THE PIDS-NEDA ANNUAL MACROECONOMETRIC MODEL VERSION 1989: A SUMMARY

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THE PIDS-NEDA ANNUAL MACROECONOMETRIC MODEL

VERSION 1989: A SUMMARY

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I. INTRODUCTION

The development of the PIDS-NEDA Macroeconometric Model is a joint effort began in 1985 by the Philippine Institute for Development Studies (PIDS) and the National Economic and Development Authority (NEDA). The main objective was to come up with a model that government economic planners could use in arriving at annual and medium-term economic forecasts or targets and in assessing the implications of various policy options.

The first version of the model consisting of 73 equations started to be used in 1986. This version was formulated with the end in view of analyzing the impact of the country's economic adjustment program which is usually formulated in connection with the country's availment of funding facility from the International Monetary Fund (IMF).

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Since that time, a lot of other new demands on the model, mostly by government policymakers themselves, emerged. These have led to subsequent modifications and improvements.

The first major revision of the model (i.e., the second version of the model), further disaggregated the production sectors of the economy and thus strengthened the feedback mechanism between the expenditure side and the production side. Value added in agriculture was broken down into crops, livestock and poultry, fishery, and forestry while industry was subdivided into mining, construction, manufacturing, and utilities.

In this third major revision of the model resulting in what we call Version 89, structural revisions as well as disaggregation and updating of data were enacted. The first and second versions of the model were estimated using historical data from 1967-1985. This has now been extended to 1987. On the production side, the crops and manufacturing subsectors were further disaggregated. Behavioral equations for the four major crops; palay, corn, coconut, and sugar and other crops, as well as for food, garment, semiconductor and other manufacturing are now part of the model. These modifications have allowed a more direct linkage with the trade sector which was also disaggregated further in the current version of the model. Real goods exports is now an aggregate of coconut products, nonquota sugar, other agricultural products, semiconductors, garments, other manufactured goods and other goods exports. Likewise, imports, which used to be the aggregate of fuel, raw materials and other intermediate goods, capital goods and other imports is now the aggregate of imports of fuel, machinery and transport equipment, base metals, cereals and cereal products, chemicals, textile yarns and other commodities.

The structural revisions are by no means inconsequential. In the previous version of the model, demand and supply components of the production sectors were determined separately and all markets were assumed to clear through the automatic adjustment of prices. This was considered as unrealistic as it was deemed possible to have a less than full employment equilibrium. This shortcoming is corrected in the current version of the model whereby the production categories are divided into "fixprice," "flexprice" and "flexprice/flexquantity" sectors. This will be explained later.

Secondly, the financial sector now boasts of endogenous money multiplier and interest rate. The level of total liquidity is still determined based on the reserve-multiplier concept of money supply.

The dual role of capital formation; demand generation in the short-run and capacity creation for increased supply in the long-run, is captured more fully in the current version of the model. Dovetailing with the change in the theoretical foundation

of the production sector, the inclusion of capital cost in sectoral prices provides this mechanism.

In the previous version of the model, an aggregate price equation was determined by excess demand, wages and price of imports. These determinants now enter directly into the specifications of the sectoral prices. In addition, an equation for wholesale prices is constructed with the same determinants. Together, these two aggregate price indicators provide a richer description of inflationary trends in the country.

II. THE PIDS-NEDA MACROECONOMETRIC MODEL VERSION 89: SOME GENERAL NOTES

A. Some Basic Concepts

The current revision of the model is based on a combination of classical, Keynesian, structuralist and monetarist concepts. Classical in the sense that aggregate output is determined from the supply side; Keynesian -- because aggregate demand also plays an important role in determining output; structuralist -- as it takes into account supply bottlenecks as affecting certain sectors of the economy; and monetarist -- as money has a prominent role in determining prices.

Such a mixture of concepts stem from a desire to reflect current developing country realities, in particular, Philippine realities in the structure of the model. For instance, in developing economies especially those with agriculture-based economies, it is more appropriate to highlight the role of aggregate supply in the determination of output. This would serve to capture the effects of supply bottlenecks. This is consistent with classical concepts where the volume of employment and level of output are not affected by aggregate demand (Sargent 1988).

Granted that supply constraints are important, other institutional constraints must be reflected in the model as well. Foremost is the persistent unemployment and underemployment in the labor force that reflects a nonmarket clearing wage. Chronic budget deficits and other macroeconomic imbalances are corrected with appropriate fiscal and monetary policies. Added to this is the effect of policy on economic activity via the influence on aggregate demand. Therefore, Keynesian demand elements are allowed to influence the present level of output.

As was noted earlier, interaction of aggregate supply and expenditure must not necessarily result in full employment equilibrium. In the context of developing economies, it is not imperative that macroeconomic balance be achieved by automatic price adjustments (the Walrasian solution). This immediately

rules out the market clearing process inherent in the classical system, a fact noted in the model via the specification of "fixprice" and "flexprice" sectors in the sense of Taylor (1983). The flexprice sector is assumed to have an adjusting price while the fixprice sector is assumed to have an adjusting output level. The former usually pertains to agriculture while the latter to industry.

B. The Structure of the Model and Outline of Interactions

The model consists of four major blocks: (1) the real sector consisting of the production, expenditure and employment, wages and prices, (2) the fiscal sector, (3) the financial sector, and (4) the external sector.

The linkage between the production sector and expenditure sector comes mainly in the form of aggregate expenditure categories appearing as arguments in the demand functions in the production sector. Output as determined then enters into the employment equation.

The financial and the real sectors interact through the interest rate and through the price variables as some monetary aggregates affect prices.

The fiscal sector is essentially exogenous in the basic model, specifically with respect to government expenditures. However, tax revenues are linked to the level of economic activity or output. To the extent that it is monetized, the government budget deficit serves as the link with the financial sector.

The external sector links up with the rest of the economy through financial variables, specifically, net foreign assets. This is in addition to the link between the expenditure/production side, i.e., exports and imports with the current account components.

III. THE MODEL

A. The Real Sector

1. Production Sector

The production sector has been divided into three sectors. The fixprice sector, the flexprice sector and the flexprice/flexquantity sector. The fixprice sector is assumed to have an adjusting output level and fixed prices. This is most applicable to the industrial sector which is often characterized by an oligopolistic structure and therefore adjustments to increases in demand take place on the quantity side.

Industrial prices are likely to be fixed in the short-run by relatively stable mark-ups over variable cost. In general, industrial sector prices are characterized as functions of prices of inputs; labor and imported inputs, a capital stock index and a measure of excess demand; average liquidity divided by potential GNP. The presence of the capital stock index provides the link from increased investment expenditure to increased production. As the stock of capital increases, returns to capital decrease, labor productivity and efficiency increase, thereby bringing down industrial prices. Excess demand, on the other hand, is expected to drive up mark-up rates and hence prices.

Sector demand for the fixprice sectors are assumed to negatively depend on sector prices and positively on indicators of aggregate domestic and international demand. The specification is consistent with the assumption that output adjusts to quantity demanded due to excess capacity.

The flexprice/flexquantity sector, on the other hand, is more in line with the usual assumption of market clearing in the goods market. This structure is assumed for some crops and the rest of the agriculture sector. While one can argue that the sector is resource limited and supply does not respond to price and other incentives in the short-run, the possibility of quantity adjustments have been made possible for some crops by multi-cropping within a given year.

The specification of the supply equations essentially follow standard lines. Own price determine supply positively while prices of inputs; labor, fertilizers and feeds affect supply negatively. Availability of capital, as proxied by a measure of loanable funds, likewise affect supply positively. The demand equations, on the other hand, essentially include own prices and domestic scale variables. The demand and supply relations are then equated to derive the price functions, thus assuring market clearing.

The flexprice sector, on the other hand, applies to some crops wherein production is limited by certain capital constraints, i.e., resource constraints. This is applied to coconut where production is limited by the number of bearing trees, and to sugar, where there is only one cropping per year.

The estimated equations are shown in Appendix 1 (Equations 1 to 35). Least squares estimation was performed and the Cochrane-Orcutt procedure for the correction of autocorrelation was applied when necessary. In general, equations yielded good fits and correct signs for the hypothesized determinants.

2. Expenditure Sector

Following standard national income accounts identity, gross national product broken down into expenditures can be stated as

the sum of consumption, investments and net exports. Consumption and investments would have private and government components. The latter are treated as policy variables and are thus exogenous to the model.

However, the actual variables that are being set by the government under its budget are government operating expenditures and capital outlays, both in cash and obligation basis. Therefore, bridge equations are constructed which link these budget concepts to national income accounts concepts. These are then deflated by their respective price indices which are, in turn, related to wholesale prices. The estimated equations (Eqs. 39 to 40, 46 to 47) have good fits as evidenced by high R2.

To arrive at a private consumption function for the Philippines, a combination of the features of the life cycle and relative income hypothesis and extensions thereof, are invoked. With permanent income being represented by an average of past and current income (i.e., due to the inability to decide whether movements in current income are permanent or transitory), consumption would therefore be affected not only by current but also by past income. Capturing these hypotheses in the model, a lagged consumption value is put in as an approximation of past disposable income in addition to a measure of current disposable income. The level of real interest rates, which increase current savings, therefore decrease current consumption. Finally, the rate of inflation enters the consumption function on the hypothesis that higher future inflation rates, given a fixed level of income and money holdings, translate to lesser real consumption. Given that people base expectations of future inflation on current inflation, the latter serves to explain movements in consumption expenditures.

The signs of the coefficients conform with hypotheses (Eq. 36). It indicates a short run marginal propensity to consume (MPC) of about 0.07 which is lower than expected. The long-run MPC is, however, about 0.80 percent. A dummy variable with a value of one for 1987 was used to capture the surge in consumer spending during this year. This is in cognizance of the effects of government pump-priming activities and income increases of the rural population with the abolition of marketing monopolies.

Viewing the investment process as an adjustment from past levels of capital stock to a desired level of capital stock, variables which therefore influence the level of desired capital and the speed of adjustment would enter the investment function. The greater is the level of output or the higher is the rate of capacity utilization, the higher is the desired capital stock. The higher the cost of external funds, the higher is the marginal productivity of capital, the lower is the desired capital stock. The availability of foreign exchange resources serves to underlie the liquidity constraint to the achievement of desired capital. This is so as developing country experience shows that foreign

exchange resources finance the importation of capital equipment and construction materials. In addition, changes in the price level affect investment expenditures in two ways. A higher expected price level lowers real cost of credit and anticipation of higher prices may cause businessmen to move actual investment to earlier dates to avoid higner costs. On the other hand, higher expected prices will shift resources from investment to production to allow entrepreneurs to take advantage of possible windfall profits. Finally, given that there is a lag from the investment decision to actual expenditure, past values of investment are added into the analysis.

Determinants of the estimated equations for private fixed capital investments (Eqs. 37 and 38) are found to be significant and of the hypothesized sign. Negative signs for the inflation variable point to the dominance of the motive to take advantage of windfall profits. Dummy variables representing the crisis petiods serve to explain decreased investments and economic activity during those years.

3. Employment, Wages and Prices

In reckoning the determinants of employment, a modified theory of input demand is recoursed to. Traditional neoclassical theory of input demand hypothesizes it as positively related to demand for output or production, negatively to its own price and positively to prices of substitute inputs. This is, of course, assuming a specific production technology. However, this theory of input demand is modified to reflect excess supply of labor in less developed countries. Where there is a large reserve of unemployed and underemployed labor, firms face a very elastic supply of labor; hence wages are hypothesized as not significantly affecting hiring decisions. On the other hand, capital is relatively scarcer, so that the decreases in the price of capital increase desired capital and hence, decrease labor demand. Output and prices of substitute inputs are therefore captured in the model by way of sectoral value added and a measure of capital stock.

In the aggregate, nominal wages are hypothesized to be related to the degree of tightness in the labor market i.e., to decreases in the reserve of the unemployed. In less developed countries where minimum wages are set by policy, other considerations would enter into the wage relation. In general, an increase in consumer prices results in a clamor to increase wages in order to attain the same standard of living. The same justification could also be applied for the appearance of lagged nominal wages.

Labor force is modelled directly as a function of the level of working age population. Unemployment rate is derived by the usual identity.

Estimated equations for the employment variables (Eqs. 50 to 52) show good fits. Sectoral output appears as a significant determinant in the fitted equations. For agriculture and industry, the negative sign of capital stock substantiates the hypotheses of substitutability between capital and labor.

The estimated wage equation (Eq. 54) likewise showed good fit with signs of the coefficients conforming to theory.

Aggregate price is reckoned as a weighted average of sectoral prices with the share of sectoral output to total output as weights. However, since aggregate price was also used to proxy for some cost items, it was necessary to retain a price function which was a function of aggregate demand and supply conditions.

This price index, wholesale price index, is hypothesized to be determined by a pricing rule characterized by stable mark-ups over variable cost in the short run. A firm's variable inputs will typically comprise of labor and imported intermediaries. The mark-up rate is influenced positively by capacity utilization rate of firms. In our formulation, increases in demand are proxied by average liquidity over potential GNP.

The aggregate wholesale price equation (Eq. 45) is seen to be significantly determined by the hypothesized determinants. Of note is the relatively greater coefficient of wages relative to the two other determinants which reflect the propensity of firms to pass on to consumers of their output any increases in wages.

B. The Fiscal Sector

The fiscal sector block centers on the determination of the national government's budget deficit and the identification of the different ways by which the deficit can be financed.

The various categories of government expenditure specified on a cash basis; current operating expenditures (interest payments on outstanding government debt and other operating expenditures), capital outlays and net lending of the government, are used to determine the budget deficit. Those defined on an obligation basis determine government expenditures on national income accounts concept. These items are exogenous to the model.

On the other side of the deficit, revenues are broken down into direct taxes, trade taxes, other taxes and nontax revenue. All revenue components save for trade taxes are determined by nominal GNP or by real GNP and its deflator as these revenue forms are income-based. Revenues from trade taxes are determined by merchandise imports in current terms; with effects of tariff rates transmitted through the import price deflator.

For a summary of the equations and identities which get into the determination of the deficit, please refer to Eqs. 55 to 58 and identities 28 to 34, and 41 listed in the Appendix.

Four basic methods of financing the budget deficit have been identified and recognized in the model:

a) the creation of currency, when the Central Bank holds part of the newly issued debt thereby monetizing it;

b) raising reserve requirements, when banks are made to hold additional reserves in the form of cash balances with the Central Bank;

c) domestic open-market borrowing;

d) foreign borrowing.

Equations for the alternative sources of financing are given by equations 66 and 67 with finance by the nonbank public acting as the residual.

The effects on output, prices, money supply and other key macroeconomic variables of a budget deficit and the alternative ways of financing it are sought to be explained. The mechanisms for transmission essentially contain elements of the standard textbook analysis of an increase in government spending that is deficit financed, and the Barro critique which shows that budget deficits are completely neutral. The effects on financial variables of the budget deficit are outlined in the next section.

C. The Financial Sector

The theoretical framework that underlies the financial sector is based on the reserve multiplier concept of money supply, wherein the latter is defined as the product of the money multiplier and the monetary base or reserve money.

