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THE MARK III INTERNATIONAL TRANSMISSION MODEL

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ABSTRACT

This paper presents a summary and estimates of the Mark III International Transmission Model, a quarterly macroeconometric model of the United States, United Kingdom, Canada, France, Germany, Italy, Japan, and the Netherlands estimated for 1957 through 1976. The model is formulated to test and measure the empirical importance of alternative channels of international transmission including the effects of capital and trade flows on the money supply, of export shocks on aggregate demand, of currency substitution on money demand, and of variations in the real price of oil.

Major implications of the model estimates are: (1) Countries linked by pegged exchange rates appear to have much more national economic independence than generally supposed. (2) Substantial or complete sterilization of the effects of contemporaneous reserve flows on the money supply is a universal practice of the nonreserve central banks. (3) Quantities such as international trade flows and capital flows are not well explained by observed prices, exchange rates, and interest rates. (4) Explaining real income by innovations in aggregate demand variables works well for U.S. real income but does not transfer easily to other countires. The empirical results suggest a rich menu for further research.

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THE MARK III INTERNATIONAL TRANSMISSION MODEL

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The Mark III International Transmission Model provides a convenient framework for testing a variety of hypotheses about the workings of and linkages among individual macroeconomies. It is a quarterly macroeconometric model of the United States, United Kingdom, Canada, France, Germany, Italy, Japan, and the Netherlands estimated for 1957 through 1976.[1] A number of hypotheses are incorporated in the structure of the model so that the data can decide their empirical relevance; test results for those hypotheses will be reported in this paper. Other hypotheses could be left for separate

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*The Mark III Model is an element in the NBER project on "The International Transmission of Inflation through the World Monetary System." Our partners in this effort -- Arthur E. Gandolfi, James R. Lothian, and Anna J. Schwartz -- have made innumerable contributions to this modeling and created the NBER quarterly international data base used in estimating the model. The authors acknowledge the able research assistance of Daniel M. Laskar, Michael T. Melvin, M. Holly Shissler, and Andrew A. Vogel and helpful suggestions from members of the project Advisory Board and the UCLA Monetary Economics Workshop. An exploratory version of the model was reported in Darby (1979). A fuller statement (including derivations) of the model summarized here will appear in the proposed NBER volume reporting project results. This work has been funded by grants from the National Science Foundation (grant numbers APR76-12334 and APR78-13072), Scaife Family trusts, and Alex C. Walker Educational and Charitable Foundation, and Relm Foundation. The research reported here is part of the NBER's research program in International Studies. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

[1]The international data base created as part of the larger project has consistent data series for all these countries from 1955 to 1976, but two years of data are used due to various lags in the model and in the definitions of expected values. The data bank is presently being extended through 1979. These additional data will be used for post-sample prediction tests.

I. The Model

Briefly the model consists of three sorts of submodels: (1) the reserve country (U.S.) submodel, (2) the nonreserve, pegged-exchange-rate submodels, and (3) the nonreserve, floating-exchange-rate submodels. These submodels are outlined in Tables 2, 3, and 4, respectively, using the notation of Table 1. Since these submodels are quite similar it is simplest to go through them equation-by-equation. The reserve and nonreserve pegged submodels each consist of eight or nine behavioral equations plus nine identities. These basic behavioral equations can be identified by the endogenous variable upon which we have normalized for simultaneous estimation as the real-income, price-level, unemployment-rate, nominal-money, interest-rate, export, import, import-price, and capital-flow equations. An additional behavioral equation is added for the nonreserve-floating submodels where the exchange rate is also endogenous. In these submodels we renormalize the import and import-price equations to obtain the exchange rate given the balance of payments determined in the new exchange intervention function. This is detailed in the equation outlines below.

Real Income - Equations (R1) and (N1)

The real income equation is a generalization of the Barro (1978) equation which expresses output as responding to shocks (innovations) in the determinants of aggregate demand with persistance effects modeled by a partial adjustment process on lagged logarthmic transitory income $[\log y_{j,t-1} - \log y^{p}_{j,t-1}]$. The innovations which we consider (in nominal money, real government spending, and scaled net exports) enter with a four-quarter distributed lag, so the partial adjustment process is really imposed only after the initial four quarters.

Price Level - Equations (R2) and (N2)

The price level equation is obtained by equating nominal money supply and demand and solving for the price level. The demand for money function used is generalized from that of Carr and Darby (1979). The Carr-Darby function allows for different adjustment processes depending on whether a change in nominal money is anticipated or unanticipated. The logarithm of real money demand is assumed to be a function of logarithmic permanent and transitory income, the domestic interest rate, the foreign interest rate allowing for expected depreciation, the lagged logarithm of real money, and a four-quarter distributed lag on the money shocks.[2] Thus a typical nonreserve money demand function would be:

$$\text{(1)} \quad \log M_j - \log P_j = \beta_{j1} - \beta_{j2} \log y_j^P - \beta_{j3} (\log y_j - \log y_j^P) - \beta_{j4} R_j - \beta_5 [R_1 + (4\Delta\log E_{j,t+1})^*] - \beta_{j6} [\log M_{j,t-1} - \log P_{j,t-1}] - \sum_{i=0}^{3} \beta_{j,7+i} \hat{M}_{j,t-i} - \varepsilon_{j2}$$

Renormalizing in terms of the price level gives us equation (N1) with the signs reversed from those of the money-demand equation. A negative sign on $\hat{M}_j$ in the price level equation implies that there is a shock-absorber increase in money demand due to an unanticipated increase in nominal money supply over and above that indicated by movements in real income and the interest rate.

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[2]The foreign interest rate is included at the suggestion of Don Mathieson and Michael Hamburger to test for the substitutability of foreign bonds for domestic money. The U.S. interest rate is used for the nonreserve countries and the U.K. interest rate is used for the United States. Carr and Darby (1979) entered only the current money shock, but our distributed lag permits the data to determine a more complicated adjustment process.

Unemployment Rate - Equations (R3) and (N3)

This is a dynamic form of Okun's law to allow for a distributed lag effect of real income growth on changes in the unemployment rate. It is included only in the U.S., U.K., and French submodels. The other countries in the model have unemployment rates which are uncorrelated with present and past changes in real income. For those countries, transitory real income replaces the unemployment rate in the nominal money reaction functions.

Nominal Money - Equations (R4) and (N4)

A standard nominal money reaction function (N4) has been adopted for the nonreserve countries. We have specified a form with sufficient generality to allow for varying lags in acquisition and utilization of information by the various monetary authorities.[3] The reaction functions explain the nominal money growth rate by the current and appropriately lagged balance of payments, the lagged unemployment rate or transitory real income, lagged inflation rates, and current and lagged innovations in real government spending. Semiannual observations were used for lagged values to reduce the number of fitted coefficients except for the unemployment-rate or transitory-income variable for which preliminary experimentation suggested a complicated lag pattern. Since under floating exchange rates more attention can be paid to inflation goals and less to balance-of-payments equilibrium, we used a floating dummy variable (DF_j) to estimate shifts in the inflation and balance-of-payments coefficients during the floating period. The U.S. equation (R4) differs from the nonreserve equations in (a) omitting all terms

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[3]Preliminary investigation uncovered substantial variation in how quickly different countries responded to the various determinants. In the exploratory Mark II version of the model, money reaction functions were tailored to the individual countries (see Darby (1979)). Experience with that approach indicated both difficulties in cross-country comparisons and with understated standard errors. The approach also does not prejudge whether domestic credit is predetermined.

involving the balance of payments[4] and the floating dummy and (b) including two lagged dependent variables in response to a seemingly complicated adjustment process indicated by earlier work.

Interest Rate - Equations (R5) and (N5)

The interest rate is based on a goods market equilibrium condition, but problems were encountered in specifying a dynamic investment function. As a result, we explain the nominal interest rate by the expected inflation rate and the real interest rate. The latter depends on the lagged expected inflation rate, time, the lagged interest rate and four-quarter-distributed lags on innovations in nominal money, real government spending and real net exports. Thus, the interest rate and real income equations can be interpreted as reflecting the outcome of a short-period IS-LM model which shifts around long-run equilibrium in response to current and lagged innovations in the demand variables. Persistent effects on the real interest rate are possible via the lagged expected-inflation and interest rates.

Exports - Equations (R6) and (N6)

We measure exports as a fraction of income.[5] These scaled exports are explained by logarithmic transitory income, time, the lagged dependent variable to allow for partial adjustment, foreign real income, the logarithm of the real price of oil (dollar price divided by the U.S. deflator), and four quarter distributed lags on the domestic and foreign price levels and on the

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[4]This exclusion was investigated at length in work reported in Darby (1980a).

[5]We similarly measure imports and capital flows as a fraction of income so that a balance of payments scaled as a fraction of income results from imposition of the identity to assure asset market equilibrium.

exchange rate. We do not constrain the foreign price level to enter converted by the exchange rate because purchasing power parities may have changed with removal of capital controls simultaneously with pegged exchange rate changes. We allow for different effects of exchange rate changes during the pegged and floating periods.

Imports - Equations (R7), (N7P), and (N7F)

The scaled imports variable is explained by permanent income, lagged dependent variable, and distributed lags on the relative price of imports and domestic transitory income for the reserve and nonreserve pegged submodels. For the non-reserve floating submodels, this import demand equation is solved (renormalized) for the current relative price of imports.

Imports Prices - Equations (R8), (N8P), and (N8F)

It was necessary to first difference the import price equation to clear up severly autocorrelated residuals. In (R8) and (N8P), the first difference of the logarithm of import prices is explained by a constant and the first differences of the logarithm of the real oil price, the scaled import variable, the logarithm of foreign real income, the logarithm of the foreign price level, the logarithm of the exchange rate, and also by the lagged dependent variable. This import supply equation was solved in the floating version (N8F) for the first difference in the logarithm of the exchange rate.

Capital Flows - Equations (R9) and (N9)

The scaled net capital outflows is explained by the domestic and U.S. interest rate and the expected growth rate of the exchange rate,[6] the logarithm

[6] For the U.S. equation the U.K. interest rate and exchange rate serves as the foreign variable.

of the real price of oil, the scaled balance of trade, time, logarithmic transitory income, the first differences in the logarithms of domestic and foreign real income, and distributed lags on first differences of domestic and U.S. interest rates, of the expected growth rate of the exchange rate, and of the logarithm of real income.

Balance of Payments - Floating (N10F) only

In the nonreserve floating model, a tenth behavioral equation is added to complete the model in view of the addition of the logarithm of the exchange rate to our list of endogenous variables. This is our exchange intervention equation which explains the scaled balance of payments by the lagged dependent variable and the log change in the exchange rate as compared to the same log change lagged one quarter and to the lagged differential between the domestic and U.S. inflation rates.

Identities - Equations (R11)-(R17) and (N11)-(N17)

Logarithmic permanent income is defined in identities (R11) and (N11). Identities (R12) and (N12P) determine the scaled balance of payments; this is solved instead for scaled imports in the floating (N12F). Money and export shocks are defined in identities (R13), (R14), (N13), and (N14). Identities (R15) and (N15P) define the relative price of imports; in the floating case, this is solved for import prices as in (N15F). The expectational identities (R16), (R17), (N16), and (N17) are for expections of next periods prices and exchange rate based on current information. Their specification is discussed in Section II. Nominal-income-weighted geometric averages of the other seven countries' real income and prices are defined by identities (R18), (R19), (N18), and (N19). The weights W_j are the ratios of country j's total nominal income (converted by E_j into dollars) for 1955I - 1976IV to the total for all eight countries. The parameters $basey_j$ and $baseP_j$ set the indices y_j^R and P_j^R to 1 for 1970 and are listed with the W_j's in Table 8. Although these variables are endogenous for the whole model, they are treated somewhat differently in the simultaneous equation estimation method outlined in Section IV.

II. Expected Values

There are four explicit plus one implicit expectational variables in the model: The explicit variables are $(4\Delta \log E_j)^*$, $(4\Delta \log P_j)^*$, $(\log M_j)^*$, and $(X/Y)^*_j$; $(\log g_j)^*$ also must be estimated in creating the exogenous variable $\hat{g}_j$. The first two of these variables appear in the model with leads so that they are based on current information. Therefore we treat them as endogenous for purposes of estimation.[7] The other three expected values are based only on lagged information and are therefore treated as predetermined for purposes of estimation.

The three predetermined expectational variables are all based on optimal univariate ARIMA processes. We also tried defining $(\log M_j)^*$ in terms of a transfer function based on the money supply reaction functions (R4) and (N4), but the univariate process worked somewhat better both in terms of explanatory power and in meeting our prior notions regarding the values of coefficients.[8] Since we are treating real government spending as exogenous, it was appropriate to model $(\log g_j)^*$ by a univariate ARIMA process. Because of the short lags in the export equations and the relatively minor role of export shocks in the model as estimated, we did not attempt a full-scale transfer function approach for $(X/Y)^*_j$.

For the expected inflation rate $(4\Delta \log P_j)^*$ we adopted a transfer function based on the price-level equations (R2) and (N2) with information lags

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[7]See identities (R16), (R17), (N16), and (N17).

[8]This is understandable if the acquisition and processing of information is costly. See Darby (1976) and Feige and Pearce (1976). Further research on the sensitivity of estimates to alternate definitions of $(\log M_j)^*$ will be reported in the project volume.

imposed. As detailed in Table 5, the expected inflation rate $(4\Delta\log P_{j,t+1})^*$ is the systematic part of a transfer function which has as input series $(\log M_j)^*$, two lags of $\log M_j$, $\Delta\log y_{j,t-1}$, R_j, $R_{j,t-1}$, current and lagged exchange-rate-adjusted foreign interest rate, two lags of $\log P_j$, and three lagged money shocks. Note that since this expected inflation rate appears in the interest rate equation, it is appropriate to assume that the information set includes current interest rates.

Finally, expected growth in the exchange rate $(4\Delta\log E_{j,t+1})^*$ differs by period and country. In general we do not wish to use the forward rate for this expectation because (1) this would require an additional equation for each nonreserve country to explain endogenously the forward rate's movements relative to movements in the expected growth in the exchange rate, and especially (2) the forward rate data are incomplete. For the floating period, we fitted regressions explaining $E_{j,t+1}$ by the current values of the variables appearing in the exchange rate equation (N8F) and the lagged dependent variable. No significant autocorrelation appeared in the residuals. The predicted value of these regressions is used as $(4\Delta\log E_{j,t+1})^*$. Details are in Part A of Table 6. For the pegged period, we use a transfer function which has input series useful to predict both a revaluation and movements absent a revaluation. The expected change due to a revaluation is assumed to vary with the level of the scaled balance of payments and with this level times its absolute value.[9] Movements absent a revaluation are captured by the current growth rate and the logarithmic difference between the actual and pegged values of E_j. The latter variable may serve as well in predicting

[9]This formulation closely approximates an expectation based on a Tobit analysis in which both the probability of a change and the size of the change varies with the balance of payments.

revaluations. Finally lagged revaluation dummies are included because of the different meaning of the variables in the quarter immediately following a revaluation. Details are given in Table 6, Part B.

III. International Linkages

The behavioral equations in the model can be divided into the domestic sector and the international sector. The domestic sector would contain the real-income, price-level, unemployment-rate, nominal-money, and interest-rate equations. The international sector determines exports, imports, import prices, capital flows, and the implied balance of payments given a pegged exchange rate or exports, import prices, the exchange rate, capital flows, the balance of payments, and the implied imports for floating exchange rates. This section discusses how international influences modeled in the international sector affect the domestic sector.

In the early monetary approach to the balance of payments literature, much was made of the "law of one price level." In the Mark II model, we attempted to enter the exchange-rate-adjusted foreign price level directly into the price level equation, but only the domestic demand and supply for money were significant. Two explanations arose: (1) International price arbitrage is trivial in impact for the aggregate price level. (2) The "law of one price level" holds, but the balance of payments forces nominal money supply to adjust practically instantaneously to real money demand times the world determined price level. Therefore the Mark III model allows foreign prices to affect the domestic price level via affecting first the trade balance, then the balance of payments, then nominal money, and finally the price level. If this pattern takes substantial time, it is consistent with a Humean specie-flow mechanism but not the "law of one price." In addition, an indirect "currency substitution" channel permits movements in the exchange-rate-adjusted foreign interest rate to affect real money demand and hence the price level.

Similarly the impact of capital flows so much emphasized in the recent monetary approach and asset approach literature enters indirectly. Domestic interest rates are determined by domestic conditions including nominal money. If they are inconsistent with the interest rate determined by asset arbitrage, then capital flows would be induced which would affect the balance of payments, then nominal money, and ultimately interest rates. Many recent writers have suggested that massive capital flows would thus overwhelm any attempt at independent monetary policy by a nonreserve country maintaining pegged exchange rates. We investigate the empirical importance of this channel here.

Note especially that in our model both the trade balance channel and the asset channel may operate simultaneously.

Some other economists have emphasized the absorption approach via which foreign changes in income may affect domestic output and interest rates via changes in export demand. This is reflected in the real export innovation terms present in both real income and interest rate equations. They in turn may affect nominal money indirectly while balance of payments effects would enter directly into the nominal money reaction functions.

At this stage, it is clear that the logarithm of the real price of oil enters into the export, import price, and capital flow equations. A future paper will test whether there is an additional direct effect of this and other international supply shocks on the real income and price level equations, or whether they operate through their effects on the balance of payments and net exports.

IV. Estimation Methods

If a simultaneously determined model such as ours is estimated by ordinary least squares (OLS), simultaneous equation bias occurs. This arises because the endogenous variables respond to each other so that the random disturbance in any one behavioral equation may be reflected in movements of all the other endogenous variables. As a result when some endogenous variables are used to explain the behavior of another endogenous variable, their values are potentially correlated with the random disturbance in the equation. Their OLS coefficients will reflect not only their effect on the variable being explained but also the effect of its residual on them. Simultaneous equation methods are used to remove this spurious correlation due to reverse-causality.

The most popular simultaneous equation methods are two-stage and three-stage least squares (2SLS and 3SLS, respectively.)[10] Unfortunately neither exists for our model. This is because the first stage of each approach involves obtaining fitted values of each of the endogenous variables which are uncorrelated with the other endogenous variables. This is done by fitting OLS regressions for each endogenous variable as a function of all the predetermined variables (exogenous and lagged endogenous). In large samples, these fitted values are uncorrelated with the residuals in the behavioral equations and, when substituted for the actual values in OLS estimates of the behavioral equations, give unbiased estimates of the coefficients. Unfortunately when the number of predetermined variables equals or exceeds the number of observations, the first stage regressions can perfectly reproduce

[10] Other, more complicated methods exist but could not be entertained for such a large model as ours because of software and computing budget limitations.

the actual values of the endogenous variables and no simultaneous equation bias is removed.

