81
DISCUSSION PAPER
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DISCUSSION PAPER

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RESUMO

Este texto apresenta a última versão do modelo econométrico anual da economia brasileira desenvolvido pelo Gamma (Grupo de Análise e Modelagem Macroeconômica) do IPEA/DIPES. O modelo destina-se à realização de projeções e simulações de política econômica de médio e longo prazos. A especificação do modelo é basicamente keynesiana. Os procedimentos econométricos incluem diversos métodos de séries temporais, tais como análise de co-integração e modelos com parâmetros variáveis no tempo, bem como estimação por MQO e variáveis instrumentais. O desenvolvimento das equações visou, em geral, à obtenção de propriedades de longo prazo desejáveis do ponto de vista teórico, além de dinâmica de curto prazo consistente com os dados.

ABSTRACT

This paper presents the latest version of the annual econometric model for the Brazilian economy developed by the Group of Macroeconomic Analysis and Modelling (Gamma) at IPEA/DIPES. The model is designed to make medium run projections and policy simulations. The specification of the model is basically Keynesian. Estimation features include the use of various time series methods, such as FIML (full information maximum likelihood) cointegration analysis and time varying parameters, besides OLS and instrumental variables estimation. In general, the development of the model's equations has explicitly tried to ensure desirable long-run properties as well as reasonable short-run dynamics.

1 - INTRODUCTION

This paper presents the latest version of the annual econometric model for the Brazilian economy developed by the Group of Macroeconomic Analysis and Modelling (Gamma) at Research Directorate of the Institute of Applied Economic Research (IPEA/DIPES), in Rio de Janeiro, Brazil.

The model is designed to make medium run projections and policy simulations for the Brazilian economy. It is a large-scale annual model built upon the main identities of the Brazilian National Accounts, Balance of Payments, and Public Sector Budget Accounts.

The specification of the model is basically keynesian. Estimation features include the use of various time series methods, such as FIML (full information maximum likelihood) cointegration analysis and time varying parameters, besides OLS and instrumental variables estimation. The use of systems methods is not possible due to the lack of sufficiently long data for many variables.

In general, the development of the model´s equations has explicitly tried to ensure desirable long-run properties as well as reasonable short-run dynamics.

This paper is organized as follows. The first section sketches the structure of the model. The second section presents the main specification and estimation results for each block. The third section discusses some simulation experiments, showing how the model responds to a few major policy shocks. Finally, the fourth section concludes with a discussion of the model´s shortcomings and the next improvements to be made.

2 - THE MODEL STRUCTURE

As it stands now, the model is basically keynesian. Aggregate demand is given by individually estimated equations for aggregate consumption, aggregate investment and net exports of goods and services, while aggregate supply is determined by a Cobb-Douglas constant return production function. The equalization of aggregate demand and supply will determine real output, capacity utilization, employment and prices, and will typically correspond to an equilibrium with under-employment.

Appendix I presents the model´s flow diagram, its variables and equations and an overview of its block structure, normalization and contemporaneous relations. The model contains 231 equations out of which 32 are stochastic. The number of endogenous variables is 131; the remaining equations of the model are just identities, which define nominal variables and GDP proportions. Equations can be grouped in five major blocks: Aggregate Demand (equations 1 to 15), Aggregate Supply (16 to 22), Employment and Price Determination (equations 23 to 30), Monetary Sector (31 to 43), Public Sector Accounts (equations 44 to 98) and Balance of Payments Accounts (equations 99 to 131).

The Aggregate Demand block (equations 1 to 15) defines and specifies the determinants of aggregate consumption and major categories of fixed investment (construction and equipment). Lack of reliable data preludes the estimation of investment in inventories, as well as the disaggregation of consumption into durables/non-durables.

The Aggregate Supply block (equations 16 to 22) specifies the economy´s production function and the determination of the domestic capital stock, disaggregated into construction and machinery and equipment components.

The Employment and Price Determination block (equations 23 to 30) consists of a labour demand equation, a wage curve, a Phillips Curve-type equation for wholesale prices and a set of equations relating the evolution of other price indices to this "key" price. As a first approximation, all prices are supposed to grow at the same rate, so that the model behaves as if there were just one domestic price.

The Monetary Sector block (equations 31 to 43) also consists of a small set of equations that determine the real money stock, the amount of credit to the private sector, the nominal and real interest rate and the exchange rate.

The Public Sector block (equations 44 to 98) specifies the determinants of major categories of expenditures and revenues of General Government (federal, state and municipal levels), as well as the accumulation of public debt. The Public Sector debt also includes the borrowing requirements of State Enterprises which, for the time being, are exogenously given to the model. Possible improvements here are the specification of expenditure and revenues for the different levels of Brazilian government including state enterprises.