The basic argument of the reserve multiplier approach is that the money multiplier cannot be assumed constant since the behavior of the public and the banks change over time. Hence, total liquidity is determined both by policy actions of the monetary authorities on the one hand, and by decisions of the public and the banks, on the other. The latter is reflected in behavioral equations for the ratio of currency to traditional deposits, demand for savings, time and demand deposits and deposit substitutes and reserves, which in turn enter into the determination of the money multiplier. To close the model, the monetary base is determined from the sources side or the items in the asset side of the Central Bank, i.e., net domestic assets, net foreign assets and reserve eligible government securities. It is in the source side where the effects of government budget deficits and movements in the balance of payments account on the

money supply are reckoned in the model, i.e., through net domestic assets and net foreign assets, respectively.

Essentially, the demand for the various components of liquidity follow the Brainard-Tobin approach where the returns to all types of liquid assets are included as arguments in the various functions. Hence the amount of currency relative to traditional deposits is explained by returns to deposits, returns to holding currency and a scale variable; demand for savings and time deposits are explained by real time deposit rates and scale variable while deposit substitutes are determined by interest rates on promissory notes. In order to capture the effect of CB reserve requirement policies, total reserves are explained by total deposits and a representative reserve requirement ratio.

The monetary authority's credit to the public sector reflects the monetized part of the government debt and is therefore determined by the level of the government budget deficit. The real rate on Treasury Bills affects the decision of the Central Bank to hold government debt.

Net credit to domestic money banks is assumed as a policy variable while other components of net domestic assets is determined by net foreign assets. This is in relation with offsetting movements in the net foreign assets position of the Central Bank by other components of NDA to keep reserve money within targets prescribed by agreements with the IMF. Net foreign assets on the other hand, is determined by the balance of payments.

Aside from the determination of total liquidity, the financial sector of the model, through the series of equations ultimately leading to the determination of interest rates, sets the linkage between the budget deficit and the monetary sector of the economy.

Consequently, net credit to the national government is assumed to increase with the level of the deficit and real treasury bill rates. Nonbank financing of the deficits depends on the magnitude of the deficit, the ability of the public to provide funds (proxied here by nominal GNP) and the availability of foreign finance. External financing is taken to be an exogenous variable linked to the BOP sector after which financing by domestic money banks is derived as a residual.

This variable then feeds into an identity determining the liquidity position of banks. Based on this, an equation to model the behavior of the 91-day treasury bill rate is estimated wherein greater liquidity of the banking system puts downward pressure on interest rates while inflationary expectations tend to drive it up.

The preceding series of equations outlined allows the possibility of modelling explicitly the crowding out effects of government deficits.

The estimated equations (Equations 60 to 74) yielded coefficients that generally conform to the theoretically expected results. Dummy variables, specially those reflecting the crisis period in late 1983 and which reached a climax in 1984 and 1985, are included when necessary.

Some slight modifications were made on the initial specifications in order to accommodate some data peculiarities. For instance, treasury bill rates were substituted for some equations (e.g., Eqs. 60 and 61) since the behavior of time deposit rates closely followed that of treasury bill rates.

Government deficit significantly explains net credit to the public sector. This completes the chain reaction that begins with the deficit and flows to total liquidity, then to inflation and ends with personal consumption expenditures. This supports Barro's argument that to the extent the public expects inflation, they would decrease their spending in order to maintain a certain level of real cash balances. This gives rise to the possibility that an increase in government outlays which is financed by deficit spending will have neutral effects.

The interest rate equation performed quite well with the adjusted R2 being .995 and all the coefficients being significant and having the right sign (Eq. 71). Net foreign assets was determined to be a function of the peso equivalent of the BOP position of the economy and its value lagged one period (Eq. 69).

D. The External Sector

1. Exports

In version 89, the exports of goods sector have been divided into two sets; i.e., agricultural and manufactured goods. The top two export categories (in terms of value) for each set are modelled individually and the remaining export commodities are grouped together to form a third category. The following classification thus resulted:

a. Agricultural Exports

1. Exports of Coconut Products (XCOCR)
2. Exports of Sugar, Quota and Nonquota (XSRUS, XSROTH)
3. Exports of Other Agricultural Products (XAO)

b. Exports of Manufactured Goods

1. Exports of Semiconductors (XSEMR)
2. Exports of Garments (XGARMR)
3. Exports of Otner Manufactured Goods (XMO)

c. Exports of Other Goods (XO)

For these export categories, export demand equations were estimated in consideration of the fact that majority of Philippine exports are characterized by fierce competition. In general, exports are posited to be influenced positively by export prices in dollar terms, by variables representing economic activity in countries which demand the export good and the real peso value of the first difference of net credit of the Central Bank to deposit money banks. Inclusion of the last variable specifically in exports of manufactured goods reflect refinancing by the Central Bank of the credits granted by commercial banks to domestic investors who are engaged in export-oriented industries.

Individual export prices are largely affected by their specific domestic price. The GDP deflator is also considered as an explanatory variable so as to capture the effects on export prices of the other inputs used in the production of the export commodities. An aggregate export price index is the weighted average of the individual export prices.

Exports of nonfactor services, on the other hand, is posited to be influenced by the real peso value of other inflow of non-merchandise trade and inflow of freight and merchandise insurance. These variables originate from the balance of payments account. Price of nonfactor services follow closely movements in merchandise export prices.

Estimated equations for the export sector generally have good fits and significant t-values for the coefficients (Eqs. 75 to 91). Dummy variables were included in some of the agricultural export equations to take stock of production aberrations resulting from weather disturbances. For exports of other agricultural products, Japanese GNP was found to be a significant variable reflecting her role as a major consumer of local bananas, pineapple, shrimps and prawns.

Real value of credit of the CB to domestic money banks appeared significantly in exports of manufactures. This is reflective of the supportive role of export finance and credit in encouraging exports.

2. Imports

Merchandise imports is the aggregate of the following categories.

(1) Imports of fuel, lubricants, and other related materials (M1FUEL)

(2) Imports of machinery and transport equipment (M2MACH)

(3) Imports of base metals (M3BM)

(4) Imports of cereals and cereal products (M4C)

(5) Imports of chemical elements and compounds (M5CHEM)

(6) Imports of textile yarns (M7TEXT)

(7) Imports of other commodities (IMOTHR)

Demand functions for these imports are generally determined negatively by import prices and positively by domestic economic activity. Exceptions to this form are demand equations for machinery, base metals, and chemicals. Decisions to import these capital goods relied heavily on the availability of foreign reserves. Thus, instead of the price variable, the average level of net foreign assets is incorporated in the specifications.

On the other hand, import price equations are essentially determined by dollar prices of the import commodity, exchange rates and average tariff rates. Unfortunately, the dollar equivalent price indices were not easily available for all the commodity sets specified here. Time series data on dollar import price indices for fuel and nonfuel categories were used instead.

The absolute value of the t-ratio for the coefficient of the relative price variable for fuel product imports is rather low (Eq. 92). This is an indication that since a large part of the country's energy requirements are derived from imported sources, the price of fuel may not be the major determinants of the volume of fuel to import, but rather the level of economic activity.

For imports of machinery and basic metals, the availability of reserves play a significant role (Eqs. 93 to 94). Likewise, dummy variables representing period of crisis reflect a significant drop in import demand for these items as the level of investment expenditures during these years dropped considerably.

Of the import commodities considered, cereals face higher substitution possibilities relative to the domestic market. To account for this, the equation for this import commodity includes a term representing relative price of cereal imports with domestic prices (Eq. 95). This representation explains the behavior of imports of cereals.

Personal consumption expenditures turned out to be the more appropriate activity variable for the import of textile (Eq. 97). This is because textile yarns are the principal components of

manufacture of clothing, a basic necessity. A dummy variable for 1986 was included to account for the sudden upsurge in demand following the political transition of 1986. The same determinants appear significantly in imports of other goods (Eq. 98).

3. Balance of Payments

The balance of payments is regarded as the sum of the current balance, capital balance plus the monetization of gold, allocation of SDR, unremitted arrears and revaluation adjustment (Identity 53). In turn, the current balance is the sum of net merchandise and nonmerchandise trade and net transfers. Real exports and imports are converted to nominal dollar export and imports by multiplying them by implicit dollar prices for exports and imports, respectively (Identity 43 and 46). The implicit dollar price for exports is determined by the dollar export price index while that for imports is determined by a weighted average of fuel and nonfuel dollar price indices (Equations 113 and 114).

Except for payments and receipts for freight and insurance, other components of inflow and outflow of nonmerchandise trade are exogenous. The endogenous components are determined by dollar imports and exports, respectively.

Net dollar factor inflows; personal and interest income less interest payments and other investment expenses, determine nominal peso net factor income (Eq. 41). Note that for factor and nonfactor flows, dollar values determine peso values while the reverse is true for merchandise flows.

The capital account balance is the sum of net short-term capital, net medium and long-term capital, and net direct investments (Identity 52). All of these components had to be made exogenous because their erratic behavior made modelling difficult. However, their exogenous nature serves to make them more amenable to changes in debt policies and rescheduling agreements.

The overall balance of payments in peso terms is directly related to net foreign assets although the components of NFA; increase/decrease in CB reserve and the increase/decrease in net foreign exchange position of commercial banks are the proper transmission linkages.

Equations for the endogenous BOP components are shown in the Appendix (Eqs. 108 to 109). They show generally good fits and significant t-values for the coefficients.

IV. MODEL VALIDATION

In order to model the tracking ability of the model, a fully dynamic simulation was performed for the period from 1977 to 1987. The complete results are presented in Appendix 3.

In general, deviations of the estimated or simulated values from the actual values are less than 10 percent. Of note is the good tracking ability of the model with respect to GNP; with an RMSPE of 1.3 percent, CPI, 5.5 percent, and full-time employment, 7.9 percent. It is only with the financial variables that disappointing results are obtained. The RMSPE for the monetary base (MB) and total liquidity are about equal at 10 percent, and those of the other financial variables are worse.

Despite the erratic behavior of the financial sector, the overall tracking ability of the model with respect to the real, external and fiscal variables is quite good.

In comparing the performance of the current version of the model with the previous, mixed results are obtained (Table 1). It is expected that because of its larger size, Version 89 would yield higher RMSPEs. However, one observes lower statistics of fit for variables such as GNP, NWAGUS and FTUERA. The expansion of the model did not cause any major trade-offs in terms of poorer tracking ability.

Table 1
DYNAMIC SIMULATION RESULTS

Variable	Root Mean Square % Error Version 87 (1976 - 1985)	Root Mean Square % Error Version 89 (1977-1987)
Output:	1.59	1.32
Gross National Product (GNP)	1.36	1.33
Gross Domestic Product (GDP)	6.01	4.61
Nominal GNP (GNPN)		
Demand:		
Private Consumption (CP)	0.68	0.92
Government Consumption (CG)	3.75	6.98
Private Construction (CONSPR)	5.46	7.51
Government Construction (CONSGO)	5.46	12.41
Durable Equipment Investment (IDER)	7.00	3.17
Exports of Goods (XGDS)	6.33	3.62
Exports of Nonfactor Services (XSV)	6.05	12.81
Imports of Goods (MGDS)	6.26	6.16
Imports of Nonfactor Services (MSV)	8.34	12.20
Production:		
Agriculture (VAR)	1.64	2.26
Industry (VIR)	2.79	2.73
Services (DSER)	1.45	1.62
Prices and Wages:		
GNP Deflator (PGNP)	5.20	5.20
GDP Deflator (PGDP)	5.21	5.23
Consumer Price Index (CPI)	6.71	5.52
Nominal Wage (NWAGUS)	4.41	3.72
Employment:		
Labor Force (LF)	1.13	1.29
Total Employment (FTEM45)	1.58	3.26
Unemployment Rate (FTUERA)	33.98	9.66
Fiscal Sector:		
Tax Revenue (TAXREV)	5.50	9.10
Nontax Revenue (NTAXRE)	6.52	6.75
Budget Deficit (DEFG)	206.53	68.10
BOP Sector:		
Trade Balance (TRABAL)	23.61	12.06
Current Account Balance (CURBAL)	31.77	32.49
Balance of Payments (BOP)	134.59	135.44
Financial:		
Net Domestic Assets (NDA)	24.72	12.06
Net Foreign Assets (NFA)	31.77	32.49
Money Supply (MS)	8.61	8.08
Total Liquidity (TL)	8.61	10.11
Others:		
Statistical Discrepancy (STATD)	1066.69	1185.18
Capital Stock (K66)	0.80	1.25

Appendix 1
MACROECONOMETRIC MODEL
COMPLETE VERSION

LIST OF BEHAVIORAL EQUATIONS

I. REAL SECTOR

A. Production Subsector

1. Production of Palay

$$PRPAL = \underset{(-2.24)}{-3843.6418} + \underset{(2.37)}{1.0971263} * PALHAS - \underset{(-3.66)}{878.57441} * DUMDR + \underset{(4.11)}{781.35759} * FPPAL$$

$$+ \underset{(2.48)}{0.8228822} * RBLOAN/(PGNP/100) + \underset{(9.18)}{0.7852773} * PRPAL_{-1}$$

$\bar{R}^2 = 0.967$ SEE = 223.42 D.W. = 3.36 1972 - 1987

2. Demand for Rice

$$DRICE = \underset{(1.78)}{1635.143} + \underset{(3.38)}{0.0532240} * CP - \underset{(-1.78)}{522.54691} * (FPPAL / FPCORN) + \underset{(2.28)}{786.57057} *$$

$$(TLA / POTGNP) + \underset{(2.27)}{499.434} * DUM72$$

$\bar{R}^2 = 0.960$ SEE = 173.04 D.W. = 1.57 1972 - 1987

3. Farmgate Price of Palay

$$FPPAL = \underset{(6.27)}{0.5996217} + \underset{(1.68)}{0.0228494} * (PPFET * ER)/(PPFET_{1972} * ER_{1972}) + \underset{(1.59)}{0.0206881}$$

$$* WLAGRI + \underset{(2.52)}{0.0023819} * PMGDS - \underset{(-5.71)}{0.0004745} * INVRIC_{-1}$$

$\bar{R}^2 = 0.991$ SEE = 0.08 D.W. = 1.60 1972 - 1987

4. Implicit Price Deflator for Palay

$$PPAL = \underset{(-3.47)}{-52.590748} + \underset{(18.18)}{181.77055} * FPPAL - \underset{(-7.00)}{123.67049} * DUM86 + \underset{(2.73)}{4.6284137} * TIME$$

$\bar{R}^2 = 0.991$ SEE = 15.51 D.W. = 1.64 1972 - 1987

5. GVA for Palay

$$SPALAY = \underset{(0.27)}{27.307371} + \underset{(38.06)}{0.5269034} * PRPAL$$

$\bar{R}^2 = 0.988$ SEE = 75.96 D.W. = 1.51 1970 - 1987

6. Demand for Corn

$$DCORN = \underset{(1.38)}{193.42233} - \underset{(-2.10)}{3.1872104} * PINCO/(FPPAL/FPPAL_{1972}) - \underset{(-3.79)}{262.42978}$$

$$* DUM83 + \underset{(2.61)}{0.0133413} * (CP + CG) + \underset{(3.31)}{0.6405215} * DCORN_{-1}$$