We reduce the number of predetermined variables relative to the number of observations in two ways: (1) For each country we use as predetermined variables only domestic variables for that country plus fitted values of only those foreign variables which enter that country's submodel. The fitted foreign variables are obtained by fitting interest rates, income, and prices on each foreign country's own domestic variables and then forming indexes (where necessary as indicated by identities (R18), (R19), (N18), and (N19)) of these fitted foreign variables. (2) Using this reduced set of predetermined variables,[11] we take sufficient principal components to explain over 99.95% of their variance. Usually this involves thirty to thirty-five components (indicating thirty to thirty-five independent sources of variation in the instrument list). However, in estimating certain equations for short subperiods[12] it is necessary to limit the number of principal components to half the number of observations in the subperiod. In either case these principal components are used as our matrix for obtaining fitted values of the endogenous variables in the first stage of our 2SLS regressions.

In summary, the model is estimated by the principal-components-2SLS method where (a) the basic instrument list for each country consists of domestic predetermined variables plus fitted values of those foreign variables which appear in the model based on foreign predetermined variables, and (b) this basic instrument list is spanned by a number of components

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[11] The actual lists of predetermined variables for each country are presented in Table 8.

[12] That is, for the floating period for all nonreserve countries except Canada and the pegged period for Canada.

either equal to half the observations being used or sufficient to explain over 99.95% of the variance in the basic instrument list, whichever is smaller.

V. Estimation Results

The estimated model is reported in Tables 9 through 18. We also discuss the estimates equation-by-equation.

Real-Income Equations (R1) and (N1) - Table 9

For the United States, there appear to be substantial effects from money shocks and weak to nonexistent effects from both real government spending and export shocks. For the nonreserve countries, a few apparently significant monetary shocks enter, but we generally cannot reject the hypothesis that all the money shock coefficients are zero. This is shown in Table 9A where only Canada among the nonreserve countries reaches even the 10 percent level of significance. The apparent impotence of monetary policy in the nonreserve countries may be real or it may reflect either a greater measurement error in defining the money shocks or a stable monetary policy which would also reduce the signal-to-noise ratio in the $\hat{M}_j$ data.[13]

The other demand shock variables, with occasional exceptions, also do not seem to have much systematic effect on the nonreserve countries' real incomes. The sensitivity of these results to alternative definitions of demand shocks and effects of anticipated variables will be examined in a future paper.

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[13] If for example the nonreserve central banks smoothed out the Federal Reserve System's erratic growth-rate changes via an effective sterilization policy, the actual variation in money shocks might be too small to estimate a significant coefficient even though a substantial monetary shock, if it were ever attempted, would have a substantial effect on real income. Although such effective sterilization appears consistent with results reported below, the authors are not agreed on its existence; see Stockman (1979) and Darby (1980b).

Price Level Equations (R2) and (N2) - Table 10

The price-level equations have the difficulties usually encountered in the stock-adjustment formulation: A tendency for autocorrelation in the residuals to bias the coefficient of the lagged dependent variable toward 1 and the long-run demand variables toward zero. We have included three lagged money shocks in addition to the current one suggested by Carr and Darby (1979). These serve to explain current movements in demand variables in what are nearly first difference in (log P-log M) equations. Software difficulties prevented us from trying a correction for autocorrelation.[14]

The fact that current money shocks enter with a coefficient near -1 indicates that expected rather actual money enters in the price level equation. With a coefficient of -1, money shocks affect the current price level only via indirect interest rate or real income effects. The shock-absorber adjustment process suggested by Carr and Darby is thus supported by the data.

The foreign-interest-rate channel (β_{j5}) is both significant and of the right sign only for the United Kingdom and Japan. Further, if we recall that interest rates are measured as decimal fractions, we see that both elasticities are very small in absolute value and compared to the elasticity of money demand with respect to the domestic interest rate. Nonetheless we are able to detect some asset substitution in two of our eight countries.

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[14]The current TROLL system regression package has a program defect when 2SLS and correction for autocorrelation are used simultaneously. France, Germany, Italy, and Japan appear to have significant positive autocorrelation judging from Durbin's h statistic.

Unemployment-Rate Equations (R3) and (N3) - Table 11

The unemployment rate equations indicate conformity to a dynamic version of Okun's Law for the United States, United Kingdom, and France. For the other countries there was no significant correlation between changes in the unemployment rate and past and present changes in real income. As the equation was not required for the model, it was dropped for those countries.

Nominal-Money Equations (R4) and (N4) - Table 12

The U.S. reaction function (R4) indicates a negative impact of lagged inflation on nominal money growth, surprisingly weak (though) positive effects from unexpected real government spending, and a stimulative effect from a two-quarter lagged change in the unemployment rate. The time trend term is extremely potent: For plausible steady-state values it increases the growth rate of nominal money from 0.2 percent per annum in 1956 to 5.9 percent per annum in 1976. Although plausibly related to a gradual increase in target inflation as a result of experienced inflation, the trend term will be investigated in detail in a future paper on alternative monetary standards.

The results for the nonreserve countries reported in Part B of Table 12 are generally acceptable except for Italy which appears to follow no systematic policy. The key element for international transmission is the effect of the balance of payments on the money supply. Table 12A indicates what fraction of the balance of payments is not sterilized by the central bank -- a value of 1 indicates no sterilization and a value of 0 indicates complete sterilization. During the pegged period, sterilization appears to have been a universal practice, although there was a substantial impact effect of the balance of payments on the German and Japanese nominal money supply. When we take account of lagged adjustments all countries except Italy appeared to respond, albeit partially, to the balance of payments. In principle a lagged adjustment may be sufficient to maintain a pegged exchange rate system.[15] The continued impact of the balance of payments on nominal money during the floating period is consistent with a joint policy of exchange intervention and monetary adjustments in response to exchange rate pressures.

Interest-Rate Equations (R5) and (N5) - Table 13

The interest rate equations are not particularly satisfactory in terms of expected values of the coefficients: The expected-inflation effect is small to nil and so is the liquidity effect of nominal money shocks. Real government spending shocks generally have a negative impact effect on interest rates. An efficient-markets/random-walk story might appear to offer an explanation, but these are short-term rates which can move in predictable ways in an efficient market. Further the contemporaneous shocks should help explain the random walk. We suspect the solution to the puzzle may lie in the formation of expectations, but leave this as an area for future research.

Export Equations (R6) and (N6) - Table 14

The export equations are generally acceptable although price influences do not seem very strong. An increased real oil price enters as a proxy for in-

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[15] The implications of sterilization (and hence endogenous domestic credit) are examined in Darby (1980b) and Stockman (1979).

creased real income of the omitted rest of the world and has the expected positive sign except for Japan. Foreign real income has much weaker positive impact than would be expected from the absorption approach. The sum of the current and lagged domestic price level is negative for all countries except the U.S. and Canada, but the effects are universally weak. Similarly foreign prices and the exchange rate generally have weak positive effects.

Import Equations (R7) and (N7P) - Table 15, Part A

The import demand equations display a J-curve type effect. An increase in relative import prices initially (except for Germany and Italy) increases the nominal value of imports relative to nominal income. Lagged quantity adjustment, indicated by negative coefficients on lagged relative import prices, gradually offset the initial increase. While the price effects are rather stronger here than for exports,[16] again there is no evidence of a "law of one price level" operating strongly in the current period.

Relative-Price-of-Imports Equations (N7F) - Table 15, Part B

During the floating period, we solve the import demand equation for the relative price of imports. The equations have no obvious problems but the implied parameter estimates are frequently quite different from those in Part A of Table 15. This may be due to biases from the (different) lagged dependent variable which appears in each equation.

Import-Price Equations (R8) and (N8P) - Table 16, Part A

The import supply equations indicate that increases in foreign prices increase import prices, although the coefficients are insignificant for the United States

[16]This may be because with relatively reliable import price data we can estimate separate import demand and supply equations while the export equation is a market equilibrium equation in which the exchange rate and foreign price level enter directly.

and Canada. Changes in exchange rates are significantly positive for the four countries which changed their peg during the period of estimation, but not for Canada, Italy, or Japan. There also appears to be a positive quantity effect for a few countries. Oil prices are important only for the U.S., Italy, and perhaps the Netherlands.

Exchange-Rate Equations (N8F) - Table 16, Part B

The inverted import supply equations are used to explain exchange rate movement during the floating period. Although it is somewhat arbitrary in a simultaneous model which one is declared "the" exchange rate equation, this one was chosen because exchange rates entered most directly and strongly here. The approach clearly worked well for France, Italy, Japan, and the Netherlands and not so well for the United Kingdom, Canada, and Germany. Why this is so is puzzling to us.

Capital-Flows Equations (R9) and (N9) - Table 17

The capital-flows equations worked poorly indeed for the United Kingdom and Japan, apparently reflecting the effectiveness of their capital controls. For the other countries, net capital outflows generally were negatively related (albeit weakly so) to either the exchange-rate adjusted interest differential $[R_j - (4\Delta\log E_{j,t+1})^* - R_1]$ or to changes in this differential, judging from the coefficients estimated on its component parts. But the estimated coefficients are neither large nor precisely estimated as would be suggested by discussions of "interest arbitrage" in the asset approach. Apparently foreign and domestic securities are treated as rather imperfect substitutes in the portfolio. Alternatively, one must suppose most movements in the differential reflect changes in the equilibrium value with no flows resulting.

Balance-of-Payments Equations - Table 18

These equations attempt to model intervention in the floating-exchange-rate markets. With few degrees of freedom, we could not experiment with lags or alternative variables and based the equations on the variables popularly discussed: movements in the exchange rate relative to recent movements or lagged relative inflation rates and the lagged dependent variable. This approach certainly did not explain intervention by the central banks of France or the Netherlands, but was otherwise reasonably serviceable. We investigated explaining the Netherlands-German exchange rate and hence the Netherlands-U.S. exchange rate, but this approach was even less successful.

VI. Conclusions and Areas for Future Research

The research reported in this paper seems very informative to us in the sense of inducing revision of prior beliefs and suggesting areas for future research. This doubtless reflects the emphasis on theoretical as opposed to empirical research in international macroeconomics. Hopefully this imbalance will be redressed in view of the demonstrated payoff and of the reduced cost of empirical work consequent upon the development of the data bank by James Lothian and Anna Schwartz.

Our main empirical results can be summarized as saying that the rational-expectations-natural-rate results found for the U.S. do not transfer easily to other developed countries and that linkages among countries joined by pegged exchange rates appear much looser than is usually assumed at least in the monetary-approach literature. In particular, substantial or complete sterilization of the effects of contemporaneous reserve flows on the money supply is a universal practice of the nonreserve central banks. Much future research by members of the International Transmission Project and others is required to substantiate or overturn these results, but the questions are clearly posed.

In greater detail, our major empirical findings are:

1. Although a natural-rate/rational-expectations real-income equation confirms strong effects from money innovations and weak effects from government spending and export innovations in the U.S., the other seven countries had little by the way of significant response to demand innovations.
2. The shock-absorber money demand equation of Carr and Darby receives confirmation. Thus innovations in nominal money have little effect on contemporaneous inflation despite small contemporaneous movements in real income and the interest rate.

TABLE 3

Nonreserve Country Submodel
Pegged Exchange Rate Periods

EQUATIONS

(N1) $$\log y_j = \alpha_{j1} + \alpha_{j2} \log y^P_{j,t-1} + (1-\alpha_{j2}) \log y_{j,t-1} + \sum_{i=0}^{3} \alpha_{j,3+i}\hat{M}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,7+i}\hat{g}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,11+i}\hat{x}_{j,t-i} + \varepsilon_{j1}$$

(N2) $$\log P_j = \log M_j + \beta_{j1} + \beta_{j2} \log y^P_j + \beta_{j3}(\log y_j - \log y^P_j) + \beta_{j4}R_j + \beta_{j5}[R_1 + (4\Delta\log E_{j,t+1})^*] + \beta_{j6} (\log M_{j,t-1} - \log P_{j,t-1}) + \sum_{i=0}^{3} \beta_{j,7+i}\hat{M}_{j,t-i} + \varepsilon_{j2}$$

(N3)[1] $$u_j = u_{j,t-1} + \gamma_{j1} + \sum_{i=0}^{7} \gamma_{j,2+i} \Delta\log y_{j,t-i} + \varepsilon_{j3}$$

(N4)[2] $$\Delta\log M_j = \eta_{j1} + \eta_{j2}t + \eta_{j3}\hat{g}_j + \eta_{j4}(\hat{g}_{j,t-1} + \hat{g}_{j,t-2}) + \eta_{j5}(\hat{g}_{j,t-3} + \hat{g}_{j,t-4}) + \eta_{j6}(\log P_{j,t-1} - \log P_{j,t-3}) + \eta_{j7}[DF_j(\log P_{j,t-1} - \log P_{j,t-3})] + \eta_{j8}(\log P_{j,t-3} - \log P_{j,t-5}) + \eta_{j9}[DF_j(\log P_{j,t-3} - \log P_{j,t-5})] + \eta_{j,10}u_{j,t-1} + \eta_{j,11}u_{j,t-2} + \eta_{j,12}u_{j,t-3} + \eta_{j,13}u_{j,t-4} + \eta_{j,14}(B/Y)_j + \eta_{j,15}[DF_j(B/Y)_j] + \eta_{j,16}[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}] + \eta_{j,17}\{DF_j[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}]\} + \eta_{j,18}[(B/Y)_{j,t-3} + (B/Y)_{j,t-4} + \eta_{j,19}\{DF_j[(B/Y)_{j,t-3} + (B/Y)_{j,t-4}]\} + \varepsilon_{j4}$$

REFERENCES

Barro, R. J., "Unanticipated Money, Output, and the Price Level in the United States," Journal of Political Economy, August 1978, 86: 549-80.

Carr, J., and Darby, M. R., "The Role of Money Supply Shocks in the Short-Run Demand for Money," U.C.L.A. Economics Department Discussion Paper No. 98, October 1979.

Darby, M. R., "Rational Expectations under Conditions of Costly Information," Journal of Finance, June 1976, 31: 889-895.

_____, "The NBER International Transmission Model: The Mark II Disequilibrium Version, Estimates and Lessons," in the Proceedings of 1978 West Coast Academic/Federal Reserve Economic Research Seminar, San Francisco: Federal Reserve Bank of San Francisco, 1979.

_____, "The International Economy as a Source of and Restraint on United States Inflation," NBER Working Paper No. 437, January 1980. (1980a)

_____, "Sterilization and Monetary Control Under Pegged Exchange Rates: Theory and Evidence," NBER Working Paper No. 449, February 1980. (1980b)

Feige, E. L., and Pearce, D. K., "Economically Rational Expectations: Are Innovations in the Rate of Inflation Independent of Innovations in Measures of Monetary and Fiscal Policy," Journal of Political Economy, June 1976, 84: 499-522.

Stockman, A. C., "Monetary Control and Sterilization under Pegged Exchange Rates," Department of Economics, University of Rochester, xerox, August 1979.

TABLE 1

Symbols Used in Mark III Model

$baseP_j$	Base to set mean value of log P_j^R to 0 for 1970 (i.e., P_j^R has geometric mean 1 for 1970).
$basey_j$	Base to set mean value of log y_j^R to 0 for 1970 (i.e., y_j^R has geometric mean 1 for 1970).
$(B/Y)_j$	Balance of payments as a fraction of GNP. (GDP if GNP unavailable. For nonreserve countries this is on the official reserve settlement basis. For the U.S., we will try changes in the gold stock and the official reserve settlement basis.)
$(C/Y)_j$	Net capital outflows as a fraction of GNP. (Measured as $(X/Y)_j - (I/Y)_j - (B/Y)_j$).
DF_j	Dummy variable equal to 1 for floating-exchange-rate period; 0 otherwise.
E_j	Exchange rate in domestic currency units (DCUs) per U. S. dollar ($E_1 \equiv 1$).
E_j^A	Actual value of E_j for fixed exchange rate period.
g_j	Real government spending.
$\hat{g}_j$	Innovation in real government spending; $g_j - g_j^*$
$(I/Y)_j$	Imports as a fraction of GNP.
M_j	Money stock in billions of DCUs.
$\hat{M}_j$	Innovation in money; $\log M_j - (\log M_j)^*$
P_j	Price deflator for GNP (or GDP) in DCUs per base-year DCU. (1970 = 1.000)
P_j^I	Import price index. (1970 = 1.000)
P_j^R	Index of foreign prices converted by exchange rates into U.S. dollars per base-year U. S. dollar.

P^{RO}	Real price of oil. (Dollar price of barrel of Venezuelan oil divided by P_1.)
R_j	Short-term nominal interest rate in decimal per annum form (Three-months treasury bill yield where available.)
t	Time index (1955 I = 1, 1955 II = 2, etc.)
u_j	Unemployment rate in decimal form.
W_j	Nominal income weight; share of country j in total sample nominal income.
$(X/Y)_j$	Exports as a fraction of GNP.
$\hat{x}_j$	Innovation in exports; $(X/Y)_j - (X/Y)^*_j$.
y_j	Real GNP (or GDP if GNP unavailable) in billions of base-year DCUs.
y^P_j	Permanent income in billions of base-year DCUs.
y^R_j	Index of foreign real income. (1970 = 1.000)
Z_j	Relative price of imports; $\log P^I_j - \log P_j$.
*	Indicates expected value based on information up through previous quarter, with exceptions noted in Section II.