The Balance of Payments block (equations 99 to 131) defines and specifies the determinants of the main categories of exports (manufactured, semi-manufactured, and primary products) and imports (consumer, intermediate, and capital goods), as well as other items of the current accounts, and the external debt dynamics. For now, foreign investments (both equity and portfolio) and reserves are exogenously specified.

The main policy variables in the model are:

- Nominal exchange rate;
- Nominal interest rate;
- General Government Investment;
- General Government Expenditures;
- Tax rates;
- Import tariff rates; and
- Export subsidy rates.

Other important exogenous variables are:

- Net Foreign Investment (Direct and Portfolio);
- Privatization Revenues;
- International reserves;
- State Enterprises' Borrowing Requirements;
- Imports of Fuels and Lubrificants;
- United States' Wholesale Price Index;
- Libor rate; and
- World imports.

We will typically simulate the model under exogenously given trajectories for these variables. It should be noted, however, that some of the policy variables may be considered partially endogenous, as most General Government expenditures and revenues depend on current GDP growth and inflation, while the nominal interest rate and the exchange rate may be partially endogenized depending on the particular model closure adopted; e.g. some form of interest or purchasing power parity.

3 - SPECIFICATION AND ESTIMATION

This section discusses the estimation methodology and main results for each block of equations. Appendix 2 shows detailed estimation results and diagnostic tests for most equations.

3.1 - Aggregate Demand

Private Consumption

Real private consumption expenditure (CFTPP) — equation 3 — is specified as a function of real disposable income (RDOPP), real interest rates (TJCDB) and total real credit granted to the private sector (EMPTR). The equation is estimated in first differences plus an error-correction mechanism which incorporates the existence of an 1:1 long-run relationship between consumption and income — thus ensuring that these two variables cannot drift permanently away from each other. The equation is estimated by instrumental variables in order to account for the endogeneity of both disposable income and credit, thus providing consistent coefficient estimates.

This is one of the most important equations of the model, as the dynamics of real demand will depend to a large extent on the value of the keynesian multiplier. The estimated coefficient on disposable income is approximately 0.4, which implies a reasonably low short-run multiplier and therefore prevents the model from becoming too unstable.

It should be noted that the effect of interest rate movements on both consumption and investment (as we shall see below) is relatively weak, so that the effect of credit on private consumption is perhaps the main channel through which monetary policy may affect aggregate demand.

Private Investment

Real private investment is disaggregated into two main components: construction and equipment fixed investment.

The demand for investment in construction (FBKCP) is a function of GDP, the real interest rate and inflation acceleration (equation 8). The equation is specified as an error-correction model, in which the cointegrating vector includes a 1:1 relationship between investment and GDP. It is interesting to note that GDP does not enter the equation unlagged, so that its only effect on construction investment operates through the error-correction term. This also means that the equation can be consistently estimated by OLS.

Total demand for machinery and equipment is equal to the sum of capital goods imports and spending on domestic machinery. Capital goods imports are determined within the foreign sector block. Investment in domestic machinery (FBKMPD) depends on the real interest rate and on the rate of capacity utilization (equation 10). It is worth noting that investment in domestic machinery displays a pattern of slow adjustment to exogenous shocks, as no exogenous variable enters the equation contemporaneously. Once again, the absence of unlagged GDP implies that the equation may be consistently estimated by OLS.

3.2 - Aggregate Supply

Aggregate supply (equation 16) is given by a constant returns to scale Cobb-Douglas-type production function whereby domestic capital stock (ELKT), multiplied by the capacity utilization rate (UTIND), is combined with employed labour to produce output. Employed labour is proxied by active urban population (PEAURB) multiplied by the complement of the unemployment rate (TXDES). The equation is specified in terms of growth rates and estimated by OLS. Due to the lack of unemployment data before 1980, the sample period is very short, which may cause estimation biases. Estimation results, however, are quite reasonable: capital and labour account for roughly 70% and 30% of output growth, respectively; although very high compared with international standards, this seems to be consistent with the observed pattern of income distribution. The main problem seems to lie in the negative sign of the estimated constant term, which implies negative productivity growth. This may reflect the stagnation of the Brazilian economy during the estimation period or other estimations problems. For simulation purposes, it is necessary to arbitrarily assume some other value for the constant term (interpreted as an exogenously given rate of growth of total factor productivity - PTF) while ignoring the econometric problems associated with such approach.

The domestic capital stock is calculated according to a perpetual inventory method, where the durability of net capital stock in residential construction (ELKCER), non-residential construction (ELKCENR) and machinery and equipment (ELKM) is assumed to be 50, 40 and 20 years, respectively.[1]

The capacity utilization rate will vary in order to equalize aggregate supply and demand.

3.3 - Employment and Price Determination

Labour supply (PEAURB) is exogenous, whereas labour demand (equation 23) depends on the current real wage (SALR) and GDP growth. This equation was estimated by OLS.