$\bar{R}^2 = 0.939$ SEE = 64.072 D.W. = 2.04 D.H. = -0.12 1972 - 1987

7. GVA for Corn

$$SCORN = \underset{(2.11)}{296.56649} + \underset{(5.64)}{3.6653713} * PINCO + \underset{(5.53)}{0.6647054} * RBLOAN/(PGNP/100)$$

$$\underset{(-3.38)}{- 0.0485925} * (PPFET*ER / (PGNP/100)) \underset{(-2.77)}{- 0.3153076} * PMFUEL + \underset{(2.18)}{217.81030}$$

$$* DUM86$$

$\bar{R}^2 = 0.915$ SEE = 86.94 D.W. = 2.17 1970 - 1987

8. Implicit Price Index for Sugar

$$PSUG = \underset{(-2.15)}{-142.69041} - \underset{(-3.40)}{0.1283684} * SSUGAR + \underset{(8.99)}{0.0072221} * (CP + CG + XSRUS + XSROTH)$$

$$+ \underset{(3.19)}{0.0139878} * (PPFET*ER / (PGNP/100)) + \underset{(3.28)}{140.23460} * DUM87$$

$\bar{R}^2 = 0.936$ SEE = 34.50 D.W. = 1.69 1970 - 1987

9. GVA for Sugar

$$SSUGAR = \underset{(2.41)}{386.22899} + \underset{(5.36)}{0.4674804} * (RBLOAN / (PGNP/100)) + \underset{(1.97)}{0.8963309} * SUGHAS$$

$$+ \underset{(3.43)}{242.94124} * D8482 - \underset{(-2.00)}{142.43670} * D8583 + \underset{(3.00)}{336.85146} * DUM76$$

$\bar{R}^2 = 0.868$ SEE = 93.203 D.W. = 1.98 1970 - 1987

10. Implicit Price Index for Coconut Products

$$PCOCO = \underset{(0.21)}{26.775900} - \underset{(-1.84)}{0.2357213} * SCOCO + \underset{(2.28)}{0.0071906} * (CP + CG + XCOCR)$$

$$+ \underset{(2.52)}{0.2967630} * WPI + \underset{(4.53)}{556.63750} * DUM84$$

$\bar{R}^2 = 0.874$ SEE = 86.30 D.W. = 1.19 1967 - 1987

11. GVA for Coconut

$$SCOCO = -710.27995 + 0.0037444 * COCOTR + 0.1421986 * PTEMPA - 445.36771 * D7484$$
$$(-5.51) \quad (10.67) \quad (6.88) \quad (-7.16)$$

$\bar{R}^2 = 0.933$ SEE = 83.306 D.W. = 1.85 1967 - 1987

12. Supply for Other Crops

$$SOTHCR = -3112.3398 + 14.242960 * PINOC + 2.6526492 * RBLOAN/(PGNP/100)$$
$$(-3.04) \quad (19.15) \quad (6.81)$$
$$+ 2.3313582 * MlFUEL - 0.1443783 * (PPFET * ER/(PGNP/100))$$
$$(2.70) \quad (-2.82)$$
$$- 1518.1472 * DUM87$$
$$(-3.20)$$

$\bar{R}^2 = 0.966$ SEE = 361.701 D.W. = 1.56 1970 - 1987

13. Demand for Other Crops

$$DOTHCR = -1552.7931 - 0.9348176 * PINOC + 0.0553439 * (XCOCR + XSRUS$$
$$(-2.18) \quad (-1.48) \quad (2.47)$$
$$+ XSROTH + XAO + CP + CG) + 0.7109875 * DOTHCR_{-1}$$
$$(4.31)$$

$\bar{R}^2 = 0.991$ SEE = 200.180 D.W. = 1.52 D.H. = 1.58 1968 - 1987

14. Loans to Rural Banks

$$RBLOAN = 283.69535 + 0.0169244 * TL - 1834.3517 * D8487 + 0.6101923 * RBLOAN_{-1}$$
$$(2.04) \quad (4.49) \quad (-6.34) \quad (6.33)$$

$\bar{R}^2 = 0.952$ SEE = 257.610 D.W. = 1.84 D.H. = 0.37 1971 - 1987

15. Price of Fertilizer (average of ammosul and urea prices)

$$PFERT = -1.7388314 + 0.0000972 * (PPFET * ER) + 0.0048548 * FERTC_{-1} - 4.5111423$$
$$(-2.96) \quad (7.76) \quad (5.37) \quad (-10.74)$$
$$D8687 + 0.4216563 * PFERT_{-1}$$
$$(6.38)$$

$\bar{R}^2 = 0.973$ SEE = 0.420 D.W. = 2.41 D.H. = -0.88 1971 - 1987

16. Supply of Livestock and Poultry

SLIVPO = 1185.0476 + 6.7256591 * PLIVPO - 25.611844 * (PFEEDS * ER / (PGNP/100))
(1.49) (5.16) (-0.64)

+ 1.0940132 * RBLOAN/(PGNP/100) - 475.00000 * D7585 - 0.6139656 *
(2.19) (-2.58) (2.04)

(1185.0476 + 6.7256591 * PLIVPO $_{-1}$ - 25.611844 * (PFEEDS $_{-1}$ *

ER $_{-1}$ / (PGNP $_{-1}$/100)) + 1.0940132 * RBLOAN $_{-1}$/(PGNP $_{-1}$/100) - 475.00000

D7585 $_{-1}$ - SLIVPO $_{-1}$)

$\bar{R}^2$ = 0.931 SEE = 249.209 D.W. = 2.06 1971 - 1987

17. Demand for Livestock and Poultry

DLIVPO = -1011.6519 - 1.5335159 * PLIVPO + 0.0658811 * CP + 1683.4837 * (TLA / POTGN
(-0.31) (-1.17) (1.41) (1.85)

- 0.8670819 * (-1011.6519 - 1.5335159 * PLIVPO $_{-1}$
(1.85)

+ 0.0658811 * CP $_{-1}$ + 1683.4837 * (TLA $_{-1}$ / POTGNP $_{-1}$) - DLIVPO $_{-1}$)

$\bar{R}^2$ = 0.977 SEE = 146.83 D.W. = 1.89 D.H. = 0.52 1968 - 1987

18. Supply of Fishery

SFISH = 318.75240 + 0.6173246 * PINFI + 0.2467451 * RBLOAN/(PGNP/100) + 0.8281502 *
(1.63) (1.58) (2.25) (7.83)

SFISH $_{-1}$

$\bar{R}^2$ = 0.988 SEE = 75.190 D.W. = 2.46 D.H. = -1.10 1970 - 1987

19. Demand for Fishery

DFISH = -2387.6331 - 1.8093206 * PINFI + 135.11154 * POP + 491.69760
(-6.54) (-2.77) (12.85) (1.07)

* (TLA / POTGNP)

$\bar{R}^2$ = 0.990 SEE = 81.72 D.W. = 1.90 1967 - 1987

20. Implicit Price Index for Mining and Quarrying

$$PMQ = 201.51025 - 268.21625 * (K66/K66_{1972}) + 577.84615 * (TLA / POTGNP) + 0.5127094 * PM - 0.5003728 * (201.51025 - 268.21625 * (K66_{-1}/K66_{1972}) + 577.84615 * (TLA_{-1} / POTGNP_{-1}) + 0.5127094 * PM - PMQ_{-1})$$
(1.67) (-2.12) (2.08) (1.40) (2.01)

$\bar{R}^2 = 0.956$ SEE = 50.660 D.W. = 1.36 1968 - 1987

21. Demand for Mining and Quarrying

$$DMQ = 82.442063 - 0.4636463 * PMQ + 0.0085411 * (CP + CG + GDCF + X - M) + 0.6444336 * DMQ_{-1}$$
(0.59) (-2.59) (1.55) (3.42)

$\bar{R}^2 = 0.925$ SEE = 109.796 D.W. = 1.54 D.H. = 1.90 1968 - 1987

22. Implicit Price Index for Food

$$PFOOD = -52.918157 - 75.259504 * (K66/K66_{1972}) + 1.8383088 * NWAGUS + 148.38298 * (TLA / POTGNP) + 0.0287975 * PMFUEL + 0.0809116 * PFOOD_{-1}$$
(-1.71) (-2.89) (8.35) (2.13) (2.40) (1.06)

$\bar{R}^2 = 0.998$ SEE = 8.81 D.W. = 1.22 1968 - 1987

23. Demand for Food

$$DFOOD = -1820.3876 - 1.9603987 * PFOOD + 0.1686656 * (CP + CG) + 254.59583 * D8485$$
(-10.12) (-6.60) (42.07) (2.23)

$\bar{R}^2 = 0.996$ SEE = 125.75 D.W. = 2.06 D.H. = 1.85 1967 - 1987

24. Implicit Price Index for Semiconductors

$$PSEM = \underset{(2.73)}{85.964615} + \underset{(5.27)}{228.38198} * (TLA/GNP) + \underset{(2.28)}{0.1169713} * PM - \underset{(-1.80)}{53.969034} * (K66/K66_{1972}) - \underset{(4.03)}{0.7746251} * (85.964615 + 228.38198 * (TLA_{-1}/GNP_{-1}) + 0.1169713 * PM_{-1} - 53.969034 * (K66_{-1}/K66_{1972}) - PSEM_{-1})$$

$\bar{R}^2 = 0.997$ SEE = 6.44 D.W. = 1.14 D.H. = 3.77 1968 - 1987

25. Demand for Semiconductors

$$DSEMR = \underset{(-2.35)}{-805.75470} - \underset{(-2.39)}{27.065146} * (PSEM / ER) + \underset{(5.07)}{0.0351225} * (CP + CG) + \underset{(3.99)}{0.1815210} * XSEMR$$

$\bar{R}^2 = 0.964$ SEE = 101.84 D.W. = 1.47 1973 - 1987

26. Implicit Price Index for Garments

$$PGARM = \underset{(-0.17)}{-10.977749} - \underset{(-2.38)}{129.26773} * (K66/K66_{1972}) + \underset{(3.26)}{459.72255} * (TLA / GNP) + \underset{(2.84)}{1.4845227} * NWAGUS + \underset{(1.02)}{0.0279995} * PMTEXT$$

$\bar{R}^2 = 0.993$ SEE = 23.70 D.W. = 1.11 1967 - 1987

27. Demand for Garments

$$DGARMR = \underset{(-3.83)}{-1353.5405} - \underset{(-1.62)}{0.3517326} * PGARM + \underset{(1.65)}{0.0802361} * XGARMR + \underset{(5.48)}{49.963629} * POP - \underset{(1.69)}{0.4073175} * (-1353.5405 - 0.3517326 * PGARM + 0.0802361 * XGARMR_{-1} + 49.963629 * POP_{-1} - DGARMR_{-1})$$

$\bar{R}^2 = 0.979$ SEE = 48.090 D.W. = 2.40 1968 - 1987

28. Implicit Price Index for Other Manufactured Goods

$$PMFGO = \underset{(-0.81)}{-45.733131} - \underset{(-2.58)}{93.313171} * (K66/K66_{1972}) + \underset{(2.90)}{1.6742899} * NWAGUS + \underset{(2.21)}{210.53403} * (TLA / POTGNP) + \underset{(1.58)}{0.3454161} * PM$$

$\bar{R}^2 = 0.996$ SEE = 17.37 D.W. = 1.36 1967 - 1987

29. Demand for Other Manufactured Goods

$$DMFGO = -356.94063 - 5.1633861 * PMFGO + 0.1491488 * (CP + CG + GDCF + X - M)$$
$$(-0.37) \quad (-7.64) \quad (11.54)$$

$$- 0.6037344 * (-356.94063 - 5.1633861 * PMFGO_{-1}$$
$$(2.98)$$

$$+ 0.1491488 * (CP_{-1} + CG_{-1} + GDCF_{-1} + X_{-1} - M_{-1}) - DMFGO_{-1}$$

$\bar{R}^2 = 0.981$ SEE = 297.80 D.W. = 1.50 D.H. = 2.66 1968 - 1987

30. Implicit Price Index for Construction

$$PCONS = 73.072833 + 308.77104 * (TLA/GNP) - 83.902004 * (K66/K66_{1972})$$
$$(2.27) \quad (4.27) \quad (-2.46)$$

$$+ 0.4310377 * PM - 0.5216693 * (73.072833$$
$$(4.19) \quad (2.15)$$

$$+ 308.77104 * (TLA_{-1}/GNP_{-1}) - 83.902004 * (K66_{-1}/K66_{1972})$$

$$+ 0.4310377 * PM_{-1} - PCONS_{-1})$$

$\bar{R}^2 = 0.997$ SEE = 11.894 D.W. = 1.33 1968 - 1987

31. Demand for Construction

$$DCONS = -3047.8481 - 4.2207795 * PCONS + 0.5153675 * (CONSPR + CONSGO)$$
$$(-8.38) \quad (-7.53) \quad (24.94)$$

$$+ 0.0962132 * CP$$
$$(7.65)$$

$\bar{R}^2 = 0.998$ SEE = 93.604 D.W. = 1.51 1967 - 1987

32. Implicit Price Deflator for Electricity, Gas, and Water

$$PEGW = 8.5462566 + 0.4293678 * WPI + 0.5290510 * PEGW_{-1}$$
$$(2.69) \quad (16.42) \quad (13.75)$$

$\bar{R}^2 = 0.999$ SEE = 8.940 D.W. = 2.42 D.H. = -0.95 1968 - 1987

33. Supply of Electricity, Gas, and Water

$$SEGW = 59.771191 + 1.4453576 * PEGW + 0.2120555 * M1FUEL + 0.0149691 * EXPEGW$$
$$(0.39) \quad (15.86) \quad (1.81) \quad (3.15)$$

$\bar{R}^2 = 0.987$ SEE = 50.114 D.W. = 1.64 1970 - 1987

34. Implicit Price Index for Services

$$PSER = \underset{(\emptyset.1\emptyset)}{690.69107} + \underset{(13.37)}{\emptyset.5927662} * WPI - \underset{(9.68)}{\emptyset.9902841} * (690.69107 + \emptyset.5927662 * WPI - PSER_{-1})$$

$\bar{R}^2 = \emptyset.997$ SEE = 13.580 D.W. = 1.73 D.H. = $\emptyset.67$ 1968 - 1987

35. Demand for Services

$$DSER = \underset{(1.33)}{953.985753} - \underset{(-1.84)}{3.3657624} * PSER + \underset{(5.16)}{\emptyset.3555154} * (VAR + VIR) + \underset{(2.71)}{1979.2286} * DUM86 + \underset{(4.27)}{3392.3057} * DUM87 + \underset{(3.11)}{\emptyset.4478446} * DSER_{-1}$$

$\bar{R}^2 = \emptyset.997$ SEE = 406.158 D.W. = 2.56 D.H. = -1.65 1968 - 1987

B. Expenditures

36. Private Consumption

$$CP = \underset{(\emptyset.25)}{266.39545} + \underset{(2.20)}{\emptyset.0716592} * (GNP - TOTTAX/(CPI/1\emptyset\emptyset)) + \underset{(2.07)}{\emptyset.3417616} * MSA/(CPI/1\emptyset\emptyset) - \underset{(-2.31)}{54.837244} * INFL - \underset{(-2.30)}{69.353811} * (TBILL - INFL) + \underset{(6.67)}{2403.8243} * DUM87 + \underset{(18.31)}{\emptyset.9095694} * CP_{-1}$$

$\bar{R}^2 = \emptyset.999$ SEE = 254.336 D.W. = $\emptyset.84$ D.H. = 2.52 1970 - 1987