Country Indices:

1	United States	5	Germany
2	United Kingdom	6	Italy
3	Canada	7	Japan
4	France	8	Netherlands

TABLE 2

Reserve Country (U. S.) Submodel

EQUATIONS

(R1)
$$\log y_1 = \alpha_{11} + \alpha_{12} \log y^P_{1,t-1} + (1-\alpha_{12}) \log y_{1,t-1} + \sum_{i=0}^{3} \alpha_{1,3+i}\hat{M}_{1,t-i} + \sum_{i=0}^{3} \alpha_{1,7+i}\hat{g}_{1,t-i} + \sum_{i=0}^{3} \alpha_{1,11+i}\hat{x}_{1,t-i} + \varepsilon_{11}$$

(R2)
$$\log P_1 = \log M_1 + \beta_{11} + \beta_{12}\log y^P_1 + \beta_{13}(\log y_1 - \log y^P_1) + \beta_{14}R_1 + \beta_{15}[R_2 - (4\Delta\log E_{2,t+1})^*] + \beta_{16} (\log M_{1,t-1} - \log P_{1,t-1}) + \sum_{i=0}^{3} \beta_{1,7+i}\hat{M}_{1,t-i} + \varepsilon_{12}$$

(R3)
$$u_1 = u_{1,t-1} + \gamma_{11} + \sum_{i=0}^{7} \gamma_{1,2+i} \Delta\log y_{1,t-i} + \varepsilon_{13}$$

(R4)
$$\Delta\log M_1 = \eta_{11} + \eta_{12}\, t + \eta_{13}\, \hat{g}_1 + \eta_{14} (\hat{g}_{1,t-1} + \hat{g}_{1,t-2}) + \eta_{15} (\hat{g}_{1,t-3} + \hat{g}_{1,t-4}) + \eta_{16} (\log P_{1,t-1} - \log P_{1,t-3}) + \eta_{18} (\log P_{1,t-3} - \log P_{1,t-5}) + \eta_{1,10}\, u_{1,t-1} + \eta_{1,11}\, u_{1,t-2} + \eta_{1,12}\, u_{1,t-3} + \eta_{1,13}\, u_{1,t-4} + \eta_{1,20}\, \Delta\log M_{1,t-1} + \eta_{1,21}\, \Delta\log M_{1,t-2} + \varepsilon_{14}$$

(R5)
$$R_1 = \delta_{11} + \delta_{12}\, t + \delta_{13} (4\Delta\log P_{1,t+1})^* + \delta_{14} R_{1,t-1} + \delta_{15} (4\Delta\log P_1)^* + \sum_{i=0}^{3} \delta_{1,6+i}\hat{M}_{1,t-i} + \sum_{i=0}^{3} \delta_{1,10+i}\, \hat{g}_{1,t-i} + \sum_{i=0}^{3} \delta_{1,14+i}\, \hat{x}_{1,t-i} + \varepsilon_{15}$$

(R6) $$(X/Y)_1 = \theta_{11} + \theta_{12}t + \theta_{13}\log P^{RO} + \theta_{14}(\log y_1 - \log y_1^P)$$
$$+ \sum_{i=0}^{1} \theta_{1,5+i}(X/Y)_{1,t-1-i} + \sum_{i=0}^{1} \theta_{1,7+i} \log y^R_{1,t-i}$$
$$+ \sum_{i=0}^{1} \theta_{1,9+i} \log P_{1,t-i} + \sum_{i=0}^{1} \theta_{11+i} \log P^R_{1,t-i} + \varepsilon_{16}$$

(R7) $$(I/Y)_1 = \lambda_{11} + \lambda_{12}(I/Y)_{1,t-1} + \lambda_{13} \log y_1^P$$
$$+ \sum_{i=0}^{1} \lambda_{1,4+i} (\log y_{1,t-i} - \log y^P_{1,t-i})$$
$$+ \sum_{i=0}^{3} \lambda_{1,6+i} Z_{1,t-i} + \varepsilon_{17}$$

(R8) $$\log P_1^I = \log P^I_{1,t-1} + \mu_{11} + \mu_{12} \Delta\log P^I_{1,t-1}$$
$$+ \mu_{13} \Delta\log P^{RO} + \mu_{14} \Delta\log y_1^R + \mu_{15} \Delta(I/Y)_1$$
$$+ \mu_{16} \Delta\log P_1^R + \varepsilon_{18}$$

(R9)[1] $$(C/Y)_1 = \xi_{11} + \xi_{12}t + \xi_{13} \log P^{RO} + \xi_{14}R_1$$
$$- \xi_{15} (4\Delta\log E_{2,t+1})^* + \xi_{16}R_2$$
$$+ \xi_{17} [(X/Y)_1 - (I/Y)_1] + \xi_{18} (\log y_1 - \log y_1^P)$$
$$+ \xi_{19} \Delta\log y_1 + \xi_{1,10} \Delta\log y_1^R + \sum_{i=0}^{2} \xi_{1,11+i}\Delta R_{1,t-i}$$
$$+ \sum_{i=0}^{2} \xi_{1,14+i} \Delta R_{2,t-i} - \sum_{i=0}^{2} \xi_{1,17+i} \Delta(4\Delta\log E_{2,t+1-i})^* + \varepsilon_{19}$$

(R10) No equation ($E_1 \equiv 1$).

IDENTITIES:

(R11) $\log y_1^P \equiv \phi_{11} + \phi_{12} \log y_1 + (1-\phi_{12}) \log y_{1,t-1}^P$

(R12) $(B/Y)_1 \equiv (X/Y)_1 - (I/Y)_1 - (C/Y)_1$

(R13) $\hat{M}_1 \equiv \log M_1 - (\log M_1)^*$

(R14) $\hat{x}_1 \equiv (X/Y)_1 - (X/Y)_1^*$

(R15) $Z_1 \equiv \log P_1^I - \log P_1$

(R16) $(4\Delta \log P_{1,t+1})^*$: See Table 5 for a complete listing.

(R17) $(4\Delta \log E_{2,t+1})^*$: See Table 6 for a complete listing.

(R18) $\log y_1^R \equiv \frac{1}{1-W_1} \sum_{i=2}^{8} W_i \log y_i - \text{basey}_1$

(R19) $\log P_1^R \equiv \frac{1}{1-W_1} \sum_{i=2}^{8} W_i (\log P_i - \log E_i) - \text{baseP}_1$

ENDOGENOUS VARIABLES

$\log y_1$, $\log P_1$, u_1, $\log M_1$, R_1, $(X/Y)_1$, $(I/Y)_1$, $\text{Log } P_1^I$, $(C/Y)_1$;

$\log y_1^P$, $(B/Y)_1$, $\hat{M}_1$, $\hat{x}_1$, Z_1, $(4\Delta \log P_{1,t+1})^*$, $(4\Delta \log E_{2,t+1})^*$

PREDETERMINED VARIABLES

<u>Exogenous Variables</u>

$\hat{g}_1$, $\hat{g}_{1,t-1}$, $\hat{g}_{1,t-2}$, $\hat{g}_{1,t-3}$, $\hat{g}_{1,t-4}$, $\log P^{RO}$, $\log P_{t-1}^{RO}$, t

Expected Values Based on Prior Information

$(\log M_1)^*$, $(X/Y)_1^*$

Lagged Endogenous Variables

$(4\Delta\log E_2)^*$, $(4\Delta\log E_{2,t-1})^*$, $(4\Delta\log E_{2,t-2})^*$, $(I/Y)_{1,t-1}$, $\log M_{1,t-1}$, $\log M_{1,t-2}$, $\log M_{1,t-3}$, $\hat{M}_{1,t-1}$, $\hat{M}_{1,t-2}$, $\hat{M}_{1,t-3}$, $\log P_{1,t-1}$, $\log P_{1,t-2}$, $\log P_{1,t-3}$, $\log P_{1,t-4}$, $\log P_{1,t-5}$, $\log P^I_{t-1}$, $\log P^I_{t-2}$, $R_{1,t-1}$, $R_{1,t-2}$, $R_{1,t-3}$, $u_{1,t-1}$, $u_{1,t-2}$, $u_{1,t-3}$, $u_{1,t-4}$, $(X/Y)_{1,t-1}$, $(X/Y)_{1,t-2}$, $\hat{x}_{1,t-1}$, $\hat{x}_{1,t-2}$, $\hat{x}_{1,t-3}$, $\log y_{1,t-1}$, $\log y_{1,t-2}$, $\log y_{1,t-3}$, $\log y_{1,t-4}$, $\log y_{1,t-5}$, $\log y_{1,t-6}$, $\log y_{1,t-7}$, $\log y_{1,t-8}$, $\log y^P_{1,t-1}$, $Z_{1,t-1}$, $Z_{1,t-2}$, $Z_{1,t-3}$

Foreign Variables (endogenous in full model)[2]

$\log E_2$, $\log P^R_1$, R_2, $\log y^R_1$

Lagged Foreign Variables

$\log E_{2,t-1}$, $\log E_{2,t-2}$, $\log E_{2,t-3}$, $\log P^R_{1,t-1}$, $R_{2,t-1}$, $R_{2,t-2}$, $R_{2,t-3}$, $\log y^R_{1,t-1}$

NOTES:

1. The United Kingdom (index 2) is used as the best alternative capital market in estimating the U.S. capital flows equation. Note that this equation is irrelevant to the previous equations unless the balance of payments affects the U.S. money supply.

2. In estimating the submodels by principal-components 2SLS, we include in our instrument list fitted values for these foreign variables based on the foreign countries' domestic predetermined variables.

TABLE 3

Nonreserve Country Submodel
Pegged Exchange Rate Periods

EQUATIONS

(N1) $$\log y_j = \alpha_{j1} + \alpha_{j2} \log y^P_{j,t-1} + (1-\alpha_{j2}) \log y_{j,t-1} + \sum_{i=0}^{3} \alpha_{j,3+i}\hat{M}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,7+i}\hat{g}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,11+i}\hat{x}_{j,t-i} + \varepsilon_{j1}$$

(N2) $$\log P_j = \log M_j + \beta_{j1} + \beta_{j2} \log y^P_j + \beta_{j3}(\log y_j - \log y^P_j) + \beta_{j4}R_j + \beta_{j5}[R_1 + (4\Delta\log E_{j,t+1})^*] + \beta_{j6} (\log M_{j,t-1} - \log P_{j,t-1}) + \sum_{i=0}^{3} \beta_{j,7+i}\hat{M}_{j,t-i} + \varepsilon_{j2}$$

(N3)[1] $$u_j = u_{j,t-1} + \gamma_{j1} + \sum_{i=0}^{7} \gamma_{j,2+i} \Delta\log y_{j,t-i} + \varepsilon_{j3}$$

(N4)[2] $$\Delta\log M_j = \eta_{j1} + \eta_{j2}t + \eta_{j3}\hat{g}_j + \eta_{j4}(\hat{g}_{j,t-1} + \hat{g}_{j,t-2}) + \eta_{j5}(\hat{g}_{j,t-3} + \hat{g}_{j,t-4}) + \eta_{j6}(\log P_{j,t-1} - \log P_{j,t-3}) + \eta_{j7}[DF_j(\log P_{j,t-1} - \log P_{j,t-3})] + \eta_{j8}(\log P_{j,t-3} - \log P_{j,t-5}) + \eta_{j9}[DF_j(\log P_{j,t-3} - \log P_{j,t-5})] + \eta_{j,10}u_{j,t-1} + \eta_{j,11}u_{j,t-2} + \eta_{j,12}u_{j,t-3} + \eta_{j,13}u_{j,t-4} + \eta_{j,14}(B/Y)_j + \eta_{j,15}[DF_j(B/Y)_j] + \eta_{j,16}[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}] + \eta_{j,17}\{DF_j[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}]\} + \eta_{j,18}[(B/Y)_{j,t-3} + (B/Y)_{j,t-4} + \eta_{j,19}\{DF_j[(B/Y)_{j,t-3} + (B/Y)_{j,t-4}]\} + \varepsilon_{j4}$$

(N5) $$R_j = \delta_{j1} + \delta_{j2}t + \delta_{j3}(4\Delta\log P_{j,t+1})^* + \delta_{j4}R_{j,t-1} + \delta_{j5}(4\Delta\log P_j)^*$$
$$+ \sum_{i=0}^{3} \delta_{j,6+i}\hat{M}_{j,t-i} + \sum_{i=0}^{3} \delta_{j,10+i}\hat{g}_{j,t-i} + \sum_{i=0}^{3} \delta_{j,14+i}\hat{x}_{j,t-i} + \varepsilon_{j5}$$

(N6) $$(X/Y)_j = \theta_{j1} + \theta_{j2}t + \theta_{j3} \log P^{RO} + \theta_{j4}(\log y_j - \log y_j^P)$$
$$+ \sum_{i=0}^{1} \theta_{j,5+i}(X/Y)_{j,t-1-i} + \sum_{i=0}^{1} \theta_{j,7+i}\log y^R_{j,t-i}$$
$$+ \sum_{i=0}^{1} \theta_{j,9+i} \log P_{j,t-i} + \sum_{i=0}^{1} \theta_{j,11+i} \log P^R_{j,t-i}$$
$$+ \sum_{i=0}^{1} \theta_{j,13+i} \log E_{j,t-i} + \sum_{i=0}^{1} \theta_{j,15+i} DF_{j,t-i} \log E_{j,t-i} + \varepsilon_{j6}$$

(N7P) $$(I/Y)_j = \lambda_{j1} + \lambda_{j2}(I/Y)_{j,t-1} + \lambda_{j3}\log y^P_j$$
$$+ \sum_{i=0}^{I} \lambda_{j,4+i}(\log y_{j,t-i} - \log y^P_{j,t-i})$$
$$+ \sum_{i=0}^{3} \lambda_{j,6+i} Z_{j,t-i} + \varepsilon_{j7}$$

(N8P) $$\log P^I_j = \log P^I_{j,t-1} + \mu_{j1} + \mu_{j2}\Delta\log P^I_{j,t-1}$$
$$+ \mu_{j3}\Delta\log P^{RO} + \mu_{j4}\Delta\log y^R_j + \mu_{j5}\Delta(I/Y)_j$$
$$+ \mu_{j6}\Delta\log P^R_j + \mu_{j7}\Delta\log E_j + \varepsilon_{j8}$$

(N9) $$(C/Y)_j = \xi_{j1} + \xi_{j2}t + \xi_{j3}\log P^{RO} + \xi_{j4}R_j$$

$$+ \xi_{j5}(4\Delta\log E_{j,t+1})^* + \xi_{j6}R_1 + \xi_{j7}\,[(X/Y)_j - (I/Y)_j]$$

$$+ \xi_{j8}\,(\log y_j - \log y_j^P) + \xi_{j9}\Delta\log y_j + \xi_{j10}\Delta\log y_j^R$$

$$+ \sum_{i=0}^{2} \xi_{j,11+i}\Delta R_{j,t-i} + \sum_{i=0}^{2} \xi_{j,14+i}\Delta R_{1,t-i}$$

$$+ \sum_{i=0}^{2} \xi_{j,17+i}\Delta(4\Delta\log E_{j,t+1-i})^* + \varepsilon_{j9}$$

(N10) No equation for pegged rate periods.

IDENTITIES

(N11) $\log y_j^P \equiv \phi_{j1} + \phi_{j2}\log y_j + (1-\phi_{j2})\log y_{j,t-1}^P$

(N12P) $(B/Y)_j \equiv (X/Y)_j - (I/Y)_j - (C/Y)_j$

(N13) $\hat{M}_j \equiv \log M_j - (\log M_j)^*$

(N14) $\hat{x}_j \equiv (X/Y)_j - (X/Y)_j^*$

(N15P) $Z_j \equiv \log P_j^I - \log P_j$

(N16) $(4\Delta\log P_{j,t+1})^*$: Varies according to country. See Table 5 for a complete listing.

(N17) $(4\Delta\log E_{j,t+1})^*$: Varies according to country. See Table 6 for a complete listing.

(N18) $\log y_j^R \equiv \frac{1}{1-W_j} \sum_{\substack{i=1 \\ i\neq j}}^{8} W_i \log y_i - \text{basey}_j$

(N19) $\log P_j^R \equiv \frac{1}{1-W_j} \sum_{\substack{i=1 \\ i\neq j}}^{8} W_i(\log P_i - \log E_i) - \text{baseP}_j$

ENDOGENOUS VARIABLES

$\log y_j$, $\log P_j$, u_j, $\log M_j$, R_j, $(X/Y)_j$, $(I/Y)_j$, $\log P_j^I$, $(C/Y)_j$;

$\log y_j^P$, $(B/Y)_j$, $\hat{M}_j$, $\hat{x}_j$, Z_j, $(4\Delta\log P_{j,t+1})^*$, $(4\Delta\log E_{j,t+1})^*$

PREDETERMINED VARIABLES

<u>Exogenous Variables</u>

DF_j, $DF_{j,t-1}$, $\log E_j$, $\log E_{j,t-1}$, $\log E_{j,t-2}$, $\log E_{j,t-3}$, $\hat{g}_j$, $\hat{g}_{j,t-1}$,

$\hat{g}_{j,t-2}$, $\hat{g}_{j,t-3}$, $\hat{g}_{j,t-4}$, $\log P^{RO}$, $\log P_{t-1}^{RO}$, t

Expected Values Based on Prior Information

$(\log M_j)^*$, $(X/Y)^*_j$

Lagged Endogenous Variables

$(4\Delta \log E_j)^*$, $(4\Delta \log E_{j,t-1})^*$, $(4\Delta \log E_{j,t-2})^*$, $(I/Y)_{j,t-1}$, $\log M_{j,t-1}$, $\hat{M}_{j,t-1}$, $\hat{M}_{j,t-2}$, $\hat{M}_{j,t-3}$, $\log P_{j,t-1}$, $\log P_{j,t-3}$, $\log P_{j,t-5}$, $\log P^I_{j,t-1}$, $\log P^I_{j,t-2}$, $R_{j,t-1}$, $R_{j,t-2}$, $R_{j,t-3}$, $(X/Y)_{j,t-1}$, $(X/Y)_{j,t-2}$, $\hat{x}_{j,t-1}$, $\hat{x}_{j,t-2}$, $\hat{x}_{j,t-3}$, $(B/Y)_{j,t-1}$, $(B/Y)_{j,t-2}$, $(B/Y)_{j,t-3}$, $(B/Y)_{j,t-4}$, $\log y_{j,t-1}$, $\log y^P_{j,t-1}$, $Z_{j,t-1}$, $Z_{j,t-2}$, $Z_{j,t-3}$, $\{u_{j,t-1}$, $\log y_{j,t-2}$, $\log y_{j,t-3}$, $\log y_{j,t-4}$, $\log y_{j,t-5}$, $\log y_{j,t-6}$, $\log y_{j,t-7}$, $\log y_{j,t-8}\}$[3]; Plus any other lagged endogenous variables appearing in (N4.j).

Foreign Variables (endogenous in full model)[4]

$\log P^R_j$, R_1, $\log y^R_j$

Lagged Foreign Variables

$\log P^R_{j,t-1}$, $R_{1,t-1}$, $R_{1,t-2}$, $R_{1,t-3}$, $\log y^R_{j,t-1}$

NOTES:

1. The unemployment equation appears only in the submodels for France and the United Kingdom.
2. For the submodels other than France and the United Kingdom, the unemployment rate variables u_j are replaced with logarithmic transitory income $\log y_j - \log y^P_j$.
3. The variables in curled brackets appear only in the submodels for France and the United Kingdom; see note 1 above.
4. In estimating the submodels by principal-components 2SLS, we include in our instrument list fitted values for these foreign variables based on the foreign countries' domestic predetermined variables.

