foreign export price (by import trade share)

MG = U.S. imports of goods (real)

MGFL = U.S. imports of fuel goods

MGFLV = Value of U.S. petroleum product imports (nominal)

MGNFL = U.S. non-fuel imports of goods (real)

MGNFLV = Value of U.S. non-petroleum product imports (nominal)

MGSA = U.S. imports of goods (real), seasonally adjusted

X MGSAER = Bridge adjustment between real and nominal seasonally adjusted imports

MGSNI = Imports of goods and services in NIA (real)

MGSNIV = Imports of goods and services in NIA (nominal)

MGSV = Imports of goods and services (nominal)

MGSVSA = U.S. import value of goods and services (nominal), seasonally adjusted

MGV = Imports of goods (nominal)

MGVSA = U.S. import value of goods (nominal), seasonally adjusted

MSOGV = All Government service account payments other than investment income

MSOPV = All private service account payments other than investment income

MSOV = All service account payments other than investment income

MSV = All service account payments

MSYGV = Government investment income payments

MSYGVSA= Government investment income payments, seasonally adjusted

MSYPDV = Income payments on foreign direct investment

MSYPEV = Foreign direct investment earnings

MSYPFV = Income payments on private financial liabilities

MSYPRV = Foreign direct investment retained earnings in U.S.

MSYPV = Private investment income payments

MSYV = Investment income payments (total)

X MTRANGV= Government transfer payments (net) abroad

MTRANPV= Private transfer payments (net) abroad

MTRANV = U.S. total transfer payments (net) abroad

MTRAVSA= U.S. total transfer payments net abroad, seasonally adjusted

MUCV = U.S. imports from Canada (CIF value .USDOL)

MUEV = U.S. imports from U.K. (CIF value .USDOL)

MUGV = U.S. imports from Germany (CIF value .USDOL)

MUJV = U.S. imports from Japan (CIF value, USDOL)

MURV = U.S. imports from ROW

M1 = U.S. money supply

NDA = Net domestic assets (FRB): Monetary base (residual)

NDD = Demand deposits net of reserve requirements, 4 quarter moving average

NFA = U.S. stock of net foreign assets (total), end of quarter

NFACCQ = U.S. stock of net foreign assets (foreign currency), end of quarter

NFAEOQ = U.S. stock of net foreign assets, (total) end of quarter

NFAGLDQ= U.S. stock of net foreign assets (gold), end of quarter

NFAIMFQ= U.S. stock of net foreign assets (IMF tranche), end of quarter

NFASDRQ= U.S. stock of net foreign assets (SDR), end of quarter

NGKA = Change in net government assets abroad

NW = Private net worth

P = Implicit deflator for total absorptions, 72 = 1

PCHM1 = Annual rate of change in U.S. money supply

PGL = Implicit price deflator for GNP: Government output, 72 = 1

PGNP = Implicit deflator for gross national product, 72 = 1

PKBAL = U.S. balance on private capital flows (BOP)

PMGFL = Unit value price index of U.S. petroleum imports 72 = 1

PMGNFL = Unit value price index of U.S. non-petroleum products imports

PGMSNI = Deflator for imports of goods and services, 72 = 1

PMGUV = Unit value price index for merchandise imports, 72 = 1

POP = Population

PPL = (Unit value) price index for U.S. non-fuel imports implicit in import trade share equation

X PXAG = Unit value index for U.S. agricultural exports, 72 = 1

PXGSNI = Implicit deflator for exports of goods and services, 72 = 1

PXGUV = Unit value price index for merchandise exports, 72 = 1

PXNAG = Unit value price index for U.S. non-agricultural exports

X Q1 = Dummy for quarter 1

X Q2 = Dummy for quarter 2

X Q3 = Dummy for quarter 3

X RCB = Bank rates on passbook and consumer CD savings

RCD = Bank rates on large CD's

X RD = Discount rate

* RED = 3-month Eurodollar rate source: Bank of England

X REGM = Required reserve ratio on Eurodollar borrowings

RF = Free reserves

RL = Long-term interest rate (new issue of AAA utility bond)

RLGB = Interest rate on U.S. Federal Government bonds

* ROWIP = Rest of world index for industrial production

* ROWPXG = Rest of world export price index (1972 = 1.00)

RR = Required reserves

RS = Short-term interest rate: commercial paper

RSMEAN = Average treasury bill interst rate for previous three years

RS1 = Short-term interest rate: treasury bill rate

RTD = CD, time and savings deposits rate at commercial banks

SBAL = U.S. Balance on services (BOP)

SII = Stock of inventories

SNGKA = Stock of net Government capital outflow

STC = Stock of private short-term claims on foreigners

STL = Stock of private short-term liabilities on foreigners

TD = Time deposits held by residents

X TIME67 = Time trend beginning in 67

X TIME70 = Time trend beginning in 70

TRANV = Government transfer payments to domestic residents

TV = Tax revenue

UN = Unemployment rate

VFOR = Transfer payments (net) in NIA

W = Wage rate for non-farm private domestic business sector

X WPIFL = U.S. wholesale price index of fuels, coal and electricity

WUC = Trade share of U.S. imports from Canada

WUE = Trade share of U.S. imports from U.K.