37. Private Construction Investment

$$CONSPR = \underset{(-1.27)}{-933.83311} + \underset{(2.51)}{\emptyset.0330963} * GNP + \underset{(2.04)}{2.2381456} * (NFA + NFA_{-1})/PGNP - \underset{(-2.56)}{21.209493} * INFL - \underset{(-4.54)}{1505.1586} * D8586 + \underset{(7.36)}{\emptyset.7723189} * CONSPR_{-1}$$

$\bar{R}^2 = \emptyset.965$ SEE = 321.23 D.W. = 1.71 D.H. = $\emptyset.67$ 1971 - 1987

38. Durable Equipment

$$IDER = -41.229669 + 0.0524309 * GNP + 5.5607155 * (NFA + NFA_{-1})/PGNP - 132.34329$$
$$(-0.03) \qquad (2.11) \qquad (1.58) \qquad (-2.40)$$

$$* (TBILL - INFL) - 106.95087 * INFL - 2856.9466 * DUM84$$
$$(-2.32) \qquad (-2.44)$$

$$+ 0.7084851 * IDER_{-1}$$
$$(4.94)$$

$\bar{R}^2 = 0.948$ SEE = 582.778 D.W. = 2.051 D.H. = -0.13 1971 - 1987

39. Government Consumption at Current Prices (National Income Accounts)

$$CGN = 321.52235 + 1.0117697 * (OPEXPO - INTPAY)$$
$$(0.52) \qquad (41.80)$$

$\bar{R}^2 = 0.990$ SEE = 1650.257 D.W. = 1.71 1969 - 1987

40. Government Construction at Current Prices (National Income Accounts)

$$CGOVN = 275.06025 + 0.2140590 * CAPUTO + 2190.8239 * D7687$$
$$(0.58) \qquad (2.27) \qquad (1.93)$$

$$- 2559.2550 * D8387 + 0.8155486 * CGOVN_{-1}$$
$$(-2.66) \qquad (8.02)$$

$\bar{R}^2 = 0.981$ SEE = 1154.822 D.W. = 2.69 D.H. = -1.67 1969 - 1987

41. Net Factor Income from Abroad at Current Prices

$$NFIAN = -284.03450 + 0.5254075 * ((INTINC + INCREM - MINT\$ - INCOUT) * ER)$$
$$(-1.75) \qquad (31.32)$$

$$+ 1515.7937 * D7980 + 1128.6943 * DUM86 + 8731.0021 * DUM87$$
$$(3.88) \qquad (1.80) \qquad (13.83)$$

$\bar{R}^2 = 0.988$ SEE = 512.340 D.W. = 1.96 1970 - 1987

42. Capital Consumption Allowance (Real)

$$KCAR = -35874.303 + 0.0567449 * K66 - 0.9996633 * (-35874.303 + 0.0567449 * K66$$
$$(-0.01) \qquad (3.97) \qquad (15.28)$$

$$- KCAR_{-1})$$

$\bar{R}^2 = 0.982$ SEE = 345.355 D.W. = 0.73 D.H. = 2.97 1968 - 1987

C. Prices, Wages and Employment

43. Potential Output

$$\ln POTGNP = -1.3910135 + 0.7715689 * \ln(K66) + 0.3440322 * \ln(LF)$$
$$(-1.74) \qquad (16.03) \qquad (2.68)$$

$$- 0.1774989 * D8485 - 0.2401505 * D8687$$
$$(-5.84) \qquad (-5.72)$$

$\bar{R}^2 = 0.984$ SEE = 0.036 D.W. = 1.16 1967 - 1987

44. Consumer Price Index

$$CPI = -12.414450 + 1.0875602 * PGDP$$
$$(-4.54) \qquad (138.60)$$

$\bar{R}^2 = 0.999$ SEE = 7.689 D.W. = 1.70 1967 - 1987

45. Wholesale Price Index

$$\ln WPI = -0.7672277 + 0.2203212 * \ln(TLA/POTGNP) + 0.7326944 * \ln(NWAGUS)$$
$$(-1.04) \qquad (2.03) \qquad (6.77)$$

$$+ 0.5176513 * \ln PM - 0.3405319 * (-0.7672277 + 0.2203212$$
$$(5.48) \qquad (1.59)$$

$$* \ln(TLA_{-1}/POTGNP_{-1}) + 0.7326944 * \ln(NWAGUS_{-1}) + 0.5176513 * \ln PM_{-1}$$

$$\ln(WPI_{-1}))$$

$\bar{R}^2 = 0.998$ SEE = 0.041 D.W. = 2.07 D.H. = -0.54 1968 - 1987

46. Implicit Price Deflator for Government Consumption

$$PCG = 15.222255 + 0.2067080 * WPI + 0.7153703 * PCG_{-1}$$
$$(4.79) \qquad (11.27) \qquad (17.81)$$

$\bar{R}^2 = 0.999$ SEE = 6.591 D.W. = 1.87 D.H. = 0.30 1968 - 1987

47. Implicit Price Deflator for Government Construction

$$PCGOV = 26.140041 + 0.6099197 * WPI + 0.2627798 * PCGOV_{-1}$$
$$(5.13) \qquad (14.23) \qquad (4.33)$$

$\bar{R}^2 = 0.997$ SEE = 13.93 D.W. = 1.07 D.H. = 2.16 1968 - 1987

48. Implicit Price Deflator for Net Factor Income from Abroad

$$PNFIA = 1.0954168 + 1.0078414 * PGDP$$
$$(0.13) \qquad (40.99)$$

$\bar{R}^2 = 0.988$ SEE = 24.094 D.W. = 2.42 1967 - 1987

49. Implicit Price Deflator for Gross Domestic Capital Formation

$$PGDCF = \underset{(7.84)}{25.943678} + \underset{(23.04)}{0.6361026} * WPI + \underset{(4.22)}{0.1733225} * PGDCF_{-1}$$

$\bar{R}^2 = 0.999$ SEE = 9.140 D.W. = 1.57 D.H. = 0.983 1968 - 1987

50. Employment in Agriculture Sector (Full-Time Equivalent)

$$FTEMPA = \underset{(-0.82)}{-882.49223} + \underset{(2.60)}{0.2940476} * VAR - \underset{(-2.57)}{0.0192386} * K66 - \underset{(-5.84)}{2008.8180} * DUM77 + \underset{(6.94)}{2231.9068} * DUM86 + \underset{(1.72)}{810.86496} * DUM87 + \underset{(5.33)}{0.7917470} * FTEMPA_{-1}$$

$\bar{R}^2 = 0.919$ SEE = 282.449 D.W. = 1.24 D.H. = 2.288 1968 - 1987

51. Employment in Industrial Sector (Full-Time Equivalent)

$$FTEMPI = \underset{(18.72)}{1155.5613} + \underset{(4.80)}{0.0572846} * VIR - \underset{(-2.39)}{0.0040155} * K66 + \underset{(4.83)}{678.09198} * D8687 + \underset{(3.67)}{461.14931} * D8485$$

$\bar{R}^2 = 0.933$ SEE = 76.721 D.W. = 1.64 1968 - 1987

52. Employment in Services Sector (Full-Time Equivalent)

$$FTEMPS = \underset{(-0.41)}{-92.472011} + \underset{(2.03)}{0.0319332} * DSER + \underset{(2.93)}{462.04349} * D8687 + \underset{(5.53)}{1002.5985} * DUM71 + \underset{(6.08)}{0.8221102} * FTEMPS_{-1}$$

$\bar{R}^2 = 0.976$ SEE = 156.876 D.W. = 2.40 D.H. = -1.11 1968 - 1987

53. Labor Force

$$LF = \underset{(-3.96)}{-1614.4106} + \underset{(4.33)}{0.3695569} * POP15 + \underset{(3.97)}{0.5180981} * LF_{-1}$$

$\bar{R}^2 = 0.992$ SEE = 301.022 D.W. = 2.01 D.H. = -0.04 1968 - 1987

54. Nominal Wage of Unskilled Workers

$$NWAGUS = \underset{(6.97)}{48.478542} + \underset{(6.37)}{0.2289503} * CPI - \underset{(-1.47)}{20.145036} * FTUERA + \underset{(3.82)}{22.746527} * D8485 + \underset{(2.97)}{0.3096627} * NWAGUS_{-1}$$

$\bar{R}^2 = 0.998$ SEE = 3.426 D.W. = 2.06 D.H. = -0.16 1968 - 1987

II. FISCAL SECTOR

55. Direct Tax

$$DIRTAX = \underset{(-1.08)}{-769.79112} + \underset{(3.89)}{0.0188618} * GNPN + \underset{(2.68)}{0.4735856} * DIRTAX_{-1}$$

$\bar{R}^2 = 0.969$ SEE = 1110.43 D.W. = 1.77 D.H. = 0.508 1976 - 1987

56. Taxes on International Trade

$$TRADET = \underset{(5.68)}{1591.1519} + \underset{(42.76)}{0.1600963} * (MGDS * (PMGDS/100))$$

$$+ \underset{(-2.86)}{0.8217073} * (1591.1519 + 0.1600965 * (MGDS_{-1} * (PMGDS_{-1}/100)))$$

$$- TRADET_{-1})$$

$\bar{R}^2 = 0.986$ SEE = 701.103 D.W. = 1.87 D.H. = 2.39 1976 - 1987

57. Taxes on Property, Goods and Services, and Other Taxes

$$OTHTAX = \underset{(-1.94)}{-85083.521} + \underset{(3.30)}{65.074619} * PGNP + \underset{(2.55)}{0.7295690} * GNP$$

$$- \underset{(8.18)}{0.8377754} * (-85083.521 + 65.074619 * PGNP_{-1}$$

$$+ 0.7295690 * GNP_{-1} - OTHTAX_{-1})$$

$\bar{R}^2 = 0.961$ SEE = 1951.796 D.W. = 0.61 D.H. = 2.569 1976 - 1987

58. Nontax Revenue

$$NTAXRE = \underset{(-0.95)}{-1622.8263} + \underset{(1.24)}{0.0257444} * GNP + \underset{(3.33)}{4.8886589} * PGNP$$

$$+ \underset{(7.82)}{5231.2746} * D8687 + \underset{(4.38)}{0.5566804} * NTAXRE_{-1}$$

$\bar{R}^2 = 0.989$ SEE = 473.244 D.W. = 2.83 D.H. = -1.61 1976 - 1987

59. Total Tax

$$TOTTAX = \underset{(1.62)}{3148.9698} + \underset{(22.63)}{1.0186692} * TAXREV$$

$\bar{R}^2 = 0.977$ SEE = 3447.063 D.W. = 1.26 1975 - 1987

III. FINANCIAL SECTOR

60. Ratio of Currency to Traditional Deposits

$$CUTD = \underset{(13.65)}{0.7043379} - \underset{(-5.84)}{0.0057044} * TBILL + \underset{(3.10)}{0.0014732} * INFL - \underset{(-7.54)}{0.1255481} * (GNP/POP$$

$$- \underset{(-1.96)}{0.0374277} * DUM82 + \underset{(4.52)}{0.0862638} * DUM72$$

$\bar{R}^2 = 0.902$ SEE = 0.017 D.W. = 1.49 1970 - 1987

61. Demand for Savings Deposits

$$SD = \underset{(-0.97)}{-3761.8116} + \underset{(6.65)}{827.94575} * (ISD - TBILL) + \underset{(13.25)}{0.1112860} * GNPN$$

$$- \underset{(4.27)}{0.7173503} * (-3761.8116 + 827.94575 * (ISD_{-1} - TBILL_{-1})$$

$$+ 0.1112860 * GNPN_{-1} - SD_{-1})$$

$\bar{R}^2 = 0.991$ SEE = 1948.480 D.W. = 2.10 D.H. = -0.28 1971 - 1987

62. Demand for Time Deposits

$$TD = \underset{(-2.86)}{-8213.0095} + \underset{(3.96)}{857.20577} * ITD + \underset{(8.18)}{0.0508277} * GNPN$$

$$- \underset{(3.31)}{0.6424574} * (-8213.0095 + 857.20577 * ITD_{-1}$$

$$+ 0.0508277 * GNPN_{-1} - TD_{-1})$$

$\bar{R}^2 = 0.973$ SEE = 2370.766 D.W. = 1.49 D.H. = 2.28 1968 - 1987

63. Demand for Deposit Substitutes

$$DS = \underset{(2.86)}{1359.2516} + \underset{(5.34)}{277.30659} * IPN + \underset{(6.64)}{0.0093959} * GNPN - \underset{(-12.35)}{9580.3447} * D8487$$

$$+ \underset{(5.54)}{2123.6218} * DUM81 + \underset{(8.56)}{0.4639750} * DS_{-1}$$

$\bar{R}^2 = 0.994$ SEE = 305.174 D.W. = 2.43 D.H.= -0.79 1975 - 1987

64. Money Supply

$$MS = \underset{(6.49)}{7374.7129} - \underset{(-4.25)}{399.78457} * TBILL + \underset{(28.07)}{0.0698149} * GNPN$$

$\bar{R}^2 = 0.983$ SEE = 1790.821 D.W. = 1.65 1970 - 1987

65. Total Reserves of Deposit Money Banks

$$\ln TRES = \underset{(-2.61)}{-4.4468472} + \underset{(2.48)}{1.3432924} * \ln(RR) + \underset{(2.01)}{0.2835339} * \ln(DTRAD + DS)$$

$$+ \underset{(5.27)}{0.7033329} * \ln(TRES_{-1})$$

$\bar{R}^2 = 0.984$ SEE = 0.126 D.W. = 2.31 D.H. = -0.78 1971 - 1987

66. Monetary Authorities Credit to the Public Sector and Reserve Eligible Government Securities

$$DMACPS = \underset{(1.95)}{1231.5801} + \underset{(4.95)}{293.89696} * (TBILL - INFL) + \underset{(3.02)}{0.2500683} * DEFG$$

$$- \underset{(-6.99)}{19946.922} * DUM86 - \underset{(-20.82)}{48355.660} * DUM87 - \underset{(-2.33)}{0.3773439} * DMACPS_{-1}$$

$\bar{R}^2 = 0.988$ SEE = 1274.327 D.W. = 2.25 D.H. = -0.56 1975 - 1987

67. Net Credit of the Central Bank to the National Government

$$DNCNG = \underset{(-0.68)}{-428.65395} + \underset{(3.20)}{0.2376106} * DEFG + \underset{(6.04)}{298.75314} *$$

$$(TBILL-INFL) - \underset{(7.82)}{19669.256} * DUM86 - \underset{(-31.17)}{43113.691} * DUM87$$

$$+ \underset{(2.92)}{2794.7784} * D7980$$

$\bar{R}^2 = 0.991$ SEE = 1045.32 D.W. = 1.37 1975- 1987

68. Other Components of Net Domestic Assets

$$OTHNDA = \underset{(4.92)}{2511.3206} - \underset{(-5.93)}{0.3686773} * NFA + \underset{(3.44)}{5722.8843} * D8485 + \underset{(5.84)}{14702.698} * D8387$$

$$+ \underset{(21.66)}{0.8186888} * OTHNDA_{-1}$$

$\bar{R}^2 = 0.999$ SEE = 1618.127 D.W. = 1.83 D.H. = 0.36 1971 - 1987

69. Net Foreign Assets

$$NFA = \underset{(0.98)}{520.86578} + \underset{(14.13)}{0.9567145} * (BOP * ER) - \underset{(-18.60)}{28642.008} * D8485 - \underset{(-15.71)}{57601.257} * D8586X$$

$$+ \underset{(2.94)}{3605.5576} * D7879 + \underset{(31.97)}{0.7768525} * NFA_{-1}$$