TABLE 4

Nonreserve Country Submodel
Floating Exchange Rate Periods

EQUATIONS

(N1) $$\log y_j = \alpha_{j1} + \alpha_{j2} \log y^P_{j,t-1} + (1-\alpha_{j2}) \log y_{j,t-1} + \sum_{i=0}^{3} \alpha_{j,3+i}\hat{M}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,7+i}\hat{g}_{j,t-i} + \sum_{i=0}^{3} \alpha_{j,11+i}\hat{x}_{j,t-i} + \varepsilon_{j1}$$

(N2) $$\log P_j = \log M_j + \beta_{j1} + \beta_{j2} \log y^P_j + \beta_{j3} (\log y_j - \log y^P_j) + \beta_{j4}R_j + \beta_{j5}[R_1 + (4\Delta\log E_{j,t+1})^*] + \beta_{j6} (\log M_{j,t-1} - \log P_{j,t-1}) + \sum_{i=0}^{3} \beta_{j,7+i}\hat{M}_{j,t-i} + \varepsilon_{j2}$$

(N3)[1] $$u_j = u_{j,t-1} + \gamma_{j1} + \sum_{i=0}^{7} \gamma_{j,2+i} \Delta\log y_{j,t-i} + \varepsilon_{j3}$$

(N4)[2] $$\Delta\log M_j = \eta_{j1} + \eta_{j2}t + \eta_{j3}\hat{g}_j + \eta_{j4}(\hat{g}_{j,t-1} + \hat{g}_{j,t-2}) + \eta_{j5}(\hat{g}_{j,t-3} + \hat{g}_{j,t-4}) + \eta_{j6}(\log P_{j,t-1} - \log P_{j,t-3}) + \eta_{j7}[DF_j(\log P_{j,t-1} - \log P_{j,t-3})] + \eta_{j8}(\log P_{j,t-3} - \log P_{j,t-5}) + \eta_{j9}[DF_j(\log P_{j,t-3} - \log P_{j,t-5})] + \eta_{j,10}u_{j,t-1} + \eta_{j,11}u_{j,t-2} + \eta_{j,12}u_{j,t-3} + \eta_{j,13}u_{j,t-4} + \eta_{j,14}(B/Y)_j + \eta_{j,15}[DF_j(B/Y)_j] + \eta_{j,16}[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}] + \eta_{j,17}\{DF_j[(B/Y)_{j,t-1} + (B/Y)_{j,t-2}]\} + \eta_{j,18}[(B/Y)_{j,t-3} + (B/Y)_{j,t-4}] + \eta_{j,19}\{DF_j[(B/Y)_{j,t-3} + (B/Y)_{j,t-4}]\} + \varepsilon_{j4}$$

(N5) $$R_j = \delta_{j1} + \delta_{j2}t + \delta_{j3}(4\Delta \log P_{j,t+1})^* + \delta_{j4}R_{j,t-1} + \delta_{j5}(4\Delta \log P_j)^* + \sum_{i=0}^{3} \delta_{j,6+i}\hat{M}_{j,t-i} + \sum_{i=0}^{3} \delta_{j,10+i}\hat{g}_{j,t-i} + \sum_{i=0}^{3} \delta_{j,14+i}\hat{x}_{j,t-i} + \varepsilon_{j5}$$

(N6) $$(X/Y)_j = \theta_{j1} + \theta_{j2}t + \theta_{j3} \log P^{RO} + \theta_{j4}(\log y_j - \log y_j^P) + \sum_{i=0}^{1} \theta_{j,5+i}(X/Y)_{j,t-1-i} + \sum_{i=0}^{1} \theta_{j,7+i}\log y^R_{j,t-i} + \sum_{i=0}^{1} \theta_{j,9+i} \log P_{j,t-i} + \sum_{i=0}^{1} \theta_{j,11+i} \log P^R_{j,t-i} + \sum_{i=0}^{1} \theta_{j,13+i} \log E_{j,t-i} + \sum_{i=0}^{1} \theta_{j,15+i}DF_{j,t-i}\log E_{j,t-i} + \varepsilon_{j6}$$

(N7F) $$Z_j = \frac{-\lambda_{j1}}{\lambda_{j6}} + \frac{1}{\lambda_{j6}}(I/Y)_j - \frac{\lambda_{j2}}{\lambda_{j6}}(I/Y)_{j,t-1} - \frac{\lambda_{j3}}{\lambda_{j6}}\log y_j^P - \sum_{i=0}^{1} \frac{\lambda_{j,4+i}}{\lambda_{j6}}(\log y_{j,t-i} - \log y^P_{j,t-i}) - \sum_{i=1}^{3} \frac{\lambda_{j,6+i}}{\lambda_{j6}} Z_{j,t-i} - \frac{\varepsilon_{j7}}{\lambda_{j6}}$$

(N8F) $$\log E_j = \log E_{j,t-1} - \frac{\mu_{j1}}{\mu_{j7}} + \frac{1}{\mu_7}\Delta\log P_j^I - \frac{\mu_{j2}}{\mu_{j7}}\Delta\log P^I_{j,t-1} - \frac{\mu_{j3}}{\mu_{j7}}\Delta\log P^{RO} - \frac{\mu_{j4}}{\mu_{j7}}\Delta\log y_j^R - \frac{\mu_{j5}}{\mu_{j7}}\Delta(I/Y)_j - \frac{\mu_{j6}}{\mu_{j7}}\Delta\log P_j^R - \frac{\varepsilon_{j8}}{\mu_{j7}}$$

(N9)
$$(C/Y)_j = \xi_{j1} + \xi_{j2}t + \xi_{j3}\log P^{RO} + \xi_{j4}R_j + \xi_{j5}(4\Delta\log E_{j,t+1})^*$$
$$+ \xi_{j6}R_1 + \xi_{j7}\,[(X/Y)_j - (I/Y)_j] + \xi_{j8}\,(\log y_j - \log y_j^P)$$
$$+ \xi_{j9}\Delta\log y_j + \xi_{j10}\Delta\log y_j^R + \sum_{i=0}^{2}\xi_{j,11+t}\Delta R_{j,t-i}$$
$$+ \sum_{i=0}^{2}\xi_{j,14+i}\Delta R_{1,t-i} + \sum_{i=0}^{2}\xi_{j,17+i}\Delta(4\Delta\log E_{j,t+1-i})^* + \varepsilon_{j9}$$

(N10F)
$$(B/Y)_j = \psi_{j1} + \psi_{j2}(B/Y)_{j,t-1} + \psi_{j3}\Delta\log E_j + \psi_{j4}\Delta\log E_{j,t-1}$$
$$+ \psi_{j5}(\Delta\log P_{j,t-1} - \Delta\log P_{1,t-1}) + \varepsilon_{j,10}$$

IDENTITIES

(N11) $\log y_j^P \equiv \phi_{j1} + \phi_{j2} \log y_j + (1-\phi_{j2}) \log y_{j,t-1}^P$

(N12F) $(I/Y)_j \equiv (X/Y)_j - (B/Y)_j - (C/Y)_j$

(N13) $\hat{M}_j \equiv \log M_j - (\log M_j)^*$

(N14) $\hat{x}_j \equiv (X/Y)_j - (\bar{X}/Y)_j^*$

(N15F) $\log P_j^I \equiv \log P_j + Z_j$

(N16) $(4\Delta \log P_{j,t+1})^*$: Varies according to country. See Table 5 for a complete listing.

(N17) $(4\Delta \log E_{j,t+1})^*$: Varies according to country. See Table 6 for a complete listing.

(N18) $$\log y_j^R \equiv \frac{1}{1-W_j} \sum_{\substack{i=1 \\ i \neq j}}^{8} W_i \log y_i - \text{basey}_j$$

(N19) $$\log P_j^R \equiv \frac{1}{1-W_j} \sum_{\substack{i=1 \\ i \neq j}}^{8} W_i (\log P_i - \log E_i) - \text{baseP}_j$$

ENDOGENOUS VARIABLES

$\log y_j$, $\log P_j$, u_j, $\log M_j$, R_j, $(X/Y)_j$, Z_j, $\log E_j$, $(C/Y)_j$, $(B/Y)_j$;

$\log y_j^P$, $(I/Y)_j$, $\hat{M}_j$, $\hat{x}_j$, $\log P_j^I$, $(4\Delta \log P_{j,t+1})^*$, $(4\Delta \log E_{j,t+1})^*$

PREDETERMINED VARIABLES

Exogenous Variables

DF_j, $DF_{j,t-1}$, $\hat{g}_j$, $\hat{g}_{j,t-1}$, $\hat{g}_{j,t-2}$, $\hat{g}_{j,t-3}$, $\hat{g}_{j,t-4}$, $\log P^{RO}$, $\log P^{RO}_{t-1}$, t

Expected Values Based on Prior Information

$(\log M_j)^*$, $(X/Y)^*_j$

Lagged Endogenous Variables

$\log E_{j,t-1}$, $\log E_{j,t-2}$, $\log E_{j,t-3}$, $(4\Delta\log E_j)^*$, $(4\Delta\log E_{j,t-1})^*$,

$(4\Delta\log E_{j,t-2})^*$, $(I/Y)_{j,t-1}$, $\log M_{j,t-1}$, $\hat{M}_{j,t-1}$, $\hat{M}_{j,t-2}$, $\hat{M}_{j,t-3}$, $\log P_{j,t-1}$,

$\log P_{j,t-2}$, $\log P_{j,t-3}$, $\log P_{j,t-5}$, $\log P^I_{j,t-1}$, $\log P^I_{j,t-2}$, $R_{j,t-1}$, $R_{j,t-2}$,

$R_{j,t-3}$, $(X/Y)_{j,t-1}$, $(X/Y)_{j,t-2}$, $(B/Y)_{j,t-1}$, $(B/Y)_{j,t-2}$, $(B/Y)_{j,t-3}$, $(B/Y)_{j,t-4}$,

$\hat{x}_{j,t-1}$, $\hat{x}_{j,t-2}$, $\hat{x}_{j,t-3}$, $\log y_{j,t-1}$, $\log y^P_{j,t-1}$, $Z_{j,t-1}$, $Z_{j,t-2}$, $Z_{j,t-3}$,

$\{u_{j,t-1}$, $\log y_{j,t-2}$, $\log y_{j,t-3}$, $\log y_{j,t-4}$, $\log y_{j,t-5}$, $\log y_{j,t-6}$,

$\log y_{j,t-7}$, $\log y_{j,t-8}\}$[3]; Plus any other lagged endogenous variables appearing in (N4.j).

Foreign Variables (endogenous in full model)[4]

$\log P^R_j$, R_1, $\log y^R_j$

Lagged Foreign Variables

$\log P_{1,t-1}$, $\log P_{1,t-2}$, $\log P^R_{j,t-1}$, $R_{1,t-1}$, $R_{1,t-2}$, $R_{1,t-3}$, $\log y^R_{j,t-1}$

NOTES:

1. The unemployment equation appears only in the submodels for France and the United Kingdom.

2. For the submodels other than France and the United Kingdom, the unemployment rate variables u_j are replaced with logarithmic transitory income $\log y_j - \log y_j^p$.

3. The variables in curled brackets appear only in the submodels for France and the United Kingdom; see note 1 above.

4. In estimating the submodels by principal-components 2SLS, we include in our instrument list fitted values for these foreign variables based on the foreign countries' domestic predetermined variables.

TABLE 5

Expected-Inflation Transfer Functions

(R16)

$$(\Delta\log P_{1,t+1})^* \equiv -0.754 - 1.704\,(\log M_1)^* + 1.001 \log M_{1,t-1} + 0.850 \log M_{1,t-2} - 0.063\,\Delta\log y_{1,t-1} + 0.248\,R_1 - 0.038\,R_{1,t-1} + 0.008\,[R_2 - (4\Delta\log E_{2,t+1})^*] - 0.009\,[R_{2,t-1} - (4\Delta\log E_2)^*] + 0.158 \log P_{1,t-1} - 0.279 \log P_{1,t-2} + 1.711\,\hat{M}_{1,t-1} + 0.222\,\hat{M}_{1,t-2} + 0.020\,\hat{M}_{1,t-3} + .160\,\varepsilon_{1,16,t-1} - .230\,\varepsilon_{1,16,t-2}$$

(R16.2)

$$(\Delta\log P_{2,t+1})^* \equiv -0.09655 + 2.315\,(\log M_2)^* - 4.655 \log M_{2,t-1} + 2.382 \log M_{2,t-2} + 0.186\,\Delta\log y_{2,t-1} + 0.030\,R_2 + 0.146\,R_{2,t-1} + 0.043\,[R_1 + (4\Delta\log E_{2,t+1})^*] - .035\,[R_{1,t-1} + (4\Delta\log E_2)^*] + 0.385 \log P_{2,t-1} - 0.408 \log P_{2,t-2} + 2.052\,\hat{M}_{2,t-1} - 0.407\,\hat{M}_{2,t-2} + 0.284\,\hat{M}_{2,t-3} - 0.238\,\varepsilon_{2,16,t-1} + 0.416\,\varepsilon_{2,16,t-2}$$

(R16.3)

$$(\Delta\log P_{3,t+1})^* \equiv -0.060 - 1.002\,(\log M_3)^* + 1.053 \log M_{3,t-1} - 0.008 \log M_{3,t-2} + 0.065\,\Delta\log y_{3,t-1} + 0.301\,R_3 - 0.460\,R_{3,t-1} + 0.012\,[R_1 + (4\Delta\log E_{3,t+1})^*] - 0.033\,[R_{1,t-1} + (4\Delta\log E_3)^*] + 0.433 \log P_{3,t-1} - 0.459 \log P_{3,t-2} + 0.434\,\hat{M}_{3,t-1} - 0.162\,\hat{M}_{3,t-2} - 0.019\,\hat{M}_{3,t-3} - 0.618\,\varepsilon_{3,16,t-1} - 0.382\,\varepsilon_{3,16,t-2}$$

(R16.4) $$(\Delta \log P_{4,t+1})^* \equiv -0.007 - 0.127\,(\log M_4)^* + 0.517 \log M_{4,t-1} - 0.393 \log M_{4,t-2} - 0.004\,\Delta \log y_{4,t-1} + 0.018\,R_4 + 0.176\,R_{4,t-1} - 0.004\,[R_1 + (4\Delta \log E_{4,t+1})^*] + 0.014\,[R_{4,t-1} + (4\Delta \log E_4)^*] + 0.139 \log P_{4,t-1} - 0.164 \log P_{4,t-2} - 0.227\,\hat{M}_{4,t-1} - 0.038\,\hat{M}_{4,t-2} - 0.073\,\hat{M}_{4,t-3} - 0.513\,e_{4,16,t-1} + 0.198\,e_{4,16,t-2}$$

(R16.5) $$(\Delta \log P_{5,t+1})^* \equiv -0.064 - 0.021\,(\log M_5)^* - 0.247 \log M_{5,t-1} + 0.281 \log M_{5,t-2} + 0.166\,\Delta \log y_{5,t-1} - 0.017\,R_5 + 0.044\,R_{5,t-1} + 0.012\,[R_1 + (4\Delta \log E_{5,t+1})^*] - 0.008\,[R_{1,t-1} + (4\Delta \log E_5)^*] + 0.643 \log P_{5,t-1} - 0.676 \log P_{5,t-2} + 0.215\,\hat{M}_{5,t-1} + 0.080\,\hat{M}_{5,t-2} + 0.085\,\hat{M}_{5,t-3} - 0.330\,\varepsilon_{5,16,t-1} - 0.670\,\varepsilon_{5,16,t-2}$$

(R16.6) $$(\Delta \log P_{6,t+1})^* \equiv 1.858 - 75.036\,(\log M_6)^* + 85.887 \log M_{6,t-1} - 10.820 \log M_{6,t-2} - 0.103\,\Delta \log y_{6,t-1} + 0.069\,R_6 + 0.154\,R_{6,t-1} - 0.031\,[R_1 + (4\Delta \log E_{6,t+1})^*] - 0.018\,[R_{1,t-1} + (4\Delta \log E_6)^*] - 0.218 \log P_{6,t-1} + 0.165 \log P_{6,t-2} + 0.974\,\hat{M}_{6,t-1} + 27.169\,\hat{M}_{6,t-2} + 8.456\,\hat{M}_{6,t-3} + 0.133\,\varepsilon_{6,16,t-1} + 0.640\,\varepsilon_{6,16,t-2}$$

(R16.7) $$(\Delta \log P_{7,t+1})^* \equiv 0.131 - 0.281\,(\log M_7)^* + 0.455 \log M_{7,t-1} - 0.180 \log M_{7,t-2} - 0.026\,\Delta \log y_{7,t-1} + 1.658\,R_7 - 2.219\,R_{7,t-1} + 0.044\,[R_1 + (4\Delta \log E_{7,t+1})^*] + .004\,[R_{1,t-1} + (4\Delta \log E_7)^*] + .092 \log P_{7,t-1} - .060 \log P_{7,t-2} + 0.107\,\hat{M}_{7,t-1} + 0.153\,\hat{M}_{7,t-2} + .034\,\hat{M}_{7,t-3} + 0.131\,\varepsilon_{7,16,t-1}$$

(R16.8) $$(\Delta \log P_{8,t+1})^* \equiv -0.221 + 0.017 (\log M_8)^* + 0.104 \log M_{8,t-1}$$
$$- 0.054 \log M_{8,t-2} + 0.237 \Delta \log y_{8,t-1} - 0.032 R_8$$
$$+ 0.186 R_{8,t-1} - 0.034 [R_1 + (4\Delta \log E_{8,t+1})^*]$$
$$- 0.020 [R_{1,t-1} + (4\Delta \log E_8)^*] - 0.261 \log P_{8,t-1}$$
$$+ 0.157 \log P_{8,t-2} - 0.233 \hat{M}_{8,t-1} + 0.017 \hat{M}_{8,t-2}$$
$$- 0.058 \hat{M}_{8,t-3} - 0.339 \varepsilon_{8,16,t-1} + 0.292 \varepsilon_{8,16,t-2}$$

NOTES:

1. These identities are for expected inflation rates per quarter, the rates per annum in the model are simply $(4\Delta \log P_j)^* \equiv 4(\Delta \log P_j)^*$.