WUG = Trade share of U.S. imports from Germany

WUJ = Trade share of U.S. imports from Japan

WUR = Trade share of U.S. imports from ROW

XCUV = Canada exports to U.S. (FOB value, USDOL)

XEUV = U.K. exports to U.S. (FOB value, USDOL)

XFPE = Weighted average of foreign exchange rates (by export trade share)

XFPX = Weighted average of export price (by export trade share)

XG = Exports of goods (REAL)

XGA = Agricultural exports (REAL)

XGAV = Value of U.S. agricultural exports (nominal)

* XGLNER = Error term for exports of goods growth rate equation

XGNAV = Value of U.S. non-agricultural exports (nominal)

XGSA = U.S. exports of goods (REAL) seasonally adjusted

XGSNI = Exports of goods and services (REAL): NIA

XGSNIV = Exports of goods and services (nominal): NIA

XGSV = Exports of goods and services (nominal): NIA

XGUV = Germany exports to U.S. (FOB value, USDOL)

XGVSA = U.S. exports value of goods and services (nominal), seasonally adjusted

XGV = Exports of goods (nominal)

XJUV = Japan exports to U.S. (FOB value, USDOL)

XRUV = ROW exports to U.S. (FOB value, USDOL)

XSOGV = All Government service account receipts other than investment income

XSOPV = All private service account receipts other than investment income

XSOV = All service account receipts other than investment income

XSV = All service exports

XSYGV = Government investment income receipts

SXYPDV = U.S. direct investment income receipts

XSYPEV = U.S. direct investment earnings

XSYPFV = Income receipts on private financial claims

XSYPRV = U.S. direct investment retained earnings

XSYPV = Private investment income receipts

XSYV = Total investment income receipts

* XUCV = U.S. exports to Canada (FOB value, USDOL)

* XUEV = U.S. exports to U.K. (FOB value, USDOL)

* XUGV = U.S. exports to Germany (FOB value, USDOL)

* XUJV = U.S. exports to Japan (FOB value, USDOL)

* XURV = U.S. exports to ROW

YDV = Disposable income

YFRPV = Federal Reserve Bank profit

* ZUC = Trade share of U.S. exports to Canada

* ZUE = Trade share of U.S. exports to U.K.

* ZUG = Trade share of U.S. exports to Germany

* ZUJ = Trade share of U.S. exports to Japan

* ZUR = Trade share of U.S. exports to ROW

Dynamic simulation results

Variables	1964: 4 to 1975: 4	1973: 2 to 1975: 4	Forecasts 1976: 1 to 1977: 1
GNP	2.39 (-0.70)	1.89 (1.32)	5.53 (-5.40)
P	0.94 (-0.59)	0.83 (0.75)	0.52 (-0.27)
RS1	19.3 (-15.8)	8.54 (4.90)	9.87 (-6.66)
MG	7.88 (-1.64)	9.06 (4.22)	6.69 (-5.80)
MGV	7.99 (-2.28)	9.05 (4.07)	7.96 (-6.85)
PMGUV	1.79 (-0.64)	1.25 (-0.14)	1.65 (-1.13)
XGV	1.65 (-0.65)	1.01 (0.66)	2.97 (-2.86)
PXGUV	1.65 (-0.65)	1.01 (0.66)	2.97 (-2.86)
CU	4.91 (0.06)	4.36 (2.01)	5.44 (-5.4)
UN	23.1 (5.57)	14.1 (-9.91)	50.7 (49.7)
DFLP	206.5 (-10.8)	190.0 (-63.0)	57.9 (-32.1)
DFCP	223.0 (11.0)	37.68 (11.6)	73.4 (-61.9)
GBAL	133.9 (163.1)	586.5 (56.4)	39.9 (-36.4)
PKBAL	179.5 (-357)	184.7 (-76.8)	158.3 (-96.3)
DLO	286.1 (33.8)	413.0 (-79.7)	124.9 (-101.0)

Note: Statistics are root-mean-square percentage errors and, in parenthesis, mean percentage errors.