$\bar{R}^2 = 0.998$ SEE = 1576.78 D.W. = 2.17 D.H. = -0.36 1971 - 1987

70. Nonbank Financing of the Budget Deficit

$$\begin{aligned} FINNB = {} & -4167.0611 + 0.0223082 * GNPN + 0.3439609 * DEFG - 1.0622481 * EXTFIN \\ & (-3.57) \qquad (4.60) \qquad (2.01) \qquad (-4.03) \\ & + 39020.641 * DUM87 + 17683.075 * DUM86 \\ & (17.07) \qquad (4.42) \end{aligned}$$

$\bar{R}^2 = 0.990$ SEE = 1580.995 D.W. = 2.04 1975 - 1987

71. 91-Day Treasury Bill Rate

$$\begin{aligned} TBILL = {} & 6.1928035 + 13.331322 * \ln(CPI) - 12.132958 * \ln(CPI_{-1}) \\ & (0.44) \qquad (4.15) \qquad (-4.98) \\ & - 5.9648238 * ((FUNDS/FUNDS_{-1}) - 1) + 10.798607 * D8485 - 0.7749102 \\ & (-7.45) \qquad (13.51) \qquad (2.52) \\ & (6.1928035 + 13.331322 * \ln(CPI_{-1}) - 12.132958 * \ln(CPI_{-2}) \\ & - 5.9648238 * ((FUNDS_{-1}/FUNDS_{-2}) - 1) + 10.798607 * D8485_{-1} - TBILL \end{aligned}$$

$\bar{R}^2 = 0.995$ SEE = 0.489 D.W. = 1.15 1977 - 1987

72. Average Level of Money Supply

$$\begin{aligned} MSA = {} & 623.06656 + 0.8912203 * ((MS + MS_{-1})/2) + 0.5518095 * (623.06656 \\ & (3.84) \qquad (117.56) \qquad (-2.64) \\ & + 0.8912203 * ((MS_{-1} + MS_{-2})/2) - MSA_{-1}) \end{aligned}$$

$\bar{R}^2 = 0.997$ SEE = 615.187 D.W. = 1.71 D.H. = 1.52 1969 - 1987

73. Average Total Liquidity

$$\begin{aligned} TLA = {} & 1461.5478 + 0.9430502 * ((TL + TL_{-1})/2) - 0.5951142 * (1461.5478 \\ & (1.15) \qquad (60.22) \qquad (2.29) \\ & + 0.9430502 * ((TL_{-1} + TL_{-2})/2) - TLA_{-1}) \end{aligned}$$

$\bar{R}^2 = 0.999$ SEE = 1134.535 D.W. = 1.98 1969 - 1987

74. Reserve-Eligible Government Securities

$$\begin{aligned} REGS = {} & 221.79059 + 0.2217242 * TRES - 4235.6140 * D8587 + 0.7846708 * REGS_{-1} \\ & (1.32) \qquad (5.15) \qquad (-7.43) \qquad (12.69) \end{aligned}$$

$\bar{R}^2 = 0.972$ SEE = 392.924 D.W. = 2.21 D.H. = -0.46 1970 - 1987

IV. EXTERNAL SECTOR

A. Export Sector

75. Exports of Coconut Products

$$XCOCR = -1513.1305 - 4.0161101 * (PXCOC/ER) + 1.1307335 * GNPUS + 5.7335396 * ((NCDMB$$
$$(-7.64) \quad (-2.76) \quad (14.48) \quad (1.78)$$

$$NCDMB_{-1})/PGNP) - 482.74616 * DUM87$$
$$(-4.05)$$

$$+ 228.68929 * D7678 - 567.60827 * D8485$$
$$(3.91) \quad (-5.37)$$

$\bar{R}^2 = 0.949$ SEE = 80.408 D.W. = 2.01 1971 - 1987

76. Nonquota Exports of Sugar

$$XSROTH = -725.3792 - 0.3900718 * XSRUS + 1.2055944 * SSUGAR + 831.15815 * DUMSUG$$
$$(-5.82) \quad (-6.15) \quad (11.06) \quad (8.25)$$

$$+ 0.4843564 * (-725.3792 - 0.3900718 * XSRUS_{-1} + 1.2055944 * SSUGAR_{-1}$$
$$(-1.64)$$

$$+ 831.15815 * DUMSUG_{-1} - XSROTH_{-1})$$

$\bar{R}^2 = 0.914$ SEE = 123.98 D.W. = 1.83 1974 - 1987

77. Exports of Other Agricultural Products

$$XAO = -421.65636 - 15.817345 * (PXAO/ER) + 0.02132857 * GNPJAP - 230.40146 * TIME$$
$$(-0.83) \quad (-3.25) \quad (4.28) \quad (-4.09)$$

$\bar{R}^2 = 0.928$ SEE = 88.022 D.W. = 2.19 1968 - 1987

78. Exports of Semiconductors

$$XSEMR = -5427.5261 + 1.8379268 * GNPUS + 26.157692 * INDJAP - 19.540919 * (PXSEM /$$
$$(-6.65) \quad (2.82) \quad (1.96) \quad (-2.02)$$

$$+ 16.877679 * (NCDMB - NCDMB_{-1})/PGNP + 2129.3489 * DUM84 + 1144.4802 * D8$$
$$(1.97) \quad (5.60) \quad (4.66)$$

$\bar{R}^2 = 0.948$ SEE = 304.96 D.W. = 2.73 1973 - 1987

79. Exports of Garments

$$XGARMR = \underset{(-5.66)}{-2824.9378} - \underset{(-3.28)}{12.024306} * (PXGARM/ER) + \underset{(5.85)}{1.5301654} * GNPUS$$

$$+ \underset{(4.82)}{13.788528} * ((NCDMB - NCDMB_{-1}) / PGNP) + \underset{(4.23)}{0.4794818} *$$

$$* XGARMR_{-1}$$

$\bar{R}^2 = 0.982$ SEE = 122.80 D.W. = 1.95 D.H. = 0.11 1971 - 1987

80. Exports of Other Manufactured Goods

$$XMO = \underset{(-4.40)}{-2195.4170} - \underset{(-6.57)}{3.3347208} * PXMO + \underset{(5.96)}{17.064730} * ((NCDMB - NCDMB_{-1}) / PGNP)$$

$$+ \underset{(5.62)}{25.644014} * INDJAP + \underset{(3.93)}{1.2151838} * GNPUS$$

$\bar{R}^2 = 0.927$ SEE = 106.76 D.W. = 1.88 1971 - 1987

81. Export of Other Goods

$$XO = \underset{(-21.53)}{-10084.326} - \underset{(-12.13)}{5.8366974} * PXO + \underset{(2.38)}{7.8437365} * ((NCDMB - NCDMB_{-1})/PGNP)$$

$$+ \underset{(26.32)}{6.0597085} * GNPUS + \underset{(-2.29)}{0.5842971} * (-10084.326 - 5.8366974 * PXO_{-1}$$

$$+ 7.8437365 * ((NCDMB_{-1} - NCDMB_{-2})/ PGNP_{-1}) + 6.0597085 * GNPUS$$

$$- XO_{-1})$$

$\bar{R}^2 = 0.979$ SEE = 178.46 D.W. = 2.22 1972 - 1987

82. Export Price Index for Coconut

$$PXCOC = \underset{(-0.24)}{-3.8999896} + \underset{(17.41)}{0.9953265} * PCOCO + \underset{(4.09)}{0.2596092} * PGDP$$

$\bar{R}^2 = 0.977$ SEE = 43.73 D.W. = 1.79 1967 - 1987

83. Export Price Index for Sugar

$$PXSUG = \underset{(-0.69)}{-8.6913235} + \underset{(8.73)}{0.5885425} * PGDP + \underset{(3.89)}{136.23871} * DUM86 + \underset{(7.31)}{175.13833} * D7475$$

$$+ \underset{(3.61)}{0.3032810} * PXSUG_{-1}$$

$\bar{R}^2 = 0.975$ SEE = 30.56 D.W. = 1.48 D.H. = 1.26 1968 - 1987

84. Export Price Index for Other Agricultural Products

$$PXAO = -33.605161 + 0.9403717 * PINOC + 0.7347128 * PGDP + 88.830639 * DUMDR + 141.67506 * DUM86 - 0.2529707 * PXAO_{-1}$$
(-2.16) (2.33) (2.20) (2.93) (4.09) (-1.67)

$\bar{R}^2 = 0.991$ SEE = 28.38 D.W. = 2.08 D.H. = -0.24 1968 - 1987

85. Export Price Index for Semiconductors

$$PXSEM = 24.761795 + 1.0769140 * PSEM + 0.3739414 * PXSEM_{-1}$$
(0.48) (2.95) (1.62)

$\bar{R}^2 = 0.832$ SEE = 76.79 D.W. = 1.82 D.H. = 0.77 1974 - 1987

86. Export Price Index for Garments

$$PXGARM = 34.497620 + 0.2711910 * PGARM + 0.6388235 * PXGARM_{-1}$$
(1.27) (2.60) (3.48)

$\bar{R}^2 = 0.907$ SEE = 55.55 D.W. = 1.29 D.H. = 2.78 1968 - 1987

87. Export Price Index for Other Manufactured Goods

$$PXMO = 81.953475 + 0.6325430 * PMFGO$$
(6.47) (19.81)

$\bar{R}^2 = 0.97$ SEE = 37.22 D.W. = 1.85 1967 - 1987

88. Export Price Index for Other Goods

$$PXO = 30.062373 + 0.7809804 * PGDP - 0.5977393 * (30.062373 + 0.7809804 * PGDP_{-1} - PXO_{-1})$$
(0.92) (10.32) (3.16)

$\bar{R}^2 = 0.967$ SEE = 33.26 D.W. = 2.06 D.H. = -0.24 1968 - 1987

89. Implicit Price Index for Merchandise Exports

$$\ln PXGDS = 0.1173419 + 0.7644906 * \ln (PX\$ * ER / ER_{1972}) + 0.2231228 * \ln (PGDP)$$
(1.17) (11.21) (3.91)

$\bar{R}^2 = 0.996$ SEE = 0.038 D.W. = 2.08 1970 - 1987

90. Exports of Nonfactor Services

$$XSV = -8.0354076 + 1.0113807 * ((OTHINM + INMFMI) * ER/(PXSV/100))$$
(-0.08) (38.00)

$\bar{R}^2 = 0.988$ SEE = 175.722 D.W. = 1.58 1970 - 1987

91. Implicit Price Index for Exports of Nonfactor Services

$$PXSV = \underset{(-2.48)}{-34.555040} + \underset{(6.08)}{0.8509185} * PXGDS + \underset{(3.18)}{0.3787101} * PXSV_{-1}$$

$\bar{R}^2 = 0.984$ SEE = 31.086 D.W. = 1.91 D.H. = 0.22 1968 - 1987

B. Import Sector

92. Imports of Fuel Products

$$M1FUEL = \underset{(10.88)}{741.66003} - \underset{(-1.38)}{20.766524} * (PMFUEL / PGNP) + \underset{(6.21)}{0.0082693} * GNP + \underset{(4.38)}{0.4813571} * ((NFA + NFA_{-1})/PGNP) - \underset{(-8.27)}{240.508234} * D8586 - \underset{(-9.06)}{300.29096} * DUM82$$

$\bar{R}^2 = 0.952$ SEE = 28.72 D.W. = 1.99 1971 - 1987

93. Imports of Electrical and Non-Electrical Machinery and Transport Equipment

$$M2MACH = \underset{(-1.70)}{-1234.9031} + \underset{(3.13)}{5.0153031} * (NFA + NFA_{-1})/PGNP) + \underset{(7.93)}{0.0725197} * GNP - \underset{(-2.92)}{1228.817} * D8485 - \underset{(-2.06)}{1255.7364} * DUM86$$

$\bar{R}^2 = 0.841$ SEE = 462.98 D.W. = 1.95 1971 - 1987

94. Imports of Basic Metals

$$M3BM = \underset{(1.48)}{306.83331} + \underset{(2.88)}{1.0131532} * ((NFA + NFA_{-1})/PGNP) + \underset{(3.10)}{0.0085308} * GNP + \underset{(3.82)}{354.15555} * DUMRE - \underset{(-2.44)}{280.09164} * D8485$$

$\bar{R}^2 = 0.803$ SEE = 124.25 D.W. = 1.90 1971 - 1987

95. Imports of Cereals

$$M4C = \underset{(-0.03)}{-7.8810532} - \underset{(-1.32)}{142.55769} * (PMC/CPI) + \underset{(4.45)}{0.0101383} * GNP + \underset{(4.20)}{424.72180} * DUM85 - \underset{(1.44)}{0.3222961} * (-7.8810532 - 142.55769 * (PMC_{-1}/CPI_{-1}) + 0.0101383 * GNP_{-1} + 424.72180 * DUM85_{-1} - M4C_{-1})$$

$\bar{R}^2 = 0.848$ SEE = 100.44 D.W. = 1.31 1968 - 1987

96. Imports of Chemicals

$$M5CHEM = -16.651795 + 0.2717110 * ((NFA + NFA_{-1})/PGNP) + 0.0073690 * GNP + 185.21854 * D8174 + 105.70378 * DUM86 + 237.86559 * DUM87$$
$$(-0.22) \quad (1.51) \quad (7.77) \quad (4.97) \quad (1.67) \quad (3.80)$$

$\bar{R}^2 = 0.889$ SEE = 47.21 D.W. = 1.57 1971 - 1987

97. Imports of Textile Yarns

$$M7TEXT = -109.29418 - 0.0753858 * PMTEXT + 0.0083208 * CP + 185.60979 * DUM86$$
$$(-2.22) \quad (-2.34) \quad (7.71) \quad (4.32)$$

$\bar{R}^2 = 0.860$ SEE = 40.19 D.W. = 1.76 1967 - 1987

98. Other Imports

$$IMOTHR = -3605.8945 - 5.9982174 * PMOTHR + 0.1445907 * CP + 2400.1337 * D8687 + 0.5558093 * IMOTHR_{-1}$$
$$(-3.32) \quad (-2.52) \quad (4.04) \quad (3.33) \quad (2.52)$$

$\bar{R}^2 = 0.936$ SEE = 527.45 D.W. = 2.24 D.H. = -3.32 1968 - 1987

99. Imports of Nonfactor Services

$$MSV = -179.50548 + 0.8130100 * (OTHONM * ER/(PMSV/100)) + 0.1007809 * MSV_{-1}$$
$$(-1.50) \quad (12.85) \quad (1.45)$$

$\bar{R}^2 = 0.947$ SEE = 149.846 D.W. = 1.66 D.H. = 0.74 1970 - 1987

100. Import Price Index for Fuel Products

$$\ln PMFUEL = 0.1824856 + 0.9377935 * \ln (MPIF\$*(ER/ER_{1972})*(1+t1/100))$$
$$(2.40) \quad (83.78)$$