2. $e_{j,16} \equiv (\Delta \log P_{j,t+1}) - (\Delta \log P_{j,t+1})^*$

   $\varepsilon_{1,16} \equiv e_{1,16} - .160\ \varepsilon_{1,16,t-1} + .230\ \varepsilon_{1,16,t-2}$

   $\varepsilon_{2,16} \equiv e_{2,16} + .238\ \varepsilon_{2,16,t-1} - .416\ \varepsilon_{2,16,t-2}$

   $\varepsilon_{3,16} \equiv e_{3,16} + .618\ \varepsilon_{3,16,t-1} + .382\ \varepsilon_{3,16,t-2}$

   $\varepsilon_{5,16} \equiv e_{5,16} + .330\ \varepsilon_{5,16,t-1} + .670\ \varepsilon_{5,16,t-2}$

   $\varepsilon_{6,16} \equiv e_{6,16} - .133\ \varepsilon_{6,16,t-1} - .640\ \varepsilon_{6,16,t-2}$

   $\varepsilon_{7,16} \equiv e_{7,16} - .131\ \varepsilon_{7,16,t-1}$

   $\varepsilon_{8,16} \equiv e_{8,16} + .339\ \varepsilon_{8,16,t-1} - .292\ \varepsilon_{8,16,t-2}$

3. The fitted ARMA error processes by country are:

1	(0,2)	5	(0,2)
2	(0,2)	6	(0,2)
3	(0,2)	7	(0,1)
4	(2,0)	8	(0,2)

TABLE 6

Expected Exchange-Rate Growth

$(4\Delta\log E_j)^* \equiv 4(\Delta\log E_j)^*$

Part A - Floating Exchange Rate Periods

$$\text{(N17F)}\quad (\Delta\log E_{j,t+1})^* \equiv \omega_{j1} + \omega_{j2}\Delta\log P_j^I + \omega_{j3}\Delta\log P^{RO} + \omega_{j4}\Delta\log y_j^R + \omega_{j5}\Delta(I/Y)_j + \omega_{j6}\Delta\log P_j^R + \omega_{j7}\Delta\log E_j$$

The parameters (estimated by OLS) are:

Country	ω_{j1}	ω_{j2}	ω_{j3}	ω_{j4}	ω_{j5}	ω_{j6}	ω_{j7}	Floating Periods
2, UK	.00597	.80037	-.02808	1.20971	-2.03867	-.98978	-.20116	1971 III-1976 IV
3, CA	-.00314	.05183	-.00683	.07509	-.30121	.18038	.31538	1956 I-62 III, 1970 II-76 IV
4, FR	.06315	.13361	-.06955	-1.13931	1.42566	-3.15593	-.39385	1971 III-1976 IV
5, GE	.00064	-.95133	.05737	-.73465	2.98731	-.13434	.18685	1971 II-1976 IV
6, IT	.02320	-.08897	-.02900	.76727	.15530	-.35833	.15115	1971 III-1976 IV
7, JA	.00323	-.03233	-.03956	-.87177	3.92447	-.02198	.20401	1971 III-1976 IV
8, NE	.02739	.11611	-.07818	-.66181	-.10364	-1.97462	-.35813	1971 II-1976 IV

*The first $(\Delta\log E_j)^*$ defined as above is for the second quarter in each floating period. The previous quarter value is defined by the pegged rate period.

Part B - Pegged Exchange Rate Periods

(N17P.2) $$(\Delta \log E_{2,t+1})^* \equiv 0.0014 - 0.5398\ (B/Y)_2 + 29.8764\ [(B/Y)_2|(B/Y)_2|] + 0.1369\ (\log E_2 - \log \overline{E}_2) + 0.5283\ \Delta \log E_2 - 0.0197\ DR_{2,t-1}$$

(N17P.3) $$(\Delta \log E_{3,t+1})^* \equiv -.0001 - .4222\ (B/Y)_3 + 33.9022\ [(B/Y)_3|(B/Y)_3|] - .0089\ (\log E_3 - \log \overline{E}_3) + .3183\ \Delta \log E_3 - \varepsilon_{3,17,t-1}$$

(N17P.4) $$(\Delta \log E_{4,t+1})^* \equiv 0.0058 - 1.1289\ (B/Y)_4 + 131.5500\ [(B/Y)_4|(B/Y)_4|] + 0.6546\ (\log E_4 - \log \overline{E}_4) + 0.7406\ \Delta \log E_4 - 0.0384\ DR_{4,t-1} - .65\ \varepsilon_{4,17,t-1} - .35\ \varepsilon_{4,17,t-2}$$

(N17P.5) $$(\Delta \log E_{5,t+1})^* \equiv -0.0026 + 0.9585\ (B/Y)_5 - 116.8350\ [(B/Y)_5|(B/Y)_5|] - 0.2109\ (\log E_5 - \log \overline{E}_5) + 0.4755\ \Delta \log E_5 + 0.0106\ DR1_{5,t-1} - 0.0086\ DR2_{5,t-1}$$

(N17P.6) $$(\Delta \log E_{6,t+1})^* \equiv -0.0002 - 0.2118\ (B/Y)_6 + 17.6550\ [(B/Y)_6|(B/Y)_6|] - 0.1099\ (\log E_6 - \log \overline{E}_6) + 0.3194\ \Delta \log E_6 - \varepsilon_{6,17,t-1}$$

(N17P.7) $$(\Delta \log E_{7,t+1})^* \equiv -.0013 + 1.9035\ (B/Y)_7 - 405.337\ [(B/Y)_7|(B/Y)_7|] + .2366\ (\log E_7 - \log \overline{E}_7) + .2636\ \Delta \log E_7 - .5\ \varepsilon_{7,17,t-1} - .5\ \varepsilon_{7,17,t-2}$$

(N17P.8) $$(\Delta \log E_{8,t+1})^* \equiv -0.0014 - 0.1362\ (B/Y)_8 + 10.9493\ [(B/Y)_8|(B/Y)_8|] - 0.2170\ (\log E_8 - \log \overline{E}_8) + 0.6339\ \Delta \log E_8 + 0.0253\ DR_{8,t-1}$$

NOTES:

1. $\overline{E}_j$ is the official parity value. For France only this is set equal to E_j through 1958-IV when a fixed official parity value was established.

2. DR_j, $DR1_5$, and $DR2_5$, are revaluation dummies with value of 1 in the indicated quarter and 0 otherwise:

DR_2	1967 IV	$DR1_5$	1961 I
DR_4	1969 III	$DR2_5$	1969 IV
		DR_8	1961 I

3. $e_{j,17} \equiv (\Delta \log E_{j,t+1}) - (\Delta \log E_{j,t+1})^*$ for all j

$\varepsilon_{3,17} \equiv e_{3,17} + \varepsilon_{3,17,t-1}$

$\varepsilon_{4,17} \equiv e_{4,17} + .65\ \varepsilon_{4,17,t-1} + .35\ \varepsilon_{4,17,t-2}$

$\varepsilon_{6,17} \equiv e_{6,17} + \varepsilon_{6,17,t-1}$

$\varepsilon_{7,17} \equiv e_{7,17} + .5\ \varepsilon_{7,17,t-1} + .5\ \varepsilon_{7,17,t-2}$

4. The fitted ARMA error processes by country are:

3 (0,1)
4 (0,2)
6 (0,1)
7 (0,2)

TABLE 7

Parameter Values for Foreign Real Income and Foreign Price Index Identities (R18), (R19), (N18), and (N19)

Country	j	W_j	$basey_j$	$baseP_j$
U.S.	1	0.531464	7.40946	-2.53058
U.K.	2	0.063287	7.36068	-1.32478
Canada	3	0.046296	7.26361	-1.24117
France	4	0.077221	7.18014	-1.14182
Germany	5	0.107001	7.20584	-1.17274
Italy	6	0.048061	6.93985	-0.920318
Japan	7	0.107898	6.64583	-0.617771
Netherlands	8	0.018771	7.17908	-1.183800

Notes: 1. Nominal income shares are computed as follows where the time summation is from 1955I-1976IV:

$$W_j = \frac{\sum_t (Y/E)_{j,t}}{\sum_{i=1}^{8} \sum_t (Y/E)_{i,t}}$$

2. The values of $basey_j$ and $baseP_j$ are such that the mean values of the logarithmic indices are 0 for our base year 1970. This is equivalent to the 1970 geometric means being 1.

TABLE 8

Basic Instrument Lists for Computation of Principal Components

Part A - United States

<u>Domestic Instruments</u>

$\hat{g}_1$, $\hat{g}_{1,t-1}$, $\hat{g}_{1,t-2}$, $\hat{g}_{1,t-3}$, $\hat{g}_{1,t-4}$, $\log P^{RO}$, $\log P^{RO}_{t-1}$, $(X/Y)^*_1$, $(I/Y)_{1,t-1}$, $\log M_{1,t-1}$, $\hat{M}_{1,t-1}$, $\hat{M}_{1,t-2}$, $\hat{M}_{1,t-3}$, $\log P_{1,t-1}$, $(\log P_{1,t-1} - \log P_{1,t-3})$, $(\log P_{1,t-3} - \log P_{1,t-5})$, $\log P^I_{1,t-1}$, $R_{1,t-1}$, $R_{1,t-2}$, $R_{1,t-3}$, $u_{1,t-1}$, $u_{1,t-2}$, $u_{1,t-3}$, $u_{1,t-4}$, $(X/Y)_{1,t-1}$, $(X/Y)_{1,t-2}$, $\hat{x}_{1,t-1}$, $\hat{x}_{1,t-2}$, $\hat{x}_{1,t-3}$, $\log y_{1,t-1}$, $Z_{1,t-2}$

<u>Fitted Foreign Instruments</u>[2]

$(\log P^R_1)^{FIT}$, $(\log P^R_{1,t-1})^{FIT}$, $(\log y^R_1)^{FIT}$, $(\log y^R_{1,t-1})^{FIT}$, $(R_2)^{FIT}$, $(R_{2,t-1})^{FIT}$, $(R_{2,t-2})^{FIT}$, $(R_{2,t-3})^{FIT}$

Part B - Nonreserve Countries

<u>Domestic Instruments</u>

$[DF_j$, $DF_{j,t-1}]$[3] $\hat{g}_j$, $\hat{g}_{j,t-1}$, $\hat{g}_{j,t-2}$, $\hat{g}_{j,t-3}$, $\hat{g}_{j,t-4}$, $\log P^{RO}$, $\log P^{RO}_{t-1}$, $(X/Y)^*_j$, $(I/Y)_{j,t-1}$, $\log M_{j,t-1}$, $\hat{M}_{j,t-1}$, $\hat{M}_{j,t-2}$, $\hat{M}_{j,t-3}$, $\log P_{j,t-1}$, $(\log P_{j,t-1} - \log P_{j,t-3})$, $(\log P_{j,t-3} - \log P_{j,t-5})$, $\log P^I_{j,t-1}$, $R_{1,t-1}$, $R_{1,t-2}$, $R_{1,t-3}$, $(X/Y)_{j,t-1}$, $(X/Y)_{j,t-2}$, $\hat{x}_{j,t-1}$, $\hat{x}_{j,t-2}$, $\hat{x}_{j,t-3}$, $(B/Y)_{j,t-1}$, $(B/Y)_{j,t-2}$, $[(B/Y)_{j,t-3} + (B/Y)_{j,t-4}]$, $\log y_{j,t-1}$, $Z_{j,t-2}$, $[u_{j,t-1}$, $u_{j,t-2}$, $u_{j,t-3}$, $u_{j,t-4}]$[4]

<u>Fitted Foreign Instruments</u>[2]

$(\log P^R_j)^{FIT}$, $(\log P^R_{j,t-1})^{FIT}$, $(\log y^R_j)^{FIT}$, $(\log y^R_{j,t-1})^{FIT}$, $(R_1)^{FIT}$, $(R_{1,t-1})^{FIT}$, $(R_{1,t-2})^{FIT}$, $(R_{1,t-3})^{FIT}$

NOTES:

1. Certain variables listed as predetermined variables are not listed here because of extreme multicollinearity with listed variables or because they are not predetermined generally for the whole sample period.

2. Fitted foreign instruments (indicated by superscript FIT) are obtained by fitting log y_j, log P_j, and R_j on the domestic instruments for country j for j = 1, . . . , 8. The indices $(\log y_j^R)^{FIT}$ and $(\log P_j^R)^{FIT}$ are obtained by applying identities (R18), (R19), (N18), and (N19) using the weights in Table 7.

3. The DF_j variables are included only for estimates spanning the entire period; *i.e.*, they are omitted in estimates made for only the pegged or floating period.

4. For nonreserve countries other than the United Kingdom and France, $\log y_j - \log y_j^P$ is substituted for u_j.

General Notes for Tables 9 through 18

1. Standard errors appear in parentheses below the estimated coefficients. The t-values appear below the standard errors. Unless otherwise noted, the period of estimation is 1957I - 1976IV.
2. All estimations are based on the principal-components-2SLS method (see Section IV) using the TROLL system at M.I.T.
3. We generally report Durbin's h for equations with a lagged dependent variable. In those cases in which Durbin's h cannot be calculated (is imaginary), we report instead the (biased) Durbin-Watson statistic in brackets.

TABLE 9

REAL INCOME EQUATIONS (R1) AND (N1)

Dependent Variable: $\log y_j$

Country	Const. $\alpha_{j,1}$	$\log y^P_{j,t-1}$ [a] $\alpha_{j,2}$	$\hat{M}_j$ $\alpha_{j,3}$	$\hat{M}_{j,t-1}$ $\alpha_{j,4}$	$\hat{M}_{j,t-2}$ $\alpha_{j,5}$	$\hat{M}_{j,t-3}$ $\alpha_{j,6}$	$\hat{g}_j$ $\alpha_{j,7}$	$\hat{g}_{j,t-1}$ $\alpha_{j,8}$	$\hat{g}_{j,t-2}$ $\alpha_{j,9}$	$\hat{g}_{j,t-3}$ $\alpha_{j,10}$	$\hat{X}_j$ $\alpha_{j,11}$	$\hat{X}_{j,t-1}$ $\alpha_{j,12}$	$\hat{X}_{j,t-2}$ $\alpha_{j,13}$	$\hat{X}_{j,t-3}$ $\alpha_{j,14}$	$\bar{R}^2$	S.E.E.	D-W
United States	0.0079	0.0747	0.7784	0.5902	-0.0470	0.8172	-0.0345	0.1128	0.0547	0.0837	0.7428	0.4548	-0.0415	-0.9251	0.9982	0.0087	1.81
	(0.0010)	(0.0352)	(0.3116)	(0.2208)	(0.2305)	(0.2326)	(0.0545)	(0.0573)	(0.0545)	(0.0563)	(0.4943)	(0.4148)	(0.4282)	(0.4255)			
	8.082	2.124	2.498	2.673	-0.204	3.513	-0.632	1.969	1.002	1.489	1.503	1.097	-0.097	-2.174			
United Kington	0.0056	0.2259	-0.1974	0.0404	-0.0262	-0.1269	0.1831	0.0274	0.1069	-0.0240	0.1897	0.4127	-0.2129	0.0069	0.9923	0.0140	1.91
	(0.0016)	(0.0867)	(0.1418)	(0.1008)	(0.0954)	(0.0930)	(0.0540)	(0.0603)	(0.0575)	(0.0571)	(0.2348)	(0.1799)	(0.1886)	(0.1916)			
	3.533	2.605	-1.392	0.401	-0.275	-1.365	3.395	0.454	1.860	-0.420	0.808	2.293	-1.129	0.036			
Canada	0.0108	0.1376	0.3020	0.2068	0.1044	0.1943	-0.0049	-0.1641	-0.0283	-0.0135	0.6833	0.1648	-0.0287	0.5699	0.9982	0.0122	2.42
	(0.0014)	(0.0613)	(0.1644)	(0.1052)	(0.1057)	(0.1022)	(0.0554)	(0.0604)	(0.0536)	(0.0547)	(0.3606)	(0.2401)	(0.2358)	(0.2495)			
	7.845	2.245	1.837	1.966	0.988	1.901	-0.088	-2.714	-0.528	-0.247	1.895	0.687	-0.122	2.284			
France	0.0125	0.0833	-0.2651	0.0688	0.1001	-0.0552	0.0447	0.0075	0.0518	0.0164	0.3427	-0.7154	0.0153	0.1215	0.9969	0.0180	2.13
	(0.0020)	(0.0695)	(0.3130)	(0.1848)	(0.1823)	(0.1776)	(0.0411)	(0.0415)	(0.0409)	(0.0403)	(0.4893)	(0.3847)	(0.3919)	(0.4069)			
	6.219	1.198	-0.847	0.372	0.549	-0.311	1.089	0.180	1.265	0.408	0.700	-1.860	0.039	0.299			
Germany	0.0108	0.0457	0.3515	0.0694	-0.0173	0.0408	-0.0349	0.0286	-0.0076	0.0139	0.2780	-0.2451	-0.3293	-0.5084	0.9974	0.0133	1.94
	(0.0015)	(0.0425)	(0.1571)	(0.1107)	(0.1094)	(0.1105)	(0.0275)	(0.0276)	(0.0271)	(0.0273)	(0.2648)	(0.2215)	(0.2339)	(0.2268)			
	7.233	1.076	2.238	0.627	-0.158	0.369	-1.273	1.033	-0.281	0.510	1.050	-1.107	-1.408	-2.242			
Italy	0.0140	-0.0354	-0.0641	0.0330	0.2744	0.0022	-0.0023	-0.0125	0.0018	0.0142	-0.7477	0.1041	0.2737	-0.1605	0.9953	0.0189	1.83
	(0.0027)	(0.0677)	(0.2027)	(0.1428)	(0.1480)	(0.1537)	(0.0150)	(0.0150)	(0.0145)	(0.0145)	(0.2752)	(0.2913)	(0.2683)	(0.2418)			
	5.094	-0.523	-0.316	0.231	1.854	0.014	-0.155	-0.829	0.123	0.974	-2.717	0.357	1.020	-0.663			
Japan	0.0204	-0.0178	0.1427	0.1083	0.1856	0.0884	0.0443	-0.0196	0.0450	-0.0393	-2.0920	0.3499	-1.7648	-0.7337	0.9992	0.0155	1.97
	(0.0017)	(0.0351)	(0.1725)	(0.1148)	(0.1141)	(0.1140)	(0.0362)	(0.0371)	(0.0361)	(0.0366)	(1.0645)	(0.9034)	(0.9331)	(0.9308)			
	11.710	-0.508	0.827	0.944	1.627	0.775	1.223	-0.527	1.247	-1.074	-1.965	0.387	-1.891	-0.788			
Netherlands	0.0100	0.0756	0.3078	0.1988	0.0352	0.0237	0.0352	-0.0586	-0.0014	0.0180	-0.1159	-0.1186	0.0943	-0.1334	0.9977	0.0134	1.71
	(0.0015)	(0.0547)	(0.1496)	(0.1237)	(0.1221)	(0.1115)	(0.0366)	(0.0385)	(0.0373)	(0.0378)	(0.1312)	(0.0961)	(0.0884)	(0.0847)			
	6.591	1.381	2.058	1.607	0.288	0.212	0.962	-1.520	-0.036	0.477	-0.884	-1.235	1.066	-1.575			

Note: a. α_{j2} appears as $\alpha_{j2} \log y^P_{j,t-1} + (1-\alpha_{j2}) \log y_{j,t-1}$

See also General Notes.

TABLE 9A

F-STATISTICS FOR GROUPS OF DEMAND SHOCK VARIABLES FOR ESTIMATES IN TABLE 9

Country	F(4/66) Statistics		
	$\hat{M}$ variables	$\hat{g}$ variables	$\hat{x}$ variables
United States	7.128	1.820	2.188
United Kingdom	1.164	3.531	1.763
Canada	2.315	3.191	1.858
France	0.341	0.783	1.006
Germany	1.473	0.748	2.353
Italy	0.899	0.517	3.426
Japan	1.152	1.141	1.660
Netherlands	1.530	1.137	1.675

NOTES: 1. The reported F-statistics are appropriate for testing the joint hypothesis that all four of the demand shock variables of the type indicated have a coefficient of zero. Such a test is conditional upon the other variables entering in the equation.

2. For F(4/66), the 10 percent significance level is 2.04, the 5 percent significance level is 2.52, and the 1 percent significance level is 3.63.