The labour market is assumed to be characterized by rigidities that will typically prevent the equalization of labour supply and demand. A "wage curve" (equation 24) determines the degree of flexibility in real wages and, therefore, the degree to which adjustments in the labour market are accomplished by variations in wages or in the rate of unemployment.[2]

Domestic prices are determined by a Phillips Curve-type equation where current inflation depends on past inflation, variation in foreign prices multiplied by the exchange rate and capacity utilization (equation 25). All parameters are calibrated, subject to the restriction that the coefficients on past inflation and foreign prices (in domestic currency) sum to one. The ad-hoc specification of the price equation derives from the technical difficulties in the estimation of price behavior in an annual model for an economy which has experienced hyperinflation in recent history.

As a first approximation, all prices are supposed to grow at the same rate.

3.4 - Monetary Sector

The evolution of M1 is indirectly given by the variation in the velocity of money (M1PIB), which is a function of the nominal interest rate (equation 32). This equation was estimated by OLS.

M0 is assumed to be a constant proportion of M1, calculated as the observed mean ratio between these variables (equation 33).

Total real credit granted to the private sector (EMPTR) depends on the percent change in M1 (equation 35). This equation was also estimated by OLS.

[1] This methodology follows Morandi (1998).
[2] The slope coefficient is taken from Barros and Mendonça (1997).

The nominal interest rate is given either by the "desired" rate set exogenously by the authorities (TJCDBND) or by the minimum rate determined by an "ex-post interest parity condition", according to which the domestic interest rate may not be lower than the international interest rate (LIBOR) corrected by the domestic currency nominal devaluation and a risk premium (RISCO) — equation 36.

Similarly, the nominal exchange rate is determined by the "desired" devaluation rate set exogenously by the authorities (DESVD). In alternative model closures, we might want to specify the exchange rate as a function of past or current inflation so as to keep the real exchange rate under control. It should be noted, however, that given the significant effect of nominal devaluations on current inflation (equation 25), such rules might bring about an upward inflation-devaluation spiral.

3.5 - Public Sector

The Public Sector Borrowing Requirements are disaggregated into General Government and Public Enterprises borrowing requirements.

Public Enterprises Borrowing Requirements are basically exogenous, as they depend on exogenously given primary results.

The General Government´s main revenues and expenditures (equations 52-59 and 68-73, respectively), in real terms, are specified as functions of real GDP and inflation. GDP is used as proxy for the tax base in the case of revenues, and as trend in the case of expenditures. Inflation affects the real value of expenditures and revenues through three main effects: *a)* taxes and expenditures are eroded because they are not perfectly indexed to prices; *b)* the time lag between tax collection and generation — the Tanzi effect; and *c)* and last but not least, because inflation tends to introduce a discretionary behavior of government taxation and spending.

The inflation effects described above can be quite significant in a high inflation economy. Furthermore, for modeling purposes, these effects tend to make constant parameter models unsuitable. In order to allow some parameters to vary through time, a state-space form representation was used for most of the equations. Thus, the real GDP coefficient was assumed to be constant, whereas the constant and inflation coefficients were allowed to vary, following a random walk process.

These equations are specified as follows:

$y(t) = z(t)\ \text{gamma}(t) + x(t)\ \text{beta} + d(t) + s(t)\ w(t)$ (measurement equation)
$\text{gamma}(t) = \text{phi}(t)\ \text{gamma}(t\text{-}1) + c(t) + psi(t)\ v(t)$ (transition equation)
$E(vt\ vt') = \text{sigmav}(t)$
$E(wt\ wt') = \text{sigmaw}(t)$

where GDP would be included in the x(t) vector (with constant coefficient beta) and inflation in the z(t) vector (with varying coefficient gamma(t)). These equations can be estimated straightforwardly by the Kalman Filter method.[3]

It is worth noting that all of the estimated coefficients have the expected sign and very 'reasonable' elasticities. As can be seen from the Table below, in most equations the GDP (constant) coefficient is very close to 1, as we should expect.

GDP Coefficients in the Revenue and Expenditure Equations

Revenues/Expenditures	Equation	Coefficient	Std Deviation
IR	31	1.0845	0.21246
IPI	33	1.1252	0.29699
ICMS	35	1.1572	0.17002
OTGG	37	1.1105	0.20381
GPGG	40	1.0055	0.17409
TAPGG	42	0.7874	0.23257
ODCCGG	44	1.0912	0.25654

For simulation purposes, we may change the intercept coefficient as a proxy for desired variations in tax revenues/expenditures. The actual variation will depend on GDP growth and inflation.

Nominal interest payments are determined by the amount of public debt, real interest rates on external and internal debt — which depend on international interest rates plus a spread and real interest rates for the economy as a whole, respectively — and monetary correction (equations 74-81).

The variation in public debt is determined by equations 91-98.

3.6 - Balance of Payments

Trade Equations

The import and export equations follow a very standard specification; imports depend on the real exchange rate (corrected by a category-specific tariff index) and real domestic activity (GDP), whereas exports´ performance is determined by the rate of growth of world imports (MW), the real exchange rate (corrected by a sector-specific subsidy index) and domestic capacity utilization (UTIND).