$\bar{R}^2 = 0.998$ SEE = 0.058 D.W. = 1.63 1970 - 1987

101. Import Price Index for Elec. and Non-Elec. Machinery and Trans. Equipment

$$\ln PMMACH = -0.1606264 + 0.9872096 * \ln (MPINF\$*(ER/ER_{1972})*(1+t2/100))$$
$$(-0.85) \quad (30.35)$$

$\bar{R}^2 = 0.984$ SEE = 0.069 D.W. = 2.01 1972 - 1987

102. Import Price Index for Base Metals

$$PMBM = \underset{(-0.18)}{-2.8349481} + \underset{(7.31)}{0.7930340} * MPINF\$*(ER/ER_{1972})*(1+t3/100) + \underset{(2.42)}{0.2692949} * PMBM_{-1}$$

$\bar{R}^2 = 0.980$ SEE = 29.575 D.W. = 2.05 D.H. = -0.11 1972 - 1987

103. Import Price Index for Cereals

$$\ln PMC = \underset{(0.42)}{0.1437144} + \underset{(15.88)}{0.9301357} * \ln (MPINF\$*(ER/ER_{1972})*(1+t4/100)) + \underset{(5.34)}{0.3782517} * D7476 - \underset{(-3.49)}{0.4050057} * DUM87$$

$\bar{R}^2 = 0.944$ SEE = 0.10 D.W. = 2.45 1972 - 1987

104. Import Price Index for Chemicals

$$\ln PMCHEM = \underset{(-4.59)}{-0.9270687} + \underset{(33.63)}{1.1826376} * \ln (MPINF\$*(ER/ER_{1972})*(1+t5/100))$$

$\bar{R}^2 = 0.987$ SEE = 0.07 D.W. = 1.68 1972 - 1987

105. Import Price Index for Textile Yarns

$$PMTEXT = \underset{(-1.70)}{-43.722446} + \underset{(3.74)}{0.6705010} * MPINF\$*(ER/ER_{1972})*(1+t7/100) + \underset{(18.15)}{1079.9861} * DUM87 + \underset{(1.90)}{0.3859102} * PMTEXT_{-1}$$

$\bar{R}^2 = 0.990$ SEE = 43.62 D.W. = 1.62 D.H. = 1.31 1972 - 1987

106. Import Price Index for Other Imports

$$\ln PMOTHR = \underset{(3.47)}{0.2923143} + \underset{(60.08)}{0.9208301} * \ln PMGDS$$

$\bar{R}^2 = 0.994$ SEE = 0.061 D.W. = 1.49 1967 - 1987

107. Import Price Index for Services

$$PMSV = \underset{(-1.84)}{-17.188397} + \underset{(8.63)}{0.7370846} * PMGDS + \underset{(3.11)}{0.2937988} * PMSV_{-1}$$

$\bar{R}^2 = 0.990$ SEE = 23.885 D.W. = 1.54 D.H. = 1.13 1968 - 1987

C. Balance of Payments

108. Inflow of Freight and Merchandise Insurance

$$INMFMI = \underset{(-0.38)}{-3.8427931} + \underset{(2.92)}{0.0120223} * X\$ + \underset{(3.69)}{44.775498} * D8485 + \underset{(2.95)}{0.4241324} * INMFMI_{-1}$$

$\bar{R}^2 = 0.897$ SEE = 15.140 D.W. = 1.94 D.H. = 0.16 1971 - 1987

109. Outflow of Freight and Merchandise Insurance

$$ONMFMI = \underset{(1.55)}{83.574396} + \underset{(6.31)}{0.0590831} * M\$ - \underset{(2.21)}{0.5449652} * (83.574396 + 0.0590831 * M\$_{-1} - ONMFMI_{-1})$$

$\bar{R}^2 = 0.925$ SEE = 39.45 D.W. = 1.99 1971 - 1987

110. International Reserves of the Central Bank

$$IRESCB = \underset{(1.60)}{349.50153} + \underset{(2.33)}{0.2837118} * BOP + \underset{(2.13)}{982.25615} * DUM80 + \underset{(5.55)}{0.7939853} * IRESCB_{-1}$$

$\bar{R}^2 = 0.719$ SEE = 427.251 D.W. = 2.26 D.H. = -0.70 1970 - 1987

111. Implicit Exchange Rate for Exports of Goods

$$ERXX = \underset{(1.16)}{15.244165} + \underset{(102.65)}{96.516694} * ER - \underset{(3.32)}{0.6266862} * (15.244165 + 96.516694 * ER_{-1} - ERXX_{-1})$$

$\bar{R}^2 = 0.999$ SEE = 9.602 D.W. = 1.74 D.H. = 0.87 1971 - 1987

112. Implicit Exchange Rate for Imports of Goods

$$ERMM = \underset{(2.04)}{40.526901} + \underset{(71.64)}{101.61202} * ER - \underset{(3.18)}{0.6415919} * (40.526901 + 101.61202 * ER_{-1} - ERMM_{-1})$$

$\bar{R}^2 = 0.999$ SEE = 13.992 D.W. = 1.99 D.H. = 0.05 1971 - 1987

113. Implicit Dollar Price for Exports

PXDOL = 0.0680276 + 0.0013401 * PX$ - 0.0467333 *
(2.91) (15.52) (-5.39)

DUM84 - 0.8129382 * (0.0680276 + 0.0013401 * PX$ $_{-1}$
(6.45)

- 0.0467333 * DUM84 $_{-1}$ - PXDOL $_{-1}$)

$\overline{R}^2$ = 0.979 SEE = 0.01 D.W. = 2.10 D.H. = -0.22 1971 - 1987

114. Implicit Dollar Price for Imports

PMDOL = -0.0132299 + 0.0014858 * ((MPIF$ * M1FUEL)
(-1.51) (42.20)

+ MPINF$ * (MGDS - M1FUEL)) / MGDS) - 0.0851338 * DUM84 + 0.057655
(-7.21) (3.99)

DUM87 + 0.7042985 * (-0.0132299 + 0.0014858 * ((MPIF$ $_{-1}$
(2.63)

* M1FUEL $_{-1}$) + MPINF$ $_{-1}$ * (MGDS $_{-1}$ - M1FUEL $_{-1}$)) / MGDS $_{-1}$) -

0.0851338 * DUM84 $_{-1}$ + 0.0576551 * DUM87 $_{-1}$ - PMDOL $_{-1}$)

$\overline{R}^2$ = 0.975 SEE = 0.01 D.W. = 1.84 1973 - 1987

Appendix 1
MACROECONOMETRIC MODEL
VERSION 89

LIST OF IDENTITIES

I. REAL SECTOR

A. Production Subsector

1. SCROPS = SPALAY + SCOCO + SCORN + SSUGAR + SOTHCR

2. PRRICE = (PRPAL - SEEDS) * MRR

3. INVRIC = PRRICE + MRICE - DRICE + INVRIC$_{-1}$

4. PINCO = (1/(3.67 + 3.19 * (1/(FPPAL/0.8)))) * (-103.14 - 0.66 * (RBLOAN/(PGNP/100)) + 0.05 * (PPFET * ER / (PGNP/100)) + 0.32 * PMFUEL - 217.81 * DUM86 - 262.43 * DUM83 + 0.01 * (CP + CG) + 0.64 * DCORN$_{-1}$)

5. PINOC = 102.75 - 0.17 * (RBLOAN/(PGNP/100)) - 0.15 * M1FUEL + 0.01 * (PPFET * ER /(PGNP/100)) + 100.02 * DUM87 + 0.004 * (XCOCR + XSROTH + XSRUS + XAO + CP + CG) + 0.05 * DOTHCR$_{-1}$

6. PLIVPO = -265.97 + 3.10 * (PFEEDS * ER / (PGNP/100)) - 0.13 * (RBLOAN / (PGNP/100)) + 57.51 * D7585 + 0.07 * (1185.0476 + 6.7256591 * PLIVPO$_{-1}$ - 25.611844 * (PFEEDS$_{-1}$ * ER$_{-1}$/(PGNP$_{-1}$/100) - 475 * D7585$_{-1}$ - SLIVPO$_{-1}$) + 0.008 * CP + 203.83 * (TLA / POTGNP) - 0.10 * (-1011.6519 - 1.5335159 * PLIVPO$_{-1}$ + 0.0658811 * CP$_{-1}$ + 1683.4837 * * (TLA$_{-1}$ / POTGNP$_{-1}$) - DLIVPO$_{-1}$)

7. PINFI = -1115.28 - 0.10 * (RBLOAN / (PGNP/100)) - 0.34 * SFISH$_{-1}$ + 55.68 * POP + 202.62 (TLA / POTGNP)

8. DMFG = DFOOD + DSEMR + DGARMR + DMFGO

9. PMFG = (DFOOD * PFOOD + DSEMR * PSEM + DGARMR * PGARM + DMFGO * PMFGO)/DMFG

10. VAR = SCROPS + SFISH + SLIVPO + SFORES

11. VIR = DMFG + DCONS + DMQ + SEGW

B. Expenditures

12. GDP = VAR + VIR + DSER

13. GNP = CP + CG + CONSGO + CONSPR + IDER + IINV + XGDS + XSV -
MGDS - MSV + STATD + NFIAN / (PNFIA/100)

14. GNPN = GNP * (PGNP/100)

15. QS = VAR + VIR + DSER + NFIA

16. CG = CGN/(PCG/100)

17. CONSGO = CGOVN/(PCGOV/100)

18. GDCF = CONSGO + CONSPR + IDER +IINV

19. STATD = QS - (CP + CG + CONSGO + CONSPR + IDER + IINV + XGDS +
XSV - MGDS - MSV + NFIAN / (PNFIA/100))

20. K66 = $K66_{-1}$ + CONSGO + CONSPR + IDER + IINV - KCAR

21. ICOR = ($GDCF_{-1}$/(GDP - GDP_{-1})) * 100

22. INFL = (CPI - CPI_{-1}) * 100 / CPI_{-1}

C. Prices, Wages and Employment

23. PGDP = (SPALAY * PPAL + SCORN * PINCO + SSUGAR * PSUG
+ SCOCO * PCOCO + SOTHCR * PINCC + SLIVPO * PLIVPO
+ SFISH * PINFI + SFORES * PINFO + DMQ * PMQ + DFOOD *
PFOOD + DSEMR * PSEM + DGARMR * PGARM + DMFGO * PMFGO +
DCONS * PCONS + SEGW * PEGW + DSER * PSER) / GDP

24. PGNP = ((GDP * (PGDP/100) + NFIAN) * 100/LGDP + NFIAN / (PNFIA/100))

25. FTEM45 = FTEMPA + FTEMPI + FTEMPS

26. FTUEMP = LF - FTEM45

27. FTUERA = FTUEMP/LF

II. FISCAL SECTOR

28. TAXREV = DIRTAX + TRADET + OTHTAX

29. REV = TAXREV + NTAXRE

30. EXPN = OPEXP + CAPOUT + NETLEN

31. DEFG = EXPN - REV

32. REVEFF = (REV/GNPN) * 100

33. TAXEFF = (TAXREV/GNPN) * 100

34. DRATIO = (DEFG/GNPN) * 100

III. FINANCIAL SECTOR

35. NDA = NCDMB + MACPS - REGS + OTHNDA

36. MULT = (CUTD + 1 + (DS/DTRAD)/(CUTD + REGS/DTRAD) + (TRES/DTRAD)

37. TL = MULT * MB

38. DTRAD = (MS + SD + TD)/(1 + CUTD)

39. FINDMB = DEFG - FINNB - EXTFIN - NCNG + $NCNG_{-1}$ - REGS + $REGS_{-1}$

40. FUNDS = DTRAD + DS + NCDMB - FINDMB - TRES - REGS

41. MB = MACPS + NCDMB + OTHNDA + NFA

III. EXTERNAL SECTOR

A. Export Sector

42. XGDS = XCOCR + XSRUS + XSROTH + XAO + XSEMR + XGARMR + XMO + XO

43. X$ = XGDS * PXDOL

B. Import Sector

44. MGDS = M1FUEL + M2MACH + M3BM + M4C + M5CHEM + M7TEXT + IMOTHR

45. PMGDS = (M1FUEL * PMFUEL + M2MACH * PMMACH + M3BM * PMBM + M4C * PMC + M5CHEM * PMCHEM + M7TEXT * PMTEXT + IMOTHR * PMOTHR)/MGDS

46. M$ = MGDS * PMDOL

47. PM = (PMGDS * MGDS/M) + (PMSV * MSVJ/M

C. Balance of Payments

48. TRABAL = X$ - M$

49. INMTRD = OTHINM + INCREM + INTINC + INMFMI

50. ONMTRD = OTHONM + MINT$ + ONMFMI

51. CURBAL = X$ - M$ + INMTRD - ONMTRD + ITRANS - OTRANS

52. CAPBAL = NSHTRM + ILTLON - OLTLON + NINDE + ERROR

53. BOP = CURBAL + CAPBAL + MNGOLD + ALLSDR + UNREM + REVADJ

Appendix 2
VERSION 89
LIST OF EXOGENOUS VARIABLES

VARIABLE	DESCRIPTION	UNIT
ALLSDR	ALLOCATION OF SDR	Million $
CAPOUT	CAPITAL OUTLAYS, CASH BASIS	Million P
CAPUTO	CAPITAL OUTLAYS, OBLIGATION	Million P
COCOTR	NUMBER OF NUT BEARING TREES	Thousands
CORYLD	YIELD PER HECTARE OF CORN	MT/Hectare
D7475	1974-75 = 1; OTHERWISE = Ø	-
D7476	1974-76 = 1; OTHERWISE = Ø	-
D7484	1974, 1984 = 1; OTHERWISE = Ø	-
D7585	1975, 1985 = 1; OTHERWISE = Ø	-
D7678	1976-78 = 1; OTHERWISE = Ø	-
D7687	1976-87 = 1; OTHERWISE = Ø	-
D7879	1978-79 = 1; OTHERWISE = Ø	-
D7980	1979, 1980 = 1; OTHERWISE = Ø	-
D8174	1974, 1981 = 1; OTHERWISE = Ø	-
D8283	1982-83 = 1; OTHERWISE = Ø	-
D8387	1983-87 = 1; OTHERWISE = Ø	-
D8482	1982, 1984 = 1; OTHERWISE = Ø	-
D8487	1984-87 = 1; OTHERWISE = Ø	-
D8485	1984-85 = 1; OTHERWISE = Ø	-
D8583	1983, 1985 = 1; OTHERWISE = Ø	-
D8586	1985-86 = 1; OTHERWISE = Ø	-
D8586X	1985-86 = 1; 1987 = Ø.5; OTHERWISE = Ø	-
D8587	1985-87 = 1; OTHERWISE = Ø	-
D8687	1986-87 = 1; OTHERWISE = Ø	-
DISCRA	DISCOUNT RATE (NOMINAL)	Percent
DUM72	1972 = 1; OTHERWISE = Ø	-
DUM76	1976 = 1; OTHERWISE = Ø	-
DUM77	1977=1; OTHERWISE = Ø	-
DUM80	1980 = 1; OTHERWISE = Ø	-
DUM81	1981 = 1; OTHERWISE = Ø	-
DUM82	1982 = 1; OTHERWISE = Ø	-
DUM83	1983 = 1; OTHERWISE = Ø	-
DUM84	1984 = 1; OTHERWISE = Ø	-
DUM85	1985 = 1; OTHERWISE = Ø	-
DUM86	1986 = 1; OTHERWISE = Ø	-
DUM87	1987 = 1; OTHERWISE = Ø	-
DUMDR	1983, 1987 = 1; OTHERWISE = Ø	-
DUMRE	1979, 1987, 1982-83 = 1; OTHERWISE = Ø	-
DUMSUG	1977, 1980 = 1; OTHERWISE = Ø	-
ER	NOMINAL EXCHANGE RATE	P/$
ERROR	ERRORS AND OMISSIONS (BOP)	Million $