TABLE 10

PRICE LEVEL EQUATIONS (R2) AND (N2)

DEPENDENT VARIABLE: $\log P_j$

	Const.	$\log y^P_j$	$\log y_j - \log y_j^P$	R_j	$R_1 + (4\Delta \log E_{j,t+1})^{*}$ [a]	$\log M_{j,t-1} - \log P_{j,t-1}$	$\hat{M}_j$	$\hat{M}_{j,t-1}$	$\hat{M}_{j,t-2}$	$\hat{M}_{j,t-3}$			h
Country	β_{j1}	β_{j2}	β_{j3}	β_{j4}	β_{j5}	β_{j6}	β_{j7}	β_{j8}	β_{j9}	β_{j10}	$\bar{R}^2$	S.E.E.	[D-W]
United States	0.0851	-0.0224	-0.0915	0.3489	-0.0011	-0.9907	-0.7145	-0.3961	0.1655	0.0164	0.9997	0.0035	1.69
	(0.1067)	(0.0058)	(0.0199)	(0.0685)	(0.0117)	(0.0248)	(0.1503)	(0.0924)	(0.0914)	(0.1028)			
	0.798	-3.863	-4.601	5.094	-0.097	-39.974	-4.754	-4.288	1.810	0.160			
United Kingdom	-0.2409	-0.0313	-0.3687	0.4405	0.0815	-0.8571	-0.7401	0.0374	-0.1519	-0.1675	0.9983	0.0147	0.66
	(0.1361)	(0.0282)	(0.1490)	(0.1694)	(0.0355)	(0.0548)	(0.1734)	(0.1065)	(0.1009)	(0.0996)			
	-1.770	-1.113	-2.476	2.601	2.295	-15.646	-4.269	0.351	-1.506	-1.681			
Canada	0.1175	-0.2196	-0.1519	0.2487	-0.0209	-0.6260	-1.0824	-0.2690	-0.2761	-0.6435	0.9978	0.0116	-1.64
	(0.0421)	(0.0368)	(0.0678)	(0.1372)	(0.0981)	(0.0606)	(0.1504)	(0.1080)	(0.1046)	(0.1051)			
	2.789	-5.967	-2.242	1.813	-0.213	-10.329	-7.199	-2.491	-2.641	-6.121			
France	0.0692	-0.0247	-0.0189	0.4813	0.0239	-0.9918	-0.7633	-0.2414	0.0248	0.0494	0.9987	0.0105	3.57
	(0.0554)	(0.0250)	(0.0576)	(0.0852)	(0.0196)	(0.0203)	(0.1927)	(0.1111)	(0.1059)	(0.1045)			
	1.248	-0.987	-0.328	5.647	1.216	-48.824	-3.962	-2.172	0.234	0.473			
Germany	0.0818	-0.0662	-0.0062	0.0227	-0.0089	-0.9335	-1.0874	-0.1448	-0.3170	-0.3196	0.9993	0.0063	2.85
	(0.0517)	(0.0228)	(0.0255)	(0.0448)	(0.0168)	(0.0200)	(0.0774)	(0.0518)	(0.0521)	(0.0571)			
	1.583	-2.900	-0.245	0.506	-0.527	-46.760	-14.049	-2.798	-6.084	-5.601			
Italy	0.2650	-0.0816	0.0301	0.2616	-0.0249	-0.9411	-1.1978	-0.1885	-0.3956	-0.1806	0.9988	0.0116	2.05
	(0.2706)	(0.0482)	(0.0750)	(0.1851)	(0.0398)	(0.0254)	(0.1255)	(0.0895)	(0.0924)	(0.0927)			
	0.979	-1.695	0.402	1.413	-0.626	-37.032	-9.544	-2.107	-4.281	-1.948			
Japan	0.4466	-0.2017	-0.0621	0.9316	0.0873	-0.8273	-1.0066	-0.3656	-0.3207	-0.3017	0.9987	0.0119	2.67
	(0.1109)	(0.0363)	(0.0421)	(0.4464)	(0.0376)	(0.0296)	(0.1165)	(0.0839)	(0.0849)	(0.0876)			
	4.026	-5.562	-1.474	2,087	2.322	-27,963	-8.640	-4,358	-3,779	-3.445			
Netherlands	-0.0057	-0.0796	0.0938	0.0227	-0.0397	-0.8941	-1.0174	-0.4761	-0.6534	-0.2813	0.9989	0.0109	-1.92
	(0.0417)	(0.0332)	(0.0526)	(0.0945)	(0.0288)	(0.0347)	(0.1271)	(0.0866)	(0.0889)	(0.0868)			
	-0.136	-2.397	1.785	0.241	-1.380	-25.750	-8.008	-5.497	-7.352	-3.243			

Note: a. For the United States, the foreign interest rate is $R_2-(4\Delta \log E_{2_1 t+1})^{*}$.

See also General Notes.

TABLE 11

UNEMPLOYMENT -- RATE EQUATIONS (R3) AND (N3)

DEPENDENT VARIABLE: Δu_j

Country	Const. $\gamma_{j,1}$	$\Delta \log y_j$ $\gamma_{j,2}$	$\Delta \log y_{j,t-1}$ $\gamma_{j,3}$	$\Delta \log y_{j,t-2}$ $\gamma_{j,4}$	$\Delta \log y_{j,t-3}$ $\gamma_{j,5}$	$\Delta \log y_{j,t-4}$ $\gamma_{j,6}$	$\Delta \log y_{j,t-5}$ $\gamma_{j,7}$	$\Delta \log y_{j,t-6}$ $\gamma_{j,8}$	$\Delta \log y_{j,t-7}$ $\gamma_{j,9}$	$\bar{R}^2$	S.E.E.	D-W
United States	0.0046 (0.0004) 11.183	-0.1952 (0.0277) -7.055	-0.1876 (0.0241) -7.802	-0.0528 (0.0235) -2.248	-0.0624 (0.0232) -2.691	0.0529 (0.0234) 2.257	0.0177 (0.0237) 0.746	-0.0349 (0.0244) -1.431	-0.0602 (0.0226) -2.668	0.8089	0.0019	1.36
United Kingdom	0.0023 (0.0003) 7.031	-0.0849 (0.0162) -5.252	-0.0327 (0.0125) -2.616	-0.0660 (0.0122) -5.407	-0.0556 (0.0125) -4.437	-0.0415 (0.0126) -3.300	-0.0165 (0.0126) -1.311	-0.0057 (0.0129) -0.444	0.0004 (0.0126) 0.028	0.4428	0.0016	1.26
France	0.0019 (0.0003) 6.648	-0.0339 (0.0077) -4.385	-0.0360 (0.0058) -6.202	-0.0240 (0.0060) -4.010	-0.0125 (0.0059) -2.116	-0.0037 (0.0059) -0.628	-0.0116 (0.0060) -1.944	0.0005 (0.0060) 0.079	0.0074 (0.0058) 1.285	0.4492	0.0009	1.40

See General Notes.

TABLE 12

PART A

RESERVE-COUNTRY NOMINAL-MONEY EQUATION (R4)

$$\Delta \log M_1 = \underset{\substack{(0.1158)\\3.984}}{0.4612}\,\Delta \log M_{1,t-1} - \underset{\substack{(0.1159)\\-1.981}}{0.2295}\,\Delta \log M_{1,t-2} + \underset{\substack{(0.0028)\\1.587}}{0.0044} + \underset{\substack{(0.0000)\\5.057}}{0.0003}\,t$$

$$+ \underset{\substack{(0.0286)\\0.141}}{0.0040}\,\hat{g}_1 + \underset{\substack{(0.0205)\\0.076}}{0.0016}\,(\hat{g}_{1,t-1} + \hat{g}_{1,t-2}) + \underset{\substack{(0.0200)\\1.465}}{0.0293}\,(\hat{g}_{1,t-3} + \hat{g}_{1,t-4})$$

$$- \underset{\substack{(0.0905)\\-0.636}}{0.0576}\,(\log P_{1,t-1} - \log P_{1,t-3}) - \underset{\substack{(0.0996)\\-2.381}}{0.2372}\,(\log P_{1,t-3} - \log P_{1,t-5}) - \underset{\substack{(0.1930)\\-0.604}}{0.1167}\,u_{1,t-1}$$

$$+ \underset{\substack{(0.3627)\\1.487}}{0.5393}\,u_{1,t-2} - \underset{\substack{(0.3670)\\-1.176}}{0.4316}\,u_{1,t-3} - \underset{\substack{(0.1950)\\-0.280}}{0.0546}\,u_{1,t-4}$$

$\bar{R}^2 = 0.5624$, S.E.E. = 0.0046, [D-W = 2.05]

See General Notes.

TABLE 12

PART B

NONRESERVE-COUNTRY NOMINAL-MONEY EQUATIONS (M4)

$$\begin{aligned}\Delta \log M_j = {} & \eta_{j1} + \eta_{j2} t + \eta_{j3} \hat{e}_j + \eta_{j4} (\hat{e}_{j,t-1} + \hat{e}_{j,t-2}) + \eta_{j5} (\hat{e}_{j,t-3} + \hat{e}_{j,t-4}) + \eta_{j6} (\log P_{j,t-1} - \log P_{j,t-3}) \\ & + \eta_{j7} [DF_j (\log P_{j,t-1} - \log P_{j,t-3})] + \eta_{j8} (\log P_{j,t-3} - \log P_{j,t-5}) + \eta_{j9} [DF_j (\log P_{j,t-3} - \log P_{j,t-5})] \\ & + \eta_{j,10} u_{j,t-1} + \eta_{j,11} u_{j,t-2} + \eta_{j,12} u_{j,t-3} + \eta_{j,13} u_{j,t-4} + \eta_{j,14} (B/Y)_j + \eta_{j,15} [DF_j (B/Y)_j] + \eta_{j,16} [(B/Y)_{j,t-1} + (B/Y)_{j,t-2}] \\ & + \eta_{j,17} \{DF_j [(B/Y)_{j,t-1} + (B/Y)_{j,t-2}]\} + \eta_{j,18} [(B/Y)_{j,t-3} + (B/Y)_{j,t-4}] + \eta_{j,19} \{DF_j [(B/Y)_{j,t-3} + (B/Y)_{j,t-4}]\} + \epsilon_{j4}\end{aligned}$$

Country	η_{j1}	η_{j2}	η_{j3}	η_{j4}	η_{j5}	η_{j6}	η_{j7}	η_{j8}	η_{j9}	$\eta_{j,10}$
United Kingdom	-0.0058 (0.0103) -0.561	-0.0000 (0.0002) -0.003	0.0874 (0.0656) 1.333	0.1540 (0.0562) 2.741	0.0299 (0.0661) 0.452	0.0771 (0.2107) 0.366	0.0242 (0.2218) 0.109	0.1567 (0.2396) 0.654	-0.0748 (0.2727 -0.274	1.2313 (1.5107) 0.815
Canada	0.0101 (0.0055) 1.841	0.0002 (0.0002) 1.001	0.1156 (0.0760) 1.521	0.1849 (0.0613) 3.018	-0.0035 (0.0655) -0.054	-0.1972 (0.5899) -0.334	0.2649 (0.5583) 0.474	-0.1133 (0.6025) -0.188	-0.0016 (0.5691) -0.003	0.1548 (0.1785) 0.867
France	0.0354 (0.0051) 6.936	-0.0003 (0.0001) -2.517	0.0030 (0.0254) 0.119	0.0307 (0.0221) 1.387	-0.0178 (0.0228) -0.781	-0.0859 (0.0989) -0.868	0.5748 (0.3598) 1.597	-0.0535 (0.0972) -0.551	-0.3655 (0.4059) -0.900	1.5859 (1.8373) 0.863
Germany	0.0160 (0.0090) 1.793	-0.0001 (0.0001) -0.586	0.0363 (0.0305) 1.192	-0.0149 (0.0232) -0.644	-0.0225 (0.0227) -0.993	0.0977 (0.2470) 0.395	-0.8816 (0.3516) -2.507	-0.4020 (0.2971) -1.353	0.6823 (0.4041) 1.688	-0.0364 (0.1331) -0.274
Italy	0.0127 (0.0115) 1.109	0.0005 (0.0002) 2.711	-0.0167 (0.0233) -0.716	-0.0356 (0.0205) -1.742	-0.0327 (0.0219) -1.495	-0.1229 (0.2740) -0.449	0.0437 (0.3533) 0.124	0.2654 (0.2550) 1.041	-0.1047 (0.4075) -0.257	0.1286 (0.2316) 0.555
Japan	0.0540 (0.0047) 8.026	-0.0000 (0.0001) -0.149	-0.0219 (0.0422) -0.518	0.0317 (0.0426) 0.744	0.0262 (0.0388) 0.676	-0.5453 (0.1811) -3.011	0.4078 (0.2181) 1.870	-0.2006 (0.1490) -1.346	0.0145 (0.2135) 0.068	0.0059 (0.1410) 0.042
Netherlands	0.0097 (0.0070) 1.375	0.0003 (0.0001) 2.151	0.0641 (0.0405) 1.582	-0.0395 (0.0307) -1.286	-0.0397 (0.0312) -1.274	-0.2390 (0.1639) -1.458	0.3620 (0.2675) 1.353	0.0566 (0.1628) 0.348	0.0622 (0.2397) 0.260	0.0338 (0.1589) 0.213

Country	$\eta_{j,11}$	$\eta_{j,12}$	$\eta_{j,13}$	$\eta_{j,14}$	$\eta_{j,15}$	$\eta_{j,16}$	$\eta_{j,17}$	$\eta_{j,18}$	$\eta_{j,19}$	$\bar{R}^2$	S.E.E.	D-W
United Kingdom	-3.4256 (2.3092) -1.483	7.0718 (2.5266) 2.799	-4.2754 (1.7219) -2.483	-0.5155 (0.5838) -0.883	2.1291 (1.0068) 2.115	0.4856 (0.2139) 2.270	-0.5212 (0.3625) -1.438	0.3309 (0.2078) 1.592	-0.2042 (0.3388) -0.603	0.2888	0.0170	1.95
Canada	-0.0546 (0.2149) -0.254	-0.0777 (0.2193) -0.354	-0.0413 (0.2003) -0.206	-0.1068 (1.2418) -0.086	3.3238 (2.3210) 1.432	0.8225 (0.5970) 1.378	-3.2249 (1.2196) -2.644	0.2862 (0.6238) 0.459	1.4646 (1.1676) 1.254	0.1540	0.0163	1.88
France	-4.0365 (3.2469) -1.243	7.8250 (3.3058) 2.367	-5.0553 (2.1008) -2.406	-0.4060 (0.6601) -0.615	0.1031 (1.1007) 0.094	0.3233 (0.3260) 0.992	-0.1322 (0.5630) -0.235	0.7214 (0.2587) 2.788	0.0605 (0.5414) 0.112	0.3474	0.0118	1.78
Germany	0.1024 (0.1684) 0.608	-0.1912 (0.1734) -1.103	0.0848 (0.1297) 0.653	1.6489 (0.5769) 2.858	0.0196 (0.8884) 0.022	0.0938 (0.2371) 0.395	0.3328 (0.4828) 0.689	0.5458 (0.2864) 1.906	0.0399 (0.4740) 0.084	0.2765	0.0133	2.30
Italy	-0.1213 (0.2839) -0.427	0.1193 (0.2770) 0.430	-0.3272 (0.2283) -1.433	-5.4528 (2.3574) -2.313	6.3937 (2.8307) 2.259	2.3821 (1.0150) 2.347	-0.5204 (1.0033) -0.519	-0.2291 (0.7409) -0.309	0.5637 (1.0525) 0.536	-0.6105	0.0220	2.18
Japan	-0.0221 (0.1697) -0.130	-0.1636 (0.1724) -0.949	0.3035 (0.1343) 2.260	2.2503 (1.2800) 1.758	-0.5742 (1.5246) -0.377	1.5380 (0.6816) 2.256	-2.5332 (0.8004) -3.165	1.8032 (0.7378) 2.444	-1.8875 (0.8633) -2.186	0.4160	0.0155	1.65
Netherlands	0.3617 (0.2141) 1.690	-0.3568 (0.2104) -1.696	-0.0288 (0.1524) -0.189	0.4210 (0.8439) 0.499	0.7008 (1.4222) 0.493	0.3972 (0.3402) 1.168	-1.1151 (0.6231) -1.790	0.0915 (0.2997) 0.305	-0.9712 (0.5983) -1.623	0.2950	0.0148	1.87

See General Notes.

TABLE 12A

Interpretation of $(B/Y)_j$ Coefficients in Table 12, Part B

	Pegged Period		Floating Period		
Country	Impact Money Effect[a]	Cumulative Money Effect[b]	Impact Money Effect[a]	Cumulative Money Effect[b]	Mean Value of $(H/Y)_j$[c]
United Kingdom	-0.058	0.125	0.181	0.201	0.1122
Canada	-0.007	0.138	0.210	0.125	0.0652
France	-0.057	0.235	-0.042	0.229	0.1394
Germany	0.158	0.280	0.160	0.353	0.0957
Italy	-0.882	-0.185	0.152	0.862	0.1617
Japan	0.165	0.656	0.123	-0.035	0.0734
Nether-lands	0.045	0.150	0.121	-0.223	0.1076

Notes: a. This is the fraction of the current effect of the balance of payments on nominal money which is not sterilized by the central bank; computed as $\frac{\partial \Delta \log M_j}{\partial (B/H)_j} \simeq$ [coefficient of $(B/Y)_j$] x [mean value of $(H/Y)_j$] where H_j is high-powered money.

b. This is the total effect including lagged adjustments by the central bank; computed as $\frac{\partial \Delta \log M_j}{\partial (B/H)_j} \simeq [\sum_i$ coefficients of $(B/Y)_{j,t-i}]$ x [mean value of $(H/Y)_j$].

c. Sample mean for 1957I-1976IV.