The equations have been estimated by Johansen´s cointegration procedure within an error-correction model framework. It is important to note that all equations except one (consumer goods imports) have passed a battery of diagnostic tests, including Chow structural stability tests. Besides, various exogeneity tests were performed and, in most cases, the equations were found to possess all the

[3] For further details on the estimation methodology, see Hernandez (1998).

desirable properties for making efficient and unbiased forecasts and policy simulations — i.e., strong and superexogeneity of the conditioning variables [see Castro and Cavalcanti (1997)].

Import equations were estimated separately for each category of use, capital, intermediate and consumer goods. Oil imports are exogenous.

The export equations were estimated for primary, semi-manufactured and manufactured products.

Services

The Services accounts' equations (equations 110-125) are disaggregated according to standard classification into non-factor and factor services. Non-factor services (equations 116-125) basically depend on the value of the country´s total trade; in the case of tourism expenditure, the real exchange rate is also included as an explanatory variable. Factor services (equations 111-115) depend on the international interest rate plus a spread, the net stock of foreign capital and net external debt. All equations are specified as autoregressive-distributed-lag (ADL) models and estimated by OLS and are usually characterized by well-behaved residuals and constant parameters.

External Debt

The external debt dynamics is determined by the current account balance. Given that flows of foreign direct and portfolio investment (IEDL and IEPL) and changes in international reserves (HACP) are assumed to be exogenous, the Current Account Deficit determines the variation in the country's external debt (equation 129). The equation also captures the changes in the value of non-dollar denominated debt that arise from variations in the exchange rate of the US dollar vis-à-vis other currencies.

4 - MODEL SIMULATIONS

This section illustrates the model's responses to selected simulation experiments.

First, we solve the model under a baseline scenario of exogenous and predetermined variables, in which we assume an unchanged international environment and a smooth path for Brazil's macroeconomic policies – basically, a tight fiscal budget, slowly depreciating exchange rate and declining interest rates.

We then perform two experiments: a large exogenous depreciation of the nominal exchange rate, of 20%, in 1999 (Experiment 1 - X1) and a permanent negative shock on General Government consumption, of 5%, in 1999 (Experiment 2 - X2).

FIGURE 1 - DEVIATIONS FROM BASELINE FOR SELECTED VARIABLES
EXPERIMENT 1 (X1): 20% NOMINAL EXCHANGE RATE DEVALUATION IN 1999
EXPERIMENT 2 (X2): 5% PUBLIC CONSUMPTION REDUCTION IN 1999