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
EXPEGW	GOVERNMENT EXPENDITURE FOR ELECTRICITY, POWER GENERATION AND WATER SUPPLY	Million P
EXTFIN	EXTERNAL FINANCING OF THE BUDGET DEFICIT	Million P
FERTC	TOTAL FERTILIZER CONSUMPTION	Thousand MT
FPCORW	FARMGATE PRICE OF WHITE CORN	P/Kg
FPCORY	FARMGATE PRICE OF YELLOW CORN	P/Kg
FWRICE	FEEDS AND WASTE USE OF RICE	Thousand MT
GNPJAP	GNP OF JAPAN (REAL)	Billion Yen
GNPUS	GROSS NATIONAL PRODUCT OF THE U.S.A. (REAL)	Billion $
IINV	INCREASE IN STOCKS (REAL)	Million P
ILTLON	INFLOW OF MEDIUM- AND LONG-TERM LOANS	Million $
INCOUT	INCOME REMITTANCES TO THE REST OF THE WORLD	Million $
INCREM	INCOME REMITTANCES FROM ABROAD	Million $
INDJAP	INDEX OF INDUSTRIAL PRODUCTION IN JAPAN	1980 = 100
INDUS	INDEX OF INDUSTRIAL PRODUCTION IN THE U.S.	1980 = 100
INTINC	INVESTMENT AND INTEREST INCOME FROM ABROAD	Million $
INTPAY	INTEREST PAYMENTS	Million P
IPN	INTEREST RATE ON PROMISSORY NOTES	Percent
ISD	INTEREST RATE ON SAVINGS DEPOSIT	Percent
ITD	INTEREST RATE ON TIME DEPOSIT	Percent
ITRANS	TRANSFERS FROM ABROAD	Million $
MINT$	INTEREST PAYMENTS ON FOREIGN DEBT	Million $
MNGOLD	MONETIZATION OF GOLD	Million $
MPIF$	DOLLAR IMPORT PRICE INDEX FOR FUEL PRODUCTS	1972 = 100
MPINF$	DOLLAR IMPORT PRICE INDEX FOR NONFUEL PRODUCTS	1972 = 100
MRICE	IMPORTS OF RICE	Thousand MT
MRR	MILLING RECOVERY RATE	Percent
NCDMB	NET CREDIT OF CB TO DEPOSIT MONEY BANKS	Million P
NETLEN	NET LENDING OF THE GOVERNMENT	Million P
NINDF	NET DIRECT FOREIGN INVESTMENT	Million $
NSHTRM	NET INFLOWS OF SHORT-TERM CAPITAL	Million $
OLTLON	OUTFLOWS OF MEDIUM- AND LONG-TERM LOANS	Million $

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
OPEXP	CURRENT OPERATING EXPENDITURES, CASH BASIS	Million P
OPEXPO	CURRENT OPERATING EXPENDITURES, OBLIGATION BASIS	Million P
OTHINM	OTHER INFLOWS OF NON-MERCHANDISE TRADE	Million $
OTHONM	OTHER OUTFLOWS OF NON-MERCHANDISE TRADE	Million $
OTRANS	TRANSFERS TO THE REST OF THE WORLD	Million $
PALHAS	PALAY AREA HARVESTED	Thousand Ha.
PFEEDS	INTERNATIONAL PRICE OF FEEDS	$/bushel
PINFO	IMPLICIT PRICE DEFLATOR FOR FORESTRY	1972 = 100
POP	POPULATION	Millions
POP15	POPULATION, 15 YEARS AND OVER	Thousands
PPFET	WORLD PRICE OF FERTILIZER	$/MT
PX$	IMPLICIT PRICE INDEX FOR EXPORTS OF GOODS AND SERVICES, DOLLAR EQUIVALENT	1972 = 100
REVADJ	REVALUATION ADJUSTMENT	Million $
RR	RESERVE REQUIREMENT RATIO	-
SFORES	GROSS VALUE ADDED IN FORESTRY (REAL)	Million P
SUGHAS	SUGAR AREA HARVESTED	Thousand Ha.
SUGYL	YIELD PER HECTARE OF SUGAR	MT/Ha.
T1	AVERAGE TARIFF FOR M1FUEL	Percent
T2	AVERAGE TARIFF FOR M2MACH	Percent
T3	AVERAGE TARIFF FOR M3BM	Percent
T4	AVERAGE TARIFF FOR M4C	Percent
T5	AVERAGE TARIFF FOR M5CHEM	Percent
T7	AVERAGE TARIFF FOR M7TEXT	Percent
TIME	TIME VARIABLE	1967 = 1
UNREM	UNREMITTED ARREARS	Million $
WLAGRI	EFFECTIVE LEGISLATED WAGE, NONPLANTATION AGRICULTURE	P
XSRUS	EXPORTS OF SUGAR TO THE U.S. (REAL)	Million P

Appendix 2
VERSION 89
LIST OF ENDOGENOUS VARIABLES

VARIABLE	DESCRIPTION	UNIT
A. REAL SECTOR		
Output		
GNP	GROSS NATIONAL PRODUCT (REAL)	Million P
GNPN	GROSS NATIONAL PRODUCT (NOMINAL)	Million P
GDP	GROSS DOMESTIC PRODUCT (REAL)	Million P
QS	GROSS NATIONAL PRODUCT (REAL)	Million P
Expenditures		
CP	PERSONAL CONSUMPTION EXPENDITURES (REAL)	Million P
CG	GOVERNMENT CONSUMPTION EXPENDITURES (REAL)	Million P
CGN	GOVERNMENT CONSUMPTION EXPENDITURES (NOMINAL)	Million P
CGOVN	GOVERNMENT CONSTRUCTION EXPENDITURES (NOMINAL)	Million P
CONSGO	GOVERNMENT CONSTRUCTION EXPENDITURES (REAL)	Million P
CONSPR	PRIVATE CONSTRUCTION EXPENDITURES (REAL)	Million P
GDCF	GROSS DOMESTIC CAPITAL FORMATION (REAL)	Million P
IDER	INVESTMENT IN DURABLE EQUIPMENT (REAL)	Million P
Imports Sector		
IMOTHR	OTHER IMPORTS (REAL)	Million P
M1FUEL	IMPORTS OF FUEL PRODUCTS (REAL)	Million P
M2MACH	IMPORTS OF ELECTRICAL SUPPLIES, MACHINERY AND TRANSPORT EQUIPMENT (REAL)	Million P
M3BM	IMPORTS OF BASIC METALS (REAL)	Million P
M4C	IMPORTS OF CEREALS (REAL)	Million P
M5CHEM	IMPORTS OF CHEMICALS (REAL)	Million P
M7TEXT	IMPORTS OF TEXTILE YARNS (REAL)	Million P
M	TOTAL IMPORTS OF GOODS AND SERVICES (REAL)	Million P
MGDS	IMPORTS OF GOODS (REAL)	Million P
MSV	IMPORTS OF SERVICES (REAL)	Million P

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
Exports Sector		
XAO	EXPORTS OF OTHER AGRICULTURAL PRODUCTS (REAL)	Million P
XCOCR	EXPORTS OF COCONUT PRODUCTS (REAL)	Million P
XGARMR	EXPORTS OF GARMENTS (REAL)	Million P
XMO	EXPORTS OF OTHER MANUFACTURED GOODS (REAL)	Million P
XO	EXPORTS OF OTHER GOODS (REAL)	Million P
XSEMR	EXPORTS OF SEMICONDUCTORS (REAL)	Million P
XSROTH	SUGAR EXPORTS TO COUNTRIES OTHER THAN THE U.S. (REAL)	Million P
X	TOTAL EXPORTS OF GOODS AND SERVICES (REAL)	Million P
XGDS	EXPORTS OF GOODS (REAL)	Million P
XSV	EXPORTS OF SERVICES (REAL)	Million P
Production		
Crops Sector		
BINVC	BEGINNING INVENTORY OF CORN	Thousand MT
DCOCO	GVA FOR COCONUT (REAL)	Million P
DCORN	GVA FOR CORN (REAL)	Million P
DOTHCR	GVA FOR OTHER CROPS (REAL)	Million P
DRICE	TOTAL DEMAND FOR RICE	Thousand MT
FPCOPR	AVERAGE FARM PRICES OF COPRA (RESECADA)	P/Kg
FPCORN	AVERAGE FARMGATE PRICE OF CORN (WEIGHTED AVERAGE OF WHITE AND YELLOW CORN)	P/Kg
FPPAL	FARMGATE PRICE OF PALAY	P/Kg
INVRIC	ENDING INVENTORY OF RICE	Thousand MT
PFERT	WEIGHTED AVE. PRICE OF FERTILIZER (AVE. OF UREA AND AMMOSUL PRICES)	P/Kg
PRPAL	PRODUCTION OF PALAY	Thousand MT
SCOCO	GVA FOR COCONUT (REAL)	Million P
SCORN	GVA FOR CORN (REAL)	Million P
SPALAY	GVA FOR PALAY (REAL)	Million P
SSUGAR	GVA FOR SUGAR (REAL)	Million P

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
Construction		
DCONS	GROSS VALUE ADDED IN CONSTRUCTION (REAL)	Million P
Electricity, Gas, and Water		
SEGW	GROSS VALUE ADDED IN ELECTRICITY, GAS, AND WATER (REAL)	Million P
Fisheries		
SFISH/ DFISH	GROSS VALUE ADDED IN FISHERY (REAL)	Million P
Livestock and Poultry		
SLIVPO/ DLIVPO	GROSS VALUE ADDED IN LIVESTOCK AND POULTRY (REAL)	Million P
Manufacturing		
DFOOD	GVA FOR FOOD (REAL)	Million P
DGARMR	GVA FOR GARMENTS (REAL)	Million P
DMFGO	GVA FOR OTHER MANUFACTURED PRODUCTS (REAL)	Million P
DSEMR	GVA FOR SEMICONDUCTORS (REAL)	Million P
Mining and Quarrying		
DMQ	GROSS VALUE ADDED IN MINING AND QUARRYING (REAL)	Million P
Services		
DSER	GROSS VALUE ADDED IN SERVICES (REAL)	Million P
VAR	GROSS VALUE ADDED IN AGRICULTURE (REAL)	Million P
VIR	GROSS VALUE ADDED IN INDUSTRY (REAL)	Million P
Prices		
CPI	CONSUMER PRICE INDEX	1972 = 100
INFL	INFLATION RATE	1972 = 100
PCG	IMPLICIT PRICE DEFLATOR FOR GOVERNMENT CONSUMPTION	1972 = 100
PCGOV	IMPLICIT PRICE DEFLATOR FOR GOVERNMENT CONSTRUCTION	1972 = 100

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
PCOCO	IMPLICIT PRICE DEFLATOR FOR COCONUT PRODUCTS	1972 = 100
PCONS	IMPLICIT PRICE DEFLATOR FOR CONSTRUCTION	1972 = 100
PEGW	IMPLICIT PRICE DEFLATOR FOR ELECTRICITY, GAS, AND WATER	1972 = 100
PFOOD	IMPLICIT PRICE DEFLATOR FOR FOOD	1972 = 100
PGARM	IMPLICIT PRICE DEFLATOR FOR GARMENTS	1972 = 100
PGDCF	IMPLICIT PRICE DEFLATOR FOR GROSS DOMESTIC CAPITAL FORMATION	1972 = 100
PGDP	IMPLICIT PRICE DEFLATOR FOR GDP	1972 = 100
PGNP	IMPLICIT PRICE DEFLATOR FOR GNP	1972 = 100
PINC	IMPLICIT PRICE DEFLATOR FOR CROPS	1972 = 100
PINCO	IMPLICIT PRICE DEFLATOR FOR CORN	1972 = 100
PINDEX	IMPLICIT PRICE DEFLATOR FOR GNP	1972 = 100
PINFI	IMPLICIT PRICE DEFLATOR FOR FISHERY	1972 = 100
PINOC	IMPLICIT PRICE DEFLATOR FOR OTHER CROPS	1972 = 100
PLIVPO	IMPLICIT PRICE DEFLATOR FOR LIVESTOCK AND POULTRY	1972 = 100
PM	IMPLICIT PRICE DEFLATOR FOR IMPORTS OF GOODS AND SERVICES	1972 = 100
PMBM	IMPLICIT PRICE INDEX FOR M3BM	1972 = 100
PMC	IMPLICIT PRICE INDEX FOR M4C	1972 = 100
PMCHEM	IMPLICIT PRICE INDEX FOR M5CHEM	1972 = 100
PMDOL	IMPLICIT DOLLAR PRICE INDEX FOR IMPORTS	1972 = 100
PMFG	IMPLICIT PRICE DEFLATOR FOR MANUFACTURING	1972 = 100
PMFGO	IMPLICIT PRICE DEFLATOR FOR OTHER MANUFACTURING PRODUCTS	1972 = 100
PMFUEL	IMPLICIT PRICE INDEX FOR M1FUEL	1972 = 100
PMGDS	IMPLICIT PRICE DEFLATOR FOR IMPORTS OF GOODS	1972 = 100
PMMACH	IMPLICIT PRICE INDEX FOR M2MACH	1972 = 100
PMOTHR	IMPLICIT PRICE INDEX FOR IMOTHR	1972 = 100
PMQ	IMPLICIT PRICE DEFLATOR FOR MINING AND QUARRYING	1972 = 100
PMSV	IMPLICIT PRICE DEFLATOR FOR SERVICES	1972 = 100