TABLE 13

INTEREST-RATE EQUATIONS (R5) AND (N5)

Dependent Variable: R_j

Country	Const. δ_{j1}	t δ_{j2}	$(4\Delta\log P_{j,t+1})^*$ δ_{j3}	$R_{j,t-1}$ δ_{j4}	$(4\Delta\log P_j)^*$ δ_{j5}	$\hat{M}_j$ δ_{j6}	$\hat{M}_{j,t-1}$ δ_{j7}	$\hat{M}_{j,t-2}$ δ_{j8}	$\hat{M}_{j,t-3}$ δ_{j9}	$\hat{E}_j$ $\delta_{j,10}$	$\hat{E}_{j,t-1}$ $\delta_{j,11}$	$\hat{E}_{j,t-2}$ $\delta_{j,12}$	$\hat{E}_{j,t-3}$ $\delta_{j,13}$	$\hat{X}_j$ $\delta_{j,14}$	$\hat{X}_{j,t-1}$ $\delta_{j,15}$	$\hat{X}_{j,t-2}$ $\delta_{j,16}$	$\hat{X}_{j,t-3}$ $\delta_{j,17}$	$\bar{R}^2$	S.E.E.	h [D-W]
United States	0.0059 (0.0023) 2.584	0.0000 (0.0000) 0.455	0.2085 (0.1015) 2.015	0.7577 (0.0991) 7.649	-0.1046 (0.0865) -1.210	-0.3230 (0.2031) -1.590	0.3091 (0.1334) 2.317	0.0917 (0.1256) 0.730	0.1624 (0.1186) 1.369	-0.0205 (0.0294) -0.696	0.0189 (0.0304) 0.622	0.0229 (0.0288) 0.797	0.0154 (0.0302) 0.509	0.6220 (0.2585) 2.407	0.3002 (0.2448) 1.226	0.5449 (0.2549) 2.138	-0.2137 (0.2339) -0.914	0.9267	0.0046	-0.28
United Kingdom	0.0016 (0.0061) 0.262	0.0002 (0.0001) 1.985	0.0018 (0.0449) 0.041	0.8761 (0.1277) 6.861	-0.0223 (0.0287) -0.776	-0.3059 (0.0866) -3.533	0.0254 (0.0692) 0.367	0.0365 (0.0586) 0.622	0.0851 (0.0557) 1.527	-0.0524 (0.0309) -1.694	0.0229 (0.0325) 0.703	0.0142 (0.0307) 0.462	0.0015 (0.0316) 0.046	0.1849 (0.1683) 1.099	0.0184 (0.1366) 0.135	-0.0039 (0.1278) -0.031	0.1883 (0.1174) 1.603	0.9109	0.0078	[1.82]
Canada	0.0037 (0.0023) 1.622	-0.0001 (0.0001) -1.599	0.0949 (0.0320) 2.963	0.9951 (0.0854) 11.651	0.0060 (0.0215) 0.278	-0.0782 (0.1056) -0.741	0.0153 (0.0662) 0.231	0.1491 (0.0671) 2.223	0.1540 (0.0606) 2.543	-0.0614 (0.0282) -2.175	-0.0020 (0.0308) -0.065	0.0556 (0.0296) 1.878	0.0307 (0.0282) 1.088	-0.0079 (0.1792) -0.044	0.0373 (0.1262) 0.295	-0.0140 (0.1182) -0.118	-0.0327 (0.1330) -0.246	0.8996	0.0060	1.84
France	0.0047 (0.0033) 1.410	0.0002 (0.0001) 2.794	0.1130 (0.0719) 1.571	0.6416 (0.0995) 6.448	0.0402 (0.0675) 0.595	-0.4759 (0.1572) -3.027	-0.1859 (0.0951) -1.954	-0.0913 (0.1011) -0.902	0.0240 (0.1022) 0.235	-0.0290 (0.0217) -1.341	0.0142 (0.0211) 0.670	-0.0151 (0.0221) -0.683	-0.0118 (0.0210) -0.561	0.1778 (0.2534) 0.702	0.1151 (0.2194) 0.525	0.2652 (0.2070) 1.281	0.0817 (0.2133) 0.383	0.8735	0.0090	3.32
Germany	0.0003 (0.0042) 0.068	0.0001 (0.0001) 1.726	0.1706 (0.1090) 1.565	0.8551 (0.0794) 10.765	-0.1406 (0.0995) -1.413	0.0846 (0.1340) 0.631	0.1052 (0.0927) 1.135	0.1507 (0.0966) 1.560	0.1492 (0.0989) 1.510	-0.0129 (0.0248) -0.519	0.0112 (0.0239) 0.470	-0.0039 (0.0233) -0.166	0.0147 (0.0251) 0.586	-0.0728 (0.2493) -0.292	-0.2830 (0.1977) -1.431	0.1817 (0.1993) 0.912	-0.1783 (0.1912) -0.932	0.8089	0.0112	2.63
Italy	-0.0051 (0.0021) -2.390	0.0000 (0.0001) 0.447	0.0373 (0.0342) 1.093	1.0663 (0.0413) 25.804	-0.0311 (0.0263) -1.185	-0.0285 (0.0537) -0.530	-0.0115 (0.0386) -0.298	0.0570 (0.0368) 1.547	0.0542 (0.0369) 1.470	-0.0037 (0.0035) -1.074	-0.0058 (0.0034) -1.715	0.0003 (0.0040) 0.073	-0.0022 (0.0036) -0.605	0.0345 (0.0701) 0.492	0.0163 (0.0684) 0.239	-0.0417 (0.0632) -0.660	-0.0079 (0.0559) -0.141	0.9503	0.0044	2.20
Japan	-0.0019 (0.0021) -0.907	-0.0001 (0.0000) -6.182	0.0393 (0.0107) 3.674	1.0043 (0.0249) 40.282	0.0333 (0.0076) 4.406	-0.0100 (0.0101) -0.988	-0.0276 (0.0086) -3.202	-0.0380 (0.0080) -4.734	-0.0194 (0.0071) -2.737	0.0005 (0.0022) 0.220	0.0029 (0.0023) 1.266	0.0009 (0.0025) 0.359	0.0006 (0.0024) 0.257	0.0074 (0.0709) 0.104	-0.0252 (0.0549) -0.459	0.0257 (0.0573) 0.448	0.0023 (0.0581) 0.039	0.9782	0.0009	2.28
Netherlands	0.0061 (0.0034) 1.765	0.0002 (0.0001) 1.515	-0.1198 (0.0698) -1.717	0.7965 (0.0738) 10.791	0.0342 (0.0546) 0.626	0.0721 (0.1185) 0.609	-0.1667 (0.0950) -1.754	0.1125 (0.0945) 1.191	0.0130 (0.0805) 0.162	0.0014 (0.0266) 0.053	-0.0006 (0.0270) -0.021	0.0069 (0.0256) 0.270	0.0162 (0.0263) 0.613	0.1590 (0.0920) 1.728	0.0734 (0.0678) 1.083	0.0354 (0.0622) 0.569	0.0740 (0.0600) 1.234	0.7501	0.0091	1.88

See General Notes.

TABLE 14

EXPORT EQUATIONS (R6) AND (N6)

Dependent Variable: $(X/Y)_j$

Country	Const. θ_{j1}	t θ_{j2}	$\log P^{RO}$ θ_{j3}	$\log y_j - \log y_j^P$ θ_{j4}	$\left(\frac{X}{Y}\right)_{j,t-1}$ θ_{j5}	$\left(\frac{X}{Y}\right)_{j,t-2}$ θ_{j6}	$\log y_j^R$ θ_{j7}	$\log y_{j,t-1}^R$ θ_{j8}	$\log P_j$ θ_{j9}	$\log P_{j,t-1}$ $\theta_{j,10}$	$\log P_j^R$ $\theta_{j,11}$	$\log P_{j,t-1}^R$ $\theta_{j,12}$	$\log E_j$ $\theta_{j,13}$	$\log E_{j,t-1}$ $\theta_{j,14}$	$DF_j \cdot \log E_j$ $\theta_{j,15}$	$DF_{j,t-1} \cdot \log E_{j,t-1}$ $\theta_{j,16}$	$\bar{R}^2$	S.E.E.	h [D-W]
United States	0.0976 (0.0189) 5.169	-0.0012 (0.0003) -4.356	0.0138 (0.0026) 5.356	0.0299 (0.0161) 1.855	0.5326 (0.1193) 4.466	0.0723 (0.1077) 0.671	0.0586 (0.0312) 1.881	0.0184 (0.0343) 0.535	0.0083 (0.0354) 0.234	0.0114 (0.0348) 0.327	0.0102 (0.0207) 0.491	-0.0085 (0.0201) -0.423	—	—	—	—	0.9799	0.0023	[2.06]
United Kingdom	0.6132 (0.0805) 7.618	-0.0035 (0.0010) -3.511	0.0148 (0.0064) 2.325	-0.0384 (0.0695) -0.553	0.1784 (0.1276) 1.398	0.1021 (0.1025) 0.996	-0.0101 (0.1152) -0.088	0.1624 (0.1178) 1.379	-0.1545 (0.0787) -1.962	-0.0952 (0.0726) -1.312	0.1635 (0.1105) 1.480	0.3009 (0.0955) 3.151	0.0572 (0.0380) 1.508	0.1432 (0.0424) 3.382	-0.0069 (0.0086) -0.799	0.0173 (0.0099) 1.747	0.9647	0.0069	[1.96]
Canada	0.2497 (0.0884) 2.826	-0.0025 (0.0013) -1.863	0.0089 (0.0072) 1.234	-0.0688 (0.0790) -0.871	0.2876 (0.1277) 2.251	0.3141 (0.1146) 2.742	0.1090 (0.1030) 1.058	0.1337 (0.1131) 1.182	0.0855 (0.0682) 1.254	-0.0416 (0.0644) -0.646	0.0251 (0.0940) 0.267	-0.0552 (0.0890) -0.621	-0.1529 (0.0921) -1.661	0.1425 (0.0960) 1.483	0.0852 (0.0741) 1.150	-0.0838 (0.0702) -1.195	0.9500	0.0062	[2.05]
France	0.1831 (0.0657) 2.785	-0.0052 (0.0011) -4.890	0.0139 (0.0049) 2.846	0.0111 (0.0448) 0.248	0.1989 (0.1119) 1.778	0.2406 (0.0967) 2.488	0.2338 (0.1027) 2.276	0.0542 (0.1030) 0.526	-0.0215 (0.0689) -0.312	-0.0539 (0.0650) -0.829	0.0103 (0.0738) 0.139	0.2875 (0.0812) 3.543	0.0657 (0.0198) 3.315	0.0670 (0.0258) 2.594	-0.0007 (0.0033) -0.197	-0.0038 (0.0034) -1.111	0.9685	0.0050	-6.42
Germany	0.1097 (0.0523) 2.099	-0.0010 (0.0011) -0.938	0.0296 (0.0053) 5.616	0.0435 (0.0426) 1.021	0.3689 (0.1216) 3.034	0.1134 (0.1285) 0.883	0.1931 (0.1066) 1.811	-0.0217 (0.0898) -0.241	-0.0665 (0.1252) -0.531	-0.1939 (0.1426) -1.360	0.1815 (0.1102) 1.648	0.0446 (0.0881) 0.506	0.0408 (0.0305) 1.340	0.0099 (0.0272) 0.364	-0.0013 (0.0051) -0.261	0.0031 (0.0057) 0.556	0.9696	0.0058	[1.65]
Italy	-0.8286 (0.1872) -4.427	-0.0009 (0.0011) -0.860	0.0166 (0.0085) 1.953	-0.0381 (0.0685) -0.556	0.1960 (0.1404) 1.396	0.3148 (0.1346) 2.339	-0.2412 (0.1482) -1.627	0.4191 (0.1317) 3.182	0.0460 (0.1000) 0.460	-0.0971 (0.0920) -1.056	-0.2754 (0.1169) -2.357	0.2828 (0.1074) 2.633	-0.0342 (0.0496) -0.690	0.1880 (0.0532) 3.534	0.0020 (0.0015) 1.374	-0.0000 (0.0015) -0.0017	0.9655	0.0079	[1.89]
Japan	-0.0395 (0.0820) -0.482	-0.0002 (0.0003) -0.616	-0.0028 (0.0034) -0.826	-0.0405 (0.0139) -2.919	0.2783 (0.1064) 2.615	0.1423 (0.1095) 1.300	-0.0967 (0.0452) -2.140	0.1139 (0.0404) 2.821	0.0311 (0.0364) 0.854	-0.0330 (0.0281) -1.176	0.0617 (0.0365) 1.692	-0.0487 (0.0332) -1.465	0.0250 (0.0206) 1.216	-0.0129 (0.0176) -0.732	0.0003 (0.0004) 0.674	-0.0004 (0.0005) -0.865	0.7767	0.0021	-0.55
Netherlands	0.2820 (0.1430) 1.972	-0.0026 (0.0026) -1.009	0.0321 (0.0150) 2.146	0.1931 (0.1629) 1.186	0.4754 (0.1250) 3.802	0.0819 (0.1281) 0.639	0.6712 (0.2613) 2.569	-0.3902 (0.2586) -1.509	-0.5752 (0.2051) -2.804	0.1862 (0.1940) 0.960	0.8770 (0.2853) 3.074	-0.4179 (0.2952) -1.415	0.1332 (0.0932) 1.429	-0.0657 (0.1155) -0.568	-0.0034 (0.0130) -0.260	0.0002 (0.0143) 0.0173	0.8568	0.0149	[1.49]

See General Notes.

TABLE 15

PART A

Import Equations (R7) and (N7P)

Dependent Variable: $(I/Y)_j$

COUNTRY	Const. λ_{j1}	$(I/Y)_{j,t-1}$ λ_{j2}	$\log y_j^p$ λ_{j3}	$\log y_j - \log y_j^p$ λ_{j4}	$\log y_{j,t-1} - \log y^p_{j,t-1}$ λ_{j5}	z_j λ_{j6}	$z_{j,t-1}$ λ_{j7}	$z_{j,t-2}$ λ_{j8}	$z_{j,t-3}$ λ_{j9}	$\bar{R}^2$	S.E.E.	h [D-W]
United States	-0.1034 (0.0388) -2.662	0.6667 (0.1128) 5.910	0.0178 (0.0066) 2.714	0.0808 (0.0421) 1.921	-0.0644 (0.0368) -1.751	0.0366 (0.0188) 1.953	0.0545 (0.0349) 1.562	-0.0753 (0.0401) -1.877	0.0044 (0.0230) 0.191	0.9746	0.0027	[1.97]
United Kingdom	-0.3300 (0.0935) -3.529	0.3540 (0.1405) 2.520	0.1358 (0.0339) 4.004	-0.1075 (0.1141) -0.942	0.0348 (0.1026) 0.339	0.1425 (0.0583) 2.446	0.0890 (0.0628) 1.416	-0.0320 (0.0617) -0.518	0.0145 (0.0471) 0.308	0.8174	0.0070	[1.83]
Canada	-0.3403 (0.2160) -1.576	0.2796 (0.2134) 1.310	0.1164 (0.0483) 2.409	-0.0179 (0.1643) -0.109	0.1806 (0.1252) 1.442	0.1882 (0.1146) 1.643	-0.0756 (0.1167) -0.647	-0.0556 (0.1158) -0.481	0.0661 (0.0910) 0.726	0.8977	0.0045	[1.75]
France	-0.0497 (0.0506) -0.982	0.8132 (0.0918) 8.858	0.0114 (0.0089) 1.281	0.0710 (0.0347) 2.045	-0.0677 (0.0306) -2.216	0.0500 (0.0234) 2.135	-0.0189 (0.0253) -0.747	-0.0481 (0.0239) -2.016	0.0181 (0.0186) 0.976	0.9383	0.0033	-1.08
Germany	-0.3324 (0.1296) -2.566	0.3815 (0.1505) 2.535	0.0708 (0.0235) 3.015	0.0634 (0.0765) 0.828	0.0146 (0.0653) 0.224	-0.0077 (0.0570) -0.135	0.0336 (0.0660) 0.510	0.0536 (0.0705) 0.760	-0.0289 (0.0485) -0.595	0.9082	0.0047	[1.88]
Italy	-0.3728 (0.2681) -1.391	0.7786 (0.0919) 8.471	0.0378 (0.0254) 1.488	0.1526 (0.1098) 1.390	-0.0580 (0.1067) -0.543	-0.0252 (0.0697) -0.362	0.1456 (0.0834) 1.746	-0.1012 (0.0889) -1.139	0.0088 (0.0620) 0.142	0.8894	0.0076	.92
Japan	-0.0296 (0.0421) -0.703	0.7148 (0.0945) 7.561	0.0035 (0.0039) 0.880	0.0137 (0.0221) 0.619	0.0003 (0.0202) 0.016	0.0101 (0.0204) 0.497	0.0438 (0.0250) 1.754	-0.0001 (0.0225) -0.004	-0.0412 (0.0161) -2.556	0.8612	0.0017	1.80
Netherlands	-0.9957 (0.7004) -1.422	0.3908 (0.1504) 2.598	0.2773 (0.1600) 1.734	0.1427 (0.2757) 0.518	0.0428 (0.2168) 0.197	0.5824 (0.1957) 2.975	-0.1574 (0.1955) -0.805	-0.0741 (0.1670) -0.444	-0.0417 (0.1344) -0.310	0.7034	0.0143	[1.96]

Note: These regressions are for the pegged periods only for non-reserve countries (excludes floating periods listed in Part A of Table 6) and are based for those countries on a correspondingly shortened instrument list.

See also General Notes.

TABLE 15
PART B
RELATIVE-PRICE-OF-IMPORTS EQUATIONS (N7F)
Dependent Variable: $Z_j \equiv \log P^I_j - \log P_j$

COUNTRY	Const. $-\frac{\lambda_{j1}}{\lambda_{j6}}$	$(I/Y)_j$ $\frac{1}{\lambda_{j6}}$	$(I/Y)_{j,t-1}$ $-\frac{\lambda_{j2}}{\lambda_{j6}}$	$\log y^P_j$ $-\frac{\lambda_{j3}}{\lambda_{j6}}$	$\log y_j - \log y^P_j$ $-\frac{\lambda_{j4}}{\lambda_{j6}}$	$\log y_{j,t-1} - \log y^P_{j,t-1}$ $-\frac{\lambda_{j5}}{\lambda_{j6}}$	$Z_{j,t-1}$ $-\frac{\lambda_{j7}}{\lambda_{j6}}$	$Z_{j,t-2}$ $-\frac{\lambda_{j8}}{\lambda_{j6}}$	$Z_{j,t-3}$ $-\frac{\lambda_{j9}}{\lambda_{j6}}$	$\bar{R}^2$	S.E.E.	h [D-W]
United Kingdom	-0.7098 (1.0135) -0.700	1.9019 (0.3771) 5.044	-0.1897 (0.6476) -0.293	0.0489 (0.2656) 0.184	-0.1153 (0.4699) -0.245	-0.3631 (0.2864) -1.268	0.6335 (0.2782) 2.277	-0.2346 (0.2588) -0.906	0.0585 (0.1555) 0.376	0.9865	0.0188	[1.50]
Canada	0.3108 (0.0990) 3.141	1.3247 (0.5007) 2.645	-0.4200 (0.5098) -0.824	-0.1201 (0.0349) -3.439	-0.0508 (0.2953) -0.172	-0.3419 (0.2542) -1.345	0.8510 (0.1563) 5.445	-0.1488 (0.1810) -0.822	-0.0821 (0.1252) -0.656	0.9353	0.0184	[2.20]
France	4.0912 (2.5134) 1.628	4.3304 (1.2205) 3.548	-0.4294 (1.1609) -0.370	-0.7055 (0.3942) -1.790	0.1843 (1.0028) 0.184	0.1800 (0.5645) 0.319	0.1853 (0.1723) 1.075	0.1247 (0.2363) 0.528	0.2125 (0.2145) 0.991	0.9570	0.0225	3.25
Germany	-2.8389 (3.2782) -0.866	2.2772 (2.2405) 1.016	-1.7447 (1.7221) -1.013	0.4096 (0.5436) 0.753	0.6405 (1.2641) 0.507	-0.0096 (0.8593) -0.011	0.8729 (0.3690) 2.365	-0.2489 (0.3266) -0.762	0.1413 (0.3371) 0.419	0.8534	0.0349	[2.14]
Italy	0.6285 (20.2966) 0.031	2.9883 (2.4423) 1.224	-0.9367 (1.1954) -0.784	-0.0969 (1.8837) -0.051	-0.4669 (0.9172) -0.509	0.3770 (1.5479) 0.244	0.8302 (0.3422) 2.426	-0.1812 (0.4293) -0.422	0.0221 (0.3379) 0.065	0.9216	0.0664	[2.72]
Japan	0.4408 (2.4054) 0.183	11.5779 (3.9031) 2.966	-1.5938 (5.2844) -0.302	-0.0654 (0.2069) -0.316	-0.5164 (1.0151) -0.509	-0.3071 (0.8033) -0.382	0.4583 (0.3703) 1.238	-0.1189 (0.3002) -0.396	-0.0560 (0.2319) 0.242	0.9718	0.0303	[2.29]
Netherlands	-0.5967 (1.0728) -0.556	1.3619 (0.5171) 2.634	-0.2921 (0.4519) -0.646	0.0047 (0.1917) 0.024	1.2541 (1.1212) 1.119	-1.1448 (0.7698) -1.487	0.6319 (0.3738) 1.691	-0.0552 (0.3680) -0.150	0.0680 (0.3114) 0.219	0.8818	0.0297	[2.99]

Note: These regressions are for the floating periods listed in Part A of Table 6 and are based on correspondingly shortened instrument lists.

See also General Notes.

TABLE 16

PART A

IMPORT-PRICE EQUATIONS (R8) AND (N8P)

Dependent Variable: log P^I_j

COUNTRY	Const. μ_{j1}	$\Delta\log P^I_{j,t-1}$ μ_{j2}	$\Delta\log P^{RO}$ μ_{j3}	$\Delta\log y^R_j$ μ_{j4}	$\Delta(I/Y)_j$ μ_{j5}	$\Delta\log P^R_j$ μ_{j6}	$\Delta\log E_j$ μ_{j7}	$\bar{R}^2$	S.E.E.	h [D-W]
United States	-0.0017 (0.0038) -0.446	0.6420 (0.0850) 7.557	0.0717 (0.0160) 4.483	0.1522 (0.2428) 0.627	1.9255 (0.9474) 2.032	0.1424 (0.1420) 1.003	--	.9964	0.0129	-4.48
United Kingdom	-0.0151 (0.0076) -1.993	-0.0020 (0.1319) -0.015	-0.0403 (0.0901) -0.448	0.6483 (0.4400) 1.473	0.1900 (0.3909) 0.486	1.3714 (0.5919) 2.317	0.5061 (0.1568) 3.229	0.9734	0.0159	-23.57
Canada	-0.0030 (0.0083) -0.357	-0.0538 (0.2077) -0.259	-0.2454 (0.5708) -0.430	0.2795 (0.4498) 0.621	0.7223 (0.3940) 1.833	0.2029 (0.8294) 0.245	0.0214 (0.5412) 0.040	0.9347	0.0084	[1.86]
France	-0.0070 (0.0105) -0.673	-0.0994 (0.1115) -0.891	0.0522 (0.1115) 0.468	-0.0267 (0.5936) -0.045	1.9406 (1.0139) 1.914	1.2349 (0.7141) 1.729	0.6364 (0.1086) 5.861	0.9468	0.0197	-1.05
Germany	-0.0107 (0.0045) -2.380	0.2422 (0.1150) 2.107	0.0070 (0.0613) 0.113	0.2902 (0.2723) 1.066	-0.3779 (0.3335) -1.133	1.2003 (0.3822) 3.140	0.4684 (0.1312) 3.570	0.9108	0.0106	-0.22
Italy	-0.0047 (0.0089) -0.523	0.0856 (0.1587) 0.539	0.1749 (0.1012) 1.729	-0.2518 (0.4443) -0.567	-0.0766 (0.4553) -0.168	1.0871 (0.7293) 1.491	-1.2293 (1.2907) -0.952	0.9215	0.0168	[2.07]
Japan	-0.0193 (0.0057) -3.392	0.1248 (0.1422) 0.877	-0.0717 (0.0655) -1.095	0.8201 (0.3479) 2.358	3.0762 (1.2324) 2.496	1.3652 (0.4252) 3.211	0.6959 (0.6067) 1.147	0.9410	0.0117	[2.10]
Netherlands	-0.0012 (0.0057) -0.208	0.2289 (0.1196) 1.914	0.0999 (0.0644) 1.550	-0.2553 (0.3150) -0.810	0.1692 (0.1091) 1.550	0.8842 (0.4491) 1.969	0.8225 (0.2579) 3.189	0.9135	0.0110	0.59

Note: These regressions are for the pegged periods only for non-reserve countries (excludes floating periods listed in Part A of Table 6) and are based for those countries on a correspondingly shortened instrument list.

See also General Notes.

TABLE 16

PART B

EXCHANGE-RATE EQUATIONS (N8F)

Dependent Variable: $\Delta \log E_j$

COUNTRY	Const. $-\frac{\mu_{11}}{\mu_{17}}$	$\Delta \log P_j^I$ $\frac{1}{\mu_7}$	$\Delta \log P_{j,t-1}^I$ $-\frac{\mu_{12}}{\mu_{17}}$	$\Delta \log P^{RO}$ $-\frac{\mu_{13}}{\mu_{17}}$	$\Delta \log y_j^R$ $-\frac{\mu_{14}}{\mu_{17}}$	$\Delta (I/Y)_j$ $-\frac{\mu_{15}}{\mu_{17}}$	$\Delta \log P_j^R$ $-\frac{\mu_{16}}{\mu_{17}}$	$\bar{R}^2$	S.E.E.	D-W
United Kingdom	0.0490 (0.0368) 1.333	0.3454 (0.8276) 0.417	0.2291 (0.4163) 0.550	-0.0018 (0.0582) -0.032	0.9776 (1.3640) 0.717	-1.3030 (1.3132) -0.992	-2.8498 (0.9892) -2.881	0.1213	0.0443	2.76
Canada	-0.0040 (0.0055) -0.727	0.2732 (0.2211) 1.236	0.0273 (0.1829) 0.149	-0.0202 (0.0144) -1.401	0.2732 (0.3320) 0.823	-0.3851 (0.4451) -0.865	-0.0676 (0.2367) -0.286	0.0007	0.0135	1.38
France	0.0507 (0.0257) 1.976	-0.0635 (0.5233) -0.121	0.2030 (0.2485) 0.817	0.0518 (0.0493) 1.050	-0.9932 (1.2940) -0.768	1.7303 (2.1846) 0.792	-2.9759 (0.8646) -3.442	0.6551	0.0291	2.45
Germany	0.0174 (0.0363) 0.480	0.3949 (0.5426) 0.728	-0.6752 (0.3770) -1.791	-0.0775 (0.0651) -1.190	-1.4449 (1.3021) -1.110	4.7085 (3.6567) 1.288	-1.4430 (1.4249) -1.013	0.1563	0.0493	2.40
Italy	0.0325 (0.0251) 1.294	0.5080 (0.2164) 2.347	-0.1346 (0.1470) -0.916	0.0178 (0.0421) 0.424	0.4327 (0.9307) 0.465	-0.7952 (0.9088) -0.875	-1.7873 (0.9523) -1.877	0.3624	0.0365	2.05
Japan	0.0508 (0.0212) 2.393	0.1140 (0.2468) 0.462	-0.2069 (0.1554) -1.331	-0.0078 (0.0332) -0.236	-2.8944 (0.8975) -3.225	7.0538 (4.9008) 1.439	-1.9986 (0.6666) -2.998	0.3304	0.0283	2.04
Netherlands	0.0162 (0.0202) 0.803	0.3805 (0.4575) 0.832	-0.2598 (0.2703) -0.961	0.0367 (0.0406) 0.903	-0.2758 (0.6667) -0.414	-0.5083 (0.4632) -1.097	-1.6610 (0.6668) -2.491	0.5852	0.0275	1.94

Note: These regressions are for the floating periods listed in Part A of Table 6 and are based on correspondingly shortened instrument lists.

See also General Notes.

TABLE 17

CAPITAL-FLOWS EQUATIONS (R9) AND (N9)

Dependent Variable: $(C/Y)_j$

COUNTRY	Const. ζ_{j1}	t ζ_{j2}	$\log P^{RO}$ ζ_{j3}	R_j ζ_{j4}	$(4\Delta\log E_{j,t+1})^e$ ζ_{j5}	R_1 ζ_{j6}	$[(X/Y)_j - (I/Y)_j]$ ζ_{j7}	$(\log y_j - \log y_j^P)$ ζ_{j8}	$\Delta\log y_j$ ζ_{j9}	$\Delta\log y_j^R$ $\zeta_{j,10}$	ΔR_j $\zeta_{j,11}$	$\Delta R_{j,t-1}$ $\zeta_{j,12}$	$\Delta R_{j,t-2}$ $\zeta_{j,13}$	ΔR_1 $\zeta_{j,14}$	$\Delta R_{1,t-1}$ $\zeta_{j,15}$	$\Delta R_{1,t-2}$ $\zeta_{j,16}$	$\Delta(4\Delta\log E_{j,t+1})^e$ $\zeta_{j,17}$	$\Delta(4\Delta\log E_j)^e$ $\zeta_{j,18}$	$\Delta(4\Delta\log E_{j,t-1})^e$ $\zeta_{j,19}$	$\bar{R}^2$	S.E.E.	D-W
United States	0.0077	0.0004	-0.0013	-0.1007	0.0348	-0.2098	0.7666	-0.0535	-0.1069	0.0550	-0.2997	0.3474	-0.6649	0.0076	0.0345	0.2389	0.0033	-0.0040	0.0019	0.1968	0.0072	1.87
	(0.0053)	(0.0001)	(0.0082)	(0.1849)	(0.0534)	(0.1402)	(0.2568)	(0.0681)	(0.1890)	(0.1612)	(0.4298)	(0.2492)	(0.3729)	(0.1695)	(0.1314)	(0.1300)	(0.0404)	(0.0119)	(0.0116)			
	1.455	3.142	-0.164	-0.545	0.651	-1.496	2.986	-0.786	-0.566	0.341	-0.697	1.394	-1.783	0.045	0.262	1.838	0.082	-0.332	0.167			
United Kingdom	0.0198	-0.0003	-0.0760	0.7525	0.4443	-0.9278	-0.8730	-0.4390	0.4491	0.0804	0.7571	-0.8290	-0.8227	0.3171	-0.5770	0.9616	-0.3424	-0.0765	-0.0117	-0.0965	0.0291	1.98
	(0.0206)	(0.0004)	(0.0269)	(0.5526)	(0.1535)	(0.6580)	(0.4839)	(0.3257)	(0.3905)	(0.8828)	(0.6444)	(0.5917)	(0.5648)	(1.3718)	(0.9802)	(1.0101)	(0.1224)	(0.0607)	(0.0542)			
	0.965	-0.716	-2.820	1.362	2.895	-1.410	-1.804	-1.348	1.150	0.091	1.175	-1.401	-1.457	0.231	-0.589	0.952	-2.797	-1.261	0.215			
Canada	-0.0211	-0.0001	0.0075	-0.2095	0.3993	0.5253	0.7222	0.1017	-0.4494	0.8661	-0.5176	-0.2984	0.1658	0.1848	0.2139	-0.1944	-0.3006	-0.0482	-0.0687	0.2811	0.0133	1.69
	(0.0128)	(0.0002)	(0.0090)	(0.2558)	(0.2398)	(0.3505)	(0.2698)	(0.1219)	(0.2863)	(0.4604)	(0.4238)	(0.3544)	(0.3765)	(0.5837)	(0.4590)	(0.4392)	(0.2497)	(0.0860)	(0.0880)			
	-1.642	-0.474	0.840	-0.819	1.665	1.499	2.677	0.835	-1.570	1.881	-1.221	-0.842	0.440	0.317	0.466	-0.443	-1.204	-0.561	-0.781			
France	-0.0159	-0.0001	0.0134	-0.6406	0.1171	1.0231	0.7770	0.0609	-0.2608	0.5558	0.6364	0.2588	0.9085	-0.6548	-0.9947	0.3867	-0.0023	0.0007	-0.0173	0.1908	0.0149	1.72
	(0.0114)	(0.0002)	(0.0124)	(0.2298)	(0.0493)	(0.3579)	(0.3074)	(0.1693)	(0.2020)	(0.4806)	(0.3094)	(0.2594)	(0.2729)	(0.7819)	(0.4586)	(0.4544)	(0.0589)	(0.0231)	(0.0217)			
	-1.396	-0.472	1.085	-2.788	2.373	2.859	2.528	0.360	-1.291	1.156	2.057	0.998	3.330	-0.837	-2.169	0.851	-0.038	0.029	-0.798			
Germany	0.0008	-0.0000	0.0044	-0.3022	0.0971	0.2431	0.5354	-0.0654	0.3244	-1.0229	0.0952	-0.4225	0.4053	1.6290	0.1326	0.5469	0.0029	0.0469	0.0516	0.1568	0.0228	2.30
	(0.0227)	(0.0004)	(0.0123)	(0.3641)	(0.1478)	(0.6019)	(0.5225)	(0.1639)	(0.4095)	(0.7941)	(0.5455)	(0.3424)	(0.4166)	(0.9686)	(0.7422)	(0.6142)	(0.1142)	(0.0448)	(0.0455)			
	0.034	-0.010	0.358	-0.830	0.657	0.404	1.025	-0.399	0.792	-1.288	0.174	-1.234	0.973	1.682	0.179	0.891	0.025	1.049	1.134			
Italy	0.0236	0.0002	-0.0016	-0.6457	0.0763	0.1349	0.5595	-0.0402	-0.0540	-0.1519	1.8846	0.2386	0.2997	-0.1910	-0.3032	-0.0552	-0.0182	0.0636	0.0726	0.3171	0.0140	1.22
	(0.0240)	(0.0003)	(0.0101)	(0.4133)	(0.1164)	(0.3515)	(0.1424)	(0.1521)	(0.1591)	(0.5155)	(0.9794)	(0.6850)	(0.7374)	(0.6089)	(0.4169)	(0.4051)	(0.0751)	(0.0443)	(0.0392)			
	0.987	0.889	-0.163	-1.562	0.656	0.384	3.930	-0.264	-0.339	-0.295	1.924	0.348	0.406	-0.314	-0.727	-0.136	-0.243	1.434	1.853			
Japan	0.1931	-0.0005	0.0314	-2.4553	0.0645	0.3620	-0.2125	0.0441	-0.3308	0.0348	-0.6103	-1.1426	-0.3466	-0.8260	-0.0918	-0.2326	0.0383	0.0331	0.0236	-0.1952	0.0135	1.65
	(0.1136)	(0.0005)	(0.0301)	(1.3871)	(0.0876)	(0.3415)	(0.6198)	(0.1487)	(0.1824)	(0.4485)	(3.1056)	(2.3290)	(2.0206)	(0.6718)	(0.3850)	(0.4311)	(0.0808)	(0.0516)	(0.0487)			
	1.700	-1.134	1.042	-1.770	0.736	1.060	-0.343	0.296	-1.814	0.078	-0.197	-0.491	-0.172	-1.230	-0.238	-0.540	0.474	0.640	0.485			
Netherlands	0.0009	0.0004	0.0162	-0.5028	0.2198	-0.0984	0.7699	0.2249	-0.0454	-0.4544	0.6962	-0.6873	0.3636	0.9836	0.1718	0.9798	-0.0866	-0.0515	0.0468	0.4587	0.0189	1.84
	(0.0149)	(0.0002)	(0.0099)	(0.3246)	(0.1079)	(0.4612)	(0.1968)	(0.1612)	(0.3549)	(0.7418)	(0.4190)	(0.3728)	(0.4770)	(0.7686)	(0.5909)	(0.6156)	(0.0867)	(0.0370)	(0.0349)			
	0.060	1.747	1.638	-1.549	2.336	-0.213	3.911	1.395	-0.128	-0.612	1.661	-1.844	0.762	1.280	0.291	1.592	-0.999	-1.392	1.341			

Note: For the U.S. equation only for "log E_j" read "log E_2" and for "R_1" read "R_2" [see equation (R9)] in the column headings above.

See also General Notes.

TABLE 18

BALANCE OF PAYMENTS EQUATIONS (N1OF)

Dependent Variable: $(B/Y)_j$

COUNTRY	Const. ψ_{j1}	$(B/Y)_{j,t-1}$ ψ_{j2}	$\Delta \log E_j$ ψ_{j3}	$\Delta \log E_{j,t-1}$ ψ_{j4}	$\Delta \log P_{j,t-1} - \Delta \log P_{1,t-1}$ ψ_{j5}	$\bar{R}^2$	S.E.E.	h [D-W]
United Kingdom	0.0002 (0.0023) 0.095	0.4170 (0.1889) 2.208	0.0191 (0.0518) 0.368	-0.0346 (0.0371) -0.931	-0.1007 (0.0896) -1.125	0.1710	0.0074	0.05
Canada	0.0003 (0.0003) 1.005	0.2975 (0.1704) 1.746	-0.0927 (0.0328) -2.824	0.0403 (0.0223) 1.802	-0.0109 (0.0147) -0.738	0.0943	0.0018	[1.89]
France	0.0004 (0.0015) 0.241	0.1640 (0.2494) 0.658	-0.0304 (0.0333) -0.912	0.0124 (0.0220) 0.564	0.0332 (0.2015) 0.165	-0.1965	0.0047	[1.82]
Germany	0.0052 (0.0021) 2.471	-0.0723 (0.2621) -0.276	-0.1020 (0.0332) -3.073	0.0025 (0.0267) 0.094	0.0766 (0.1649) 0.464	0.0606	0.0053	[1.98]
Italy	-0.0020 (0.0016) -1.264	0.1847 (0.2354) 0.785	-0.0436 (0.0257) -1.696	-0.0247 (0.0268) -0.923	0.0259 (0.0932) 0.278	0.1712	0.0046	[1.52]
Japan	0.0007 (0.0010) 0.652	0.7929 (0.2136) 3.712	0.0397 (0.0392) 1.014	0.0244 (0.0276) 0.883	-0.0193 (0.0633) -0.305	0.4109	0.0038	1.01
Netherlands	0.0021 (0.0019) 1.144	-0.2072 (0.2557) -0.810	-0.0078 (0.0529) -0.147	-0.0295 (0.0333) -0.885	0.0196 (0.1303) 0.150	-0.1179	0.0063	[2.09]

Note: These regressions are for the floating periods listed in Part A of Table 6 and are based on correspondingly shortened instrument lists.

See also General Notes.