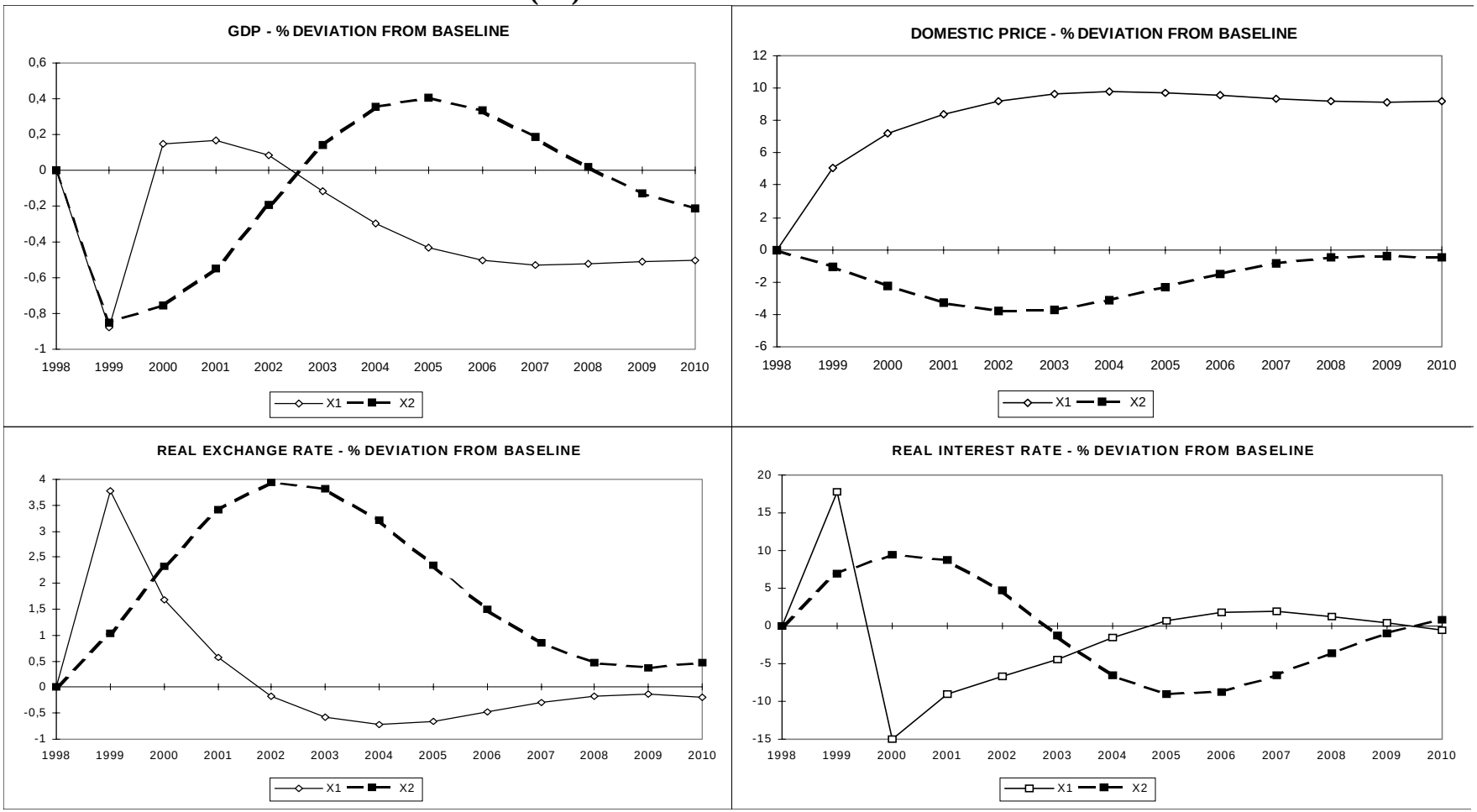
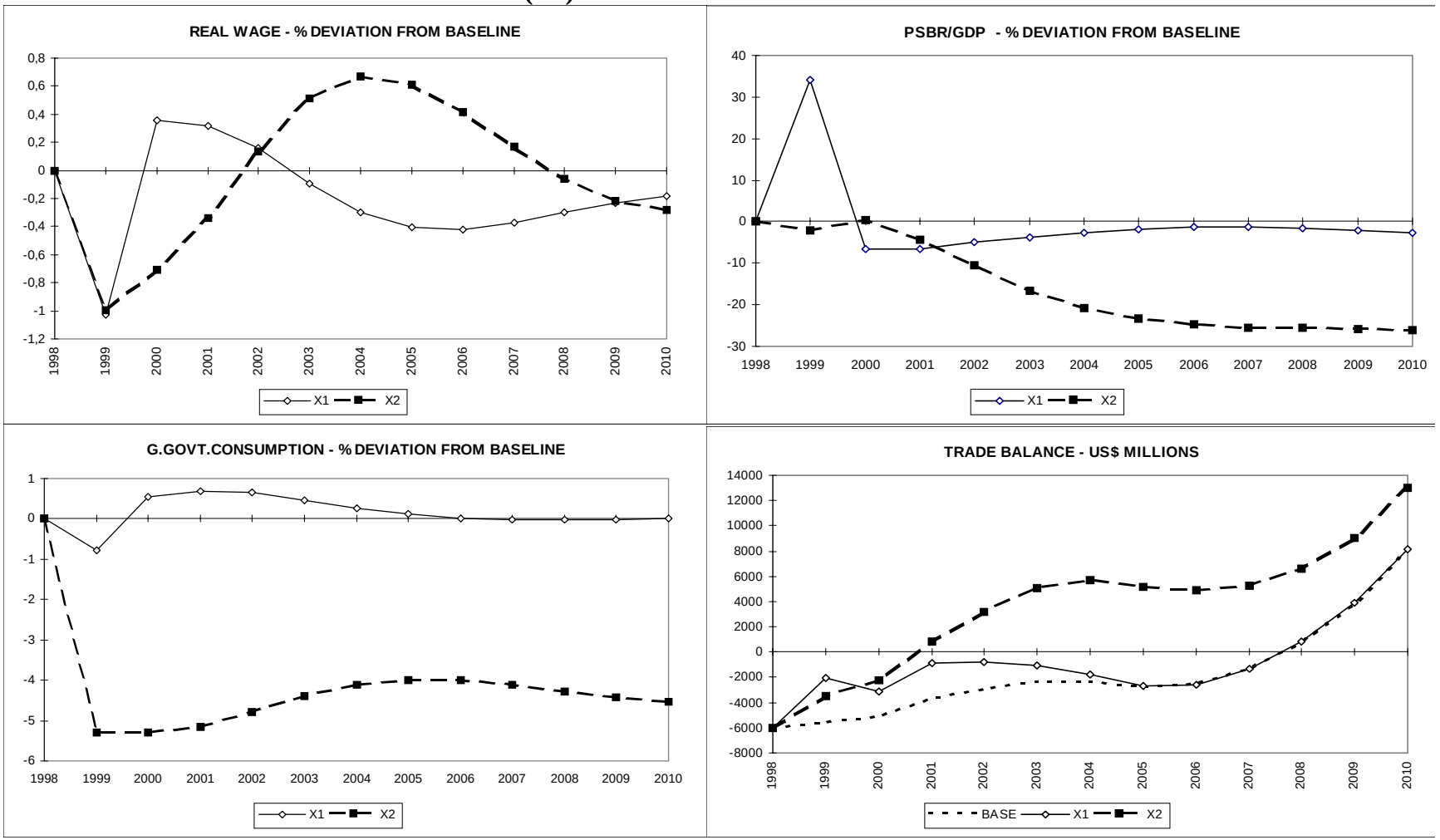


FIGURE 2 - DEVIATIONS FROM BASELINE FOR SELECTED VARIABLES
EXPERIMENT 1 (X1): 20% NOMINAL EXCHANGE RATE DEVALUATION IN 1999
EXPERIMENT 2 (X2): 5% PUBLIC CONSUMPTION REDUCTION IN 1999



We report below deviations from the baseline path for some of the main variables in the model. In the case of the trade balance, we show the actual value in US$ millions.

5 - CONCLUSION

The current version of the model already allows relatively rich projections and simulation exercises, which seem to provide fairly reasonable outcomes. Nonetheless, there still are significant improvements to be made.

Among the main shortcomings of the model we should point out the following:

1 - The price equation is specified in an ad-hoc manner, due to the difficulties in estimating price behaviour in an economy with a history of hyperinflation;

2 - Wages and labour demand are poorly specified;

3 - The monetary sector is also poorly specified and has little effect on real variables;

4 - Capital flows are not explicitly modelled, which does not allow us to infer the positive impacts of high domestic interest rates/investment returns on the financing of current account deficits and on the accumulation of international reserves;

5 - Inventories are not modelled, due to the lack of reliable data. This considerably constrains the model´s investment dynamics — although it should be said that this problem is probably worse in higher frequency models;

6 - There is no role played by expectations, so that the model is inherently backward-looking. This problem is especially important in the specification of financial variables; and

7 - As a general difficulty, the estimated equations usually require a number of dummy variables to account for the frequent breaks and/or outliers in Brazilian macroeconomic series. It is very hard to avoid such modelling shortcomings that arise in economies with a history of severe structural breaks and policy regime changes.

The next improvements to be made shall focus on overcoming some of these difficulties.

Endogenous Variables

CFT	Total Final Consumption (Millions of Reais,1980 prices)
CFTPP	Total Private Final Consumption (Millions of Reais,1980 prices)
CMEE	Public Enterprises Monetary Correction Payments (Millions of Reais, 1980 prices)
CMEEN	Public Enterprises Monetary Correction Payments (Millions of Reais)
CMEEPIB	Public Enterprises Monetary Correction Payments as proportion of GDP
CMGG	General Government Monetary Correction Payments (Millions of Reais, 1980 prices)
CMGGN	General Government Monetary Correction Payments (Millions of Reais)
CMGGPIB	General Government Monetary Correction Payments as proportion of GDP
CPMF	CPMF Revenue (Millions of Reais,1980 prices)
CPMFN	CPMF Revenue (Millions of Reais)
CR	Real Exchange Rate (US$/R$)
CTGG	General Government Final Consumption (Millions of Reais,1980 prices)
CTRIB	Total Gross Tax Revenue (Millions of Reais, 1980 prices)
CTRIBL	Total Net Tax Revenue (Millions of Reais, 1980 prices)
CTRIBLN	Total Net Tax Revenue (Millions of Reais)
CTRIBN	Total Gross Tax Revenue (Millions of Reais)
CTRIBPIB	Total Gross Tax Revenue as a proportion of GDP
DEXEE	Public Enterprises External Debt (Millions of Reais,1980 prices)
DEXEEN	Public Enterprises External Debt(Millions of Reais)
DEXEEPIB	Public Enterprises External Debt as proportion of GDP
DEXGG	General Government External Debt (Millions of Reais,1980 prices)
DEXGGN	General Government External Debt(Millions of Reais)
DEXGGPIB	General Government External Debt as proportion of GDP
DEXPR	Private Sector External Debt (Millions of US$)
DEXT	Total External Debt (Millions of US$)
DEXTPIB	Total External Debt as a proportion of GDP
DEXTXTV	Total External Debt as a proportion of Total Exports
DINEE	Public Enterprises Internal Debt (Millions of Reais,1980 prices)
DINEEN	Public Enterprises Internal Debt (Millions of Reais)
DINEEPIB	Public Enterprises Internal Debt as proportion of GDP
DINGG	General Government Internal Debt (Millions of Reais,1980 prices)
DINGGN	General Government Internal Debt (Millions of Reais)
DINGGPIB	General Government Internal Debt as proportion of GDP
DIPIB	GDP Implicit Price Deflator, period average (1980=1)
DTCCGG	General Government Current Expenditure (Millions of Reais,1980 prices)
DTCCGGN	General Government Current Expenditure (Millions of Reais)
DTCCGGPIB	General Government Current Expenditure as proportion of GDP
DTEE	Public Enterprises Total Debt (Millions of Reais,1980 prices)
DTEEN	Public Enterprises Total Debt(Millions of Reais)
DTEEPIB	Public Enterprises Total Debt as proportion of GDP
DTGG	General Government Total Debt (Millions of Reais,1980 prices)
DTGGN	General Government Total Debt (Millions of Reais)
DTGGPIB	General Government Total Debt as proportion of GDP
ELKCENR	Net Domestic Capital Stock in Non-Residential Construction (Millions of Reais,1980 prices)
ELKCER	Net Domestic Capital Stock in Residential Construction (Millions of Reais,1980 prices)
ELKM	Net Domestic Capital Stock in Machinery and Equipment (Millions of Reais,1980 prices)
ELKT	Total Net Domestic Capital Stock (Millions of Reais,1980 prices)
EMPTR	Total Credit to Private Sector (Millions of Reais, 1980 prices)
ER	Nominal Exchange Rate, Real/US$

(continue)

ERNPT	Nominal Exchange Rate, Real/US$, corrected for exchange auction
ERV	Nominal Exchange Rate, Real/US$, period average
ERVF	Nominal Exchange Rate, Real/US$, end of period
FBKC	Gross Fixed Capital Formation Construction - Total (Millions of Reais,1980 prices)
FBKCENR	Gross Fixed Capital Formation - Non-Residential Construction - Total (Millions of Reais,1980 prices)
FBKCER	Gross Fixed Capital Formation - Residential Construction - Total (Millions of Reais,1980 prices)
FBKCG	Gross Fixed Capital Formation - Construction - General Government (Millions of Reais,1980 prices)
FBKCP	Gross Fixed Capital Formation - Construction - Private Sector (Millions of Reais,1980 prices)
FBKCPN	Gross Fixed Capital Formation - Construction - Private Sector(Thousands of Reais)
FBKCPPIB	Gross Fixed Capital Formation - Construction - Private Sector as proportion of GDP
FBKF	Gross Fixed Capital Formation - Total (Millions of Reais,1980 prices)
FBKFGG	Gross Fixed Capital Formation - General Government (Millions of Reais,1980 prices)
FBKFGGPIB	Gross Fixed Capital Formation - General Government as proportion of GDP
FBKFP	Gross Fixed Capital Formation - Private Sector (Millions of Reais,1980 prices)
FBKFPIB	Gross Fixed Capital Formation - Total as proportion of GDP
FBKFPN	Gross Fixed Capital Formation - Private Sector (Thousands of Reais)
FBKFPPIB	Gross Fixed Capital Formation - Private Sector as proportion of GDP
FBKM	Gross Fixed Capital Formation - Machinery - Total (Millions of Reais,1980 prices)
FBKMG	Gross Fixed Capital Formation - Machinery - General Government (Millions of Reais,1980 prices)
FBKMP	Gross Fixed Capital Formation - Machinery and Equipment - Private Sector (Millions of Reais,1980 prices)
FBKMPD	Gross Fixed Capital Formation - Domestic Machinery and Equipment - Private Sector (Millions of Reais,1980 prices)
FBKMPDN	Gross Fixed Capital Formation - Domestic Machinery and Equipment - Private Sector (Thousands of Reais)
FBKMPN	Gross Fixed Capital Formation Machinery and Equipment Private Sector(Thousands of Reais)
FBKMPPIB	Gross Fixed Capital Formationem Machinery and Equipment - Private Sector as proportion of GDP
FBKO	Gross Fixed Capital Formation - Other - Private Sector (Millions of Reais,1980 prices)
GPGG	General Government Expenditure - Employees/Contributions Millions of Reais,1980 prices)
GPGGN	General Government Expenditure - Employees/Contributions (Thousands of Reais)
GPGGPIB	General Government Expenditure - Employees/Contributions as proportion of GDP
ICMS	Circulation of Goods and Services Tax Revenue (Millions of Reais,1980 prices)
ICMSN	Circulation of Goods and Services Tax (Millions of Reais)
ICMSPIB	Circulation of Goods and Services Tax Revenue as proportion of GDP
IGP	General Price Index, period average (1980=1)
IGPF	General Price Index, end of period
IINF	Inflationary Tax (Millions of Reais,1980 prices)
IINFN	Inflationary Tax (Millions of Reais)
IINFPIB	Inflationary Taxes as a proportion of GDP
IPA	Wholesale Price Index, period average (1980=1)

(continue)

IPC	Consumer Price Index, period average (1990=100)
IPI	Industrialized Product Tax Revenue (Millions of Reais,1980 prices)
IPIN	Industrialized Products Tax (Millions of Reais)
IPIPIB	Industrialized Product Tax Revenue as proportion of GDP
IR	Income Tax Revenue (Millions of Reais,1980 prices)
IRN	Income Tax (Millions of Reais)
IRPIB	Income Tax Revenue as proportion of GDP
JNDTGG	General Government Nominal Interest Payments on Total Debt (Millions of Reais,1980 prices)
JNDTGGN	General Government Nominal Interest Payments on Total Debt (Millions of Reais)
JNDTGGPIB	General Government Nominal Interest Payments on Total Debt as proportion of GDP
JRDEE	Public Enterprises Real Interest Payments on Total Debt (Millions of Reais,1980 prices)
JRDEEN	Public Enterprises Real Interest Payments on Total Debt (Millions of Reais)
JRDEEPIB	Public Enterprises Real Interest Payments on Total Debt as proportion of GDP
JRDEXEE	Public Enterprises Real Interest Payments on External Debt (Millions of Reais, 1980 prices)
JRDEXEEN	Public Enterprises Real Interest Payments on External Debt (Millions of Reais)
JRDEXEEPIB	Public Enterprises Real Interest Payments on External Debt as proportion of GDP
JRDEXGG	General Government Real Interest Payments on External Debt (Millions of Reais, 1980 prices)
JRDEXGGN	General Government Real Interest Payments on External Debt (Millions of Reais)
JRDEXGGPIB	General Government Real Interest Payments on External Debt as proportion of GDP
JRDGG	General Government Real Interest Payments on Total Debt (Millions of Reais,1980 prices)
JRDGGN	General Government Real Interest Payments on Total Debt (Millions of Reais)
JRDGGPIB	General Government Real Interest Payments on Total Debt as proportion of GDP
JRDINEE	Public Enterprises Real Interest Payments on Internal Debt (Millions of Reais, 1980 prices)
JRDINEEN	Public Enterprises Real Interest Payments on Internal Debt (Millions of Reais)
JRDINEEPIB	Public Enterprises Real Interest Payments on Internal Debt as proportion of GDP
JRDINGG	General Government Real Interest Payments on Internal Debt (Millions of Reais, 1980 prices)
JRDINGGN	General Government Real Interest Payments on Internal Debt (Millions of Reais)
JRDINGGPIB	General Government Real Interest Payments on Internal Debt as proportion of GDP
JUR	Net Foreign Interest Revenues(Millions of US$)
JURDES	Foreign Interest Expenditures (Millions of US$)
JURDESPIB	Foreign Interest Payments as a proportion of GDP
JURPIB	Net Foreign Interest Payments as a proportion of GDP
JURREC	Foreign Interest Revenues (Millions of US$)
KED	Net Foreign Capital Stock (Millions of Dollars)
M0	Real Monetary Base, Year Average (Millions of Reais,1980 prices)
M0FR	Real Monetary Base, End of Period (Millions of Reais,1980 prices)
M1	Real M1 (Millions of Reais, 1980 prices)
M1PIB	Velocity of Money
MBCV	Imports - Consumption Goods (Millions of US$)

(continue)

MBIV	Imports - Intermediate Goods (Millions of US$)
MBKV	Imports - Capital Goods (Millions of US$)
MBSNF	Imports of Goods and Non-Factor Services (Millions of US$)
MTV	Total Imports (Millions of US$)
MTVPIB	Total Imports as a proportion of GDP
NFEEN	Public Enterprises Borrowing Requirements, Nominal (Millions of Reais, 1980 prices)
NFEENN	Public Enterprises Borrowing Requirements, Nominal (Millions of Reais)
NFEENPIB	Public Enterprises Borrowing Requirements, Nominal as proportion of GDP
NFEEO	Public Enterprises Borrowing Requirements, Operational (Millions of Reais, 1980 prices)
NFEEON	Public Enterprises Borrowing Requirements, Operational (Millions of Reais)
NFEEOPIB	Public Enterprises Borrowing Requirements, Operational as proportion of GDP
NFEEPN	Public Enterprises Borrowing Requirements, Primary (Millions of Reais)
NFEEPPIB	Public Enterprises Borrowing Requirements, Primary as proportion of GDP
NFGGN	General Government Borrowing Requirements, Nominal (Millions of Reais, 1980 prices)
NFGGNN	General Government Borrowing Requirements, Nominal (Millions of Reais)
NFGGNPIB	General Government Borrowing Requirements, Nominal as proportion of GDP
NFGGO	General Government Borrowing Requirements, Operational (Millions of Reais, 1980 prices)
NFGGON	General Government Borrowing Requirements, Operational(Millions of Reais)
NFGGOPIB	General Government Borrowing Requirements, Operational as proportion of GDP
NFGGP	General Government Borrowing Requirements, Primary (Millions of Reais, 1980 prices)
NFGGPN	General Government Borrowing Requirements, Primary (Millions of Reais)
NFGGPPIB	General Government Borrowing Requirements