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
PMTEXT	IMPLICIT PRICE INDEX FOR M7TEXT	1972 = 100
PNFIA	IMPLICIT PRICE DEFLATOR FOR NFIA	1972 = 100
PPAL	IMPLICIT PRICE DEFLATOR FOR PALAY	1972 = 100
PSEM	IMPLICIT PRICE INDEX FOR SEMICONDUCTORS	1972 = 100
PSER	IMPLICIT PRICE DEFLATOR FOR SERVICES	1972 = 100
PSUG	IMPLICIT PRICE DEFLATOR FOR SUGAR	1972 = 100
PXAO	IMPLICIT PRICE INDEX FOR EXPORTS OF OTHER AGRICULTURAL PRODUCTS	1972 = 100
PXCOC	IMPLICIT PRICE INDEX FOR EXPORTS OF COCONUT PRODUCTS	1972 = 100
PXDOL	IMPLICIT DOLLAR PRICE INDEX FOR EXPORTS	1972 = 100
PXGARM	IMPLICIT PRICE INDEX FOR EXPORTS OF GARMENTS	1972 = 100
PXGDS	IMPLICIT PRICE DEFLATOR FOR EXPORTS OF GOODS	1972 = 100
PXMO	IMPLICIT PRICE DEFLATOR FOR EXPORTS OF MANUFACTURED GOODS	1972 = 100
PXO	IMPLICIT PRICE DEFLATOR FOR EXPORTS OF OTHER GOODS	1972 = 100
PXSEM	IMPLICIT PRICE INDEX FOR EXPORTS OF SEMICONDUCTORS	1972 = 100
PXSUG	IMPLICIT PRICE DEFLATOR FOR EXPORTS OF SUGAR	1972 = 100
PXSV	IMPLICIT PRICE DEFLATOR FOR EXPORTS OF SERVICES	1972 = 100
Employment and Wage		
LF	LABOR FORCE	Thousands
FTEM45	TOTAL EMPLOYMENT, FULL-TIME EQUIVALENT	Thousands
FTEMPA	EMPLOYMENT IN AGRICULTURE, FULL-TIME EQUIVALENT	Thousands
FTEMPI	EMPLOYMENT IN INDUSTRY, FULL-TIME EQUIVALENT	Thousands
FTEMPS	EMPLOYMENT IN SERVICES, FULL-TIME EQUIVALENT	Thousands
FTUEMP	UNEMPLOYED, FULL-TIME EQUIVALENT	Thousands
FTUERA	UNEMPLOYMENT RATE, FULL-TIME EQUIVALENT	-
NWAGUS	WAGE RATE INDEX OF UNSKILLED WORKERS	1972 = 100

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
Others		
K66	CAPITAL STOCK (REAL)	Million P
KCAR	CAPITAL CONSUMPTION ALLOWANCE (REAL)	Million P
NFIAN	NET FACTOR INCOME FROM ABROAD (NOMINAL)	Million P
POTGNP	POTENTIAL OUTPUT (REAL)	Million P
RBLOAN	LOANS OF RURAL BANKS TO THE AGRICULTURE SECTOR	Million P
STATD	STATISTICAL DISCREPANCY	Million P
ICOR	INCREMENTAL CAPITAL-OUTPUT RATIO	Percent
B. FISCAL SECTOR		
DEFG	GOVERNMENT DEFICIT (CASH BASIS)	Million P
DIRTAX	DIRECT TAXES	Million P
DRATIO	RATIO OF THE BUDGET DEFICIT TO NOMINAL GNP	Percent
EXPN	TOTAL EXPENDITURES (CASH BASIS)	Million P
NTAXRE	NONTAX REVENUES EXCLUDING GRANTS	Million P
OTHTAX	TAXES ON PROPERTY, GOODS AND SERVICES, AND OTHER TAXES	Million P
REV	TOTAL REVENUES	Million P
REVEFF	RATIO OF REVENUE TO NOMINAL GNP	Percent
TAXREV	TAX REVENUES	Million P
TAXEFF	TAX EFFORT	Percent
TOTTAX	TOTAL TAXES	Million P
TRADET	TAXES ON INTERNATIONAL TRADE	Million P
C. FINANCIAL SECTOR		
CURC	CURRENCY IN CIRCULATION	Million P
CUTD	RATIO OF CURRENCY TO TRADITIONAL DEPOSIT	Million P
DS	DEPOSIT SUBSTITUTES	Million P
DTRAD	TRADITIONAL DEPOSITS	Million P
FINDMB	FINANCING OF THE BUDGET DEFICIT THROUGH DEPOSIT MONEY BANKS	Million P
FINNB	NONBANK FINANCING OF THE BUDGET DEFICIT	Million P

Appendix 2 (cont'd)

VARIABLE	DESCRIPTION	UNIT
FUNDS	LIQUIDITY POSITION OF COMMERCIAL BANKS	Million P
MACPS	MONETARY AUTHORITIES' CREDIT TO THE PUBLIC SECTOR	Million P
MB	MONETARY BASE	Million P
MS	MONEY SUPPLY, END OF YEAR	Million P
MSA	MONEY SUPPLY, AVERAGE FOR THE YEAR	Million P
MULT	MONEY MULTIPLIER	Million P
NCNG	NET CREDIT OF CB TO THE NATIONAL GOVERNMENT	Million P
NDA	NET DOMESTIC ASSETS	Million P
NFA	NET FOREIGN ASSETS	Million P
OTHNDA	OTHER NET DOMESTIC ASSETS	Million P
REGS	RESERVE ELIGIBLE GOVERNMENT SECURITIES	Million P
SD	SAVINGS DEPOSIT	Million P
TBILL	AVERAGE INTEREST RATE ON 91-DAY TREASURY BILLS	Percent
TD	TIME DEPOSITS	Million P
TL	TOTAL LIQUIDITY, END OF YEAR	Million P
TLA	TOTAL LIQUIDITY, AVERAGE FOR THE YEAR	Million P
TRES	TOTAL RESERVES OF DEPOSIT MONEY BANKS	Million P
D. EXTERNAL SECTOR		
BOP	BALANCE OF PAYMENTS	Million $
CAPBAL	CAPITAL ACCOUNTS BALANCE	Million $
CURBAL	CURRENT ACCOUNTS BALANCE	Million $
ERMM	IMPLICIT EXCHANGE RATE FOR MERCHANDISE IMPORTS	Percent
ERXX	IMPLICIT EXCHANGE RATE FOR MERCHANDISE EXPORTS	Percent
INMFMI	INFLOW OF NONMERCHANDISE TRADE, FREIGHT AND MERCHANDISE INSURANCE	Million $
INMTRD	INFLOW OF NONMERCHANDISE TRADE	Million $
IRESCB	GROSS INTERNATIONAL RESERVES OF THE CB	Million $
M$	MERCHANDISE EXPORTS	Million $
ONMFMI	OUTFLOW OF NONMERCHANDISE TRADE, FREIGHT AND MERCHANDISE INSURANCE	Million $
ONMTRD	OUTFLOW OF NONMERCHANDISE TRADE	Million $
TRABAL	TRADE BALANCE	Million $
X$	MERCHANDISE EXPORTS	Million $

Appendix 3
SIMNLIN PROCEDURE
DYNAMIC SIMULTANEOUS SIMULATION

Solution Range Year = 1977 to 1987

Statistics of Fit

Variable	RMS Error	RMS % Error	R-Square
LNGNP	0.0376674	0.32604	0.7491
POTGNP	035.15	3.82775	0.7022
CP	533.03888	0.91739	0.9910
CONSPR	416.34558	7.50888	0.8934
IDER	251.68233	3.16842	0.9917
PXSV	28.29194	6.88544	0.9827
XSV	439.71789	12.81216	0.9166
XCOCR	85.27606	7.04952	0.8895
XSROTH	135.53819	NA	0.9072
XAO	99.61284	14.98346	1.2146
XSEMR	311.41970	53.62727	0.9282
XGARMR	114.27460	10.86144	0.9778
XMO	132.46648	5.29571	0.5640
XO	240.25803	5.34673	0.8226
PXGARM	62.36383	16.88731	0.8328
PXSEM	75.84003	16.65168	0.7885
PXCOC	93.26336	19.61128	0.8809
PXSUG	41.80924	24.31974	0.9554
PXAO	40.57558	10.22623	0.9758
PXMO	44.45498	12.41207	0.9145
PXO	31.45462	9.33296	0.9588
XGDS	514.61693	3.61957	0.9137
EXPORT	678.13161	3.58760	0.9489
LNPXGD	0.0421167	0.69329	0.9895
PXGDS	20.69828	4.27568	0.9843
M1FUEL	24.74729	1.90718	0.9723
M2MACH	315.28851	6.99509	0.9196
M3BM	99.63928	9.24924	0.8822
M4CD	91.11739	15.11894	0.7812
M5CHEM	40.54316	6.09382	0.8210
M7TEXT	23.99541	6.09480	0.8954
IMOTHR	844.75105	10.63786	0.6145
LNPMFU	0.0658196	0.89335	0.9829
PMFUEL	128.97384	6.83647	0.9597
LNPMMA	0.0582666	0.98434	0.9802
PMMACH	26.25478	5.77766	0.9721
PMBM	27.33790	6.07631	0.9788
LNPMCD	0.0786732	1.38118	0.9529
PMCD	28.30026	7.77691	0.9470
LNPMCH	0.0734285	1.22549	0.9767
PMCHEM	36.69815	7.27647	0.9787
PMTEXT	48.96914	21.34489	0.9887

Appendix 3 (cont'd)

Statistics of Fit

Variable	RMS Error	RMS % Error	R-Square
LNPMOT	0.13791	2.22769	0.8882
PMOTHR	73.75491	13.79037	0.8120
MGDS	997.10546	6.16006	0.7326
PMGDS	59.92484	8.90412	0.9104
PMSV	51.32003	9.38449	0.9430
MSV	300.38369	12.19892	0.7442
IMPORT	1216.81	6.56049	0.7357
PM	58.55517	8.74279	0.9159
PGNP	27.73153	5.19671	0.9801
LNWPI	0.0569175	0.87168	0.9895
WPI	45.55447	5.42628	0.9793
PCG	15.96990	3.97722	0.9896
PCGOV	33.94409	6.40372	0.9800
CPI	32.24881	5.52239	0.9777
PGDCF	31.24520	5.12604	0.9819
PGDP	27.93875	5.22852	0.9797
CGN	1897.35	5.43825	0.9807
CG	572.44915	6.98192	-0.5083
CGOVN	1092.18	8.44769	0.9234
CONSGO	551.71642	12.41022	0.7863
NFIAN	498.93704	41.50746	0.9901
PNFIA	47.04273	8.92772	0.9409
KCAR	1795.32	17.55664	-1.0874
GNP	1190.44	1.32093	0.9611
GNPN	23458.57	4.61250	0.9835
K66	3411.59	1.25180	0.9907
DIRTAX	1214.73	11.03312	0.9577
TRADET	1347.38	7.89738	0.9404
OTHTAX	2893.00	16.34639	0.9040
NTAXRE	359.70745	6.75316	0.9932
LF	237.44356	1.28540	0.9875
FTEMPA	490.04655	7.86417	0.8105
FTEMP1	74.60428	3.49799	0.6419
FTEMP5	172.18554	3.44366	0.9256
FTEMP45	439.58046	3.25725	0.9413
FTUEMP	577.12748	10.53318	0.6028
FTUERA	0.0276262	9.66630	0.4857
NWAGUS	9.14678	3.71567	0.9842
RBLOAN	296.99931	9.54424	0.8640
PRPAL	253.22408	3.05025	0.8505
DRICE	188.00061	3.76192	0.9000
FPPAL	0.23774	11.75960	0.9168
SPALAY	121.04655	2.77939	0.8837
PPAL	37.27650	11.47530	0.9412

Statistics of Fit

Variable	RMS Error	RMS % Error	R-Square
EXPN	0	0	1.0000
DEFG	4761.90	68.10223	0.7276
ERXX	8.66279	0.63628	0.9997
ERMM	7.51525	0.78029	0.9998
PXDOL	0.0130009	3.49967	0.8753
PMDOL	0.0149966	3.76899	0.9133
X	247.49356	4.92918	0.9133
M	367.98894	5.77498	0.9231
TRABAL	435.97237	83.55692	0.7042
INMFMI	16.72381	17.84666	0.4576
ONMFMI	42.85829	9.52106	0.7631
INMTRD	16.72381	1.38485	0.9996
ONMTRD	42.85829	1.54018	0.9976
CURBAL	450.47853	60.22812	0.8444
CAPBAL	0	0	1.0000
BOP	450.47853	135.43816	0.8502
IRESCB	481.52727	33.84304	0.5465
CUTD	0.011669	4.93715	0.8119
SD	3323.65	10.29518	0.9672
DS	361.89862	7.04838	0.9927
MS	2395.48	8.07709	0.9532
LNTRES	0.11345	1.24816	0.9655
TRES	1470.55	10.98700	0.9429
REGS	720.62034	15.30109	0.7339
MULT	0.16260	5.21768	0.7770
OTHNDA	4267.30	25.75408	0.9952
NFA	5417.12	32.49082	0.9827
MACPS	2428.44	19.02713	0.9579
MB	3715.52	9.62977	0.9421
TL	11224.56	10.11467	0.9103
DTRAD	5843.16	8.41124	0.9644
TD	3836.62	15.69014	0.9010
NCNG	1944.05	33.16770	0.9739
FINDMB	2944.36	219.24971	-0.8826
FUNDS	6924.57	10.48977	0.9120
TBILL	0.93780	7.34750	0.9785
MSA	1950.47	7.94774	0.9509
TLA	7899.42	8.39752	0.9462
NDA	5222.90	12.06179	0.9913
FINNB	1981.56	165.64590	0.9852
INFL	6.08802	217.54465	0.7723
GDCF	1085.65	4.89225	0.9716
ICOR	1559.58	60.43496	-2.6053
REVEFF	1.22601	10.50598	-0.2273
TAXEFF	1.15637	11.32091	-1.0186
DRATIO	1.01680	69.76417	0.5473

Appendix 3 (cont'd)

Statistics of Fit

Variable	RMS Error	RMS % Error	R-Square
DCORN	63.19612	3.83722	0.8547
SCORN	62.95227	3.82342	0.8559
PINCO	26.97792	8.52305	0.9733
SSUGAR	65.67934	6.65470	0.9402
PSUG	30.12273	13.56167	0.9427
SCOCO	110.11158	7.90830	0.7811
PCOCO	88.31438	29.81788	0.8819
SOTHCR	238.45760	3.34066	0.9302
DOTHCR	238.50241	3.34114	0.9302
PINOC	28.89233	10.23137	0.9668
PFERT	0.39657	5.89262	0.9672
SCROPS	379.45904	2.40629	0.9103
PRRICE	164.94528	3.14745	0.8712
INVRIC	321.01336	20.54078	-0.7038
FPCORN	0	0	1.0000
BINVC	0	0	1.0000
SLIVPO	262.29197	5.81255	0.8796
DLIVPO	262.33179	5.81365	0.8795
PLIVPO	16.98712	6.50433	0.9867
SFISH	64.74770	1.60462	0.9699
DFISH	64.70442	1.60376	0.9700
PINFI	11.90120	3.92870	0.9962
DFOOD	131.86294	1.34538	0.9707
PFOOD	26.17819	6.59165	0.9821
DSEMR	81.77542	7.98252	0.9647
PSEM	19.59882	8.10264	0.9620
DGARMR	44.10098	4.08058	0.9492
PGARM	47.19484	10.53404	0.9662
DMFGO	446.14457	4.26785	0.8502
PMFGO	31.45326	6.34721	0.9829
DMFG	467.94944	2.01293	0.9066
PMFG	27.19800	6.27579	0.9828
DMQ	168.40079	8.68662	0.4437
PMQ	52.59541	15.38822	0.9495
DCONS	526.43332	9.05725	0.8847
PCONS	32.35364	6.67069	0.9675
PEGW	28.49687	4.18291	0.9869
SEGW	75.14543	4.98629	0.9597
DSER	563.54222	1.61804	0.9565
PSER	49.04350	7.94390	0.9473
VAR	576.48389	2.26146	0.9159
VIR	881.98111	2.72856	0.9011
GDP	1217.04	1.32932	0.9624
QS	1192.57	1.32314	0.9610
STATD	1238.04	1185.18	0.3520
TAXREV	4643.23	9.10011	0.9484
REV	4761.90	8.12897	0.9626
TOTTAX	3644.08	6.98300	0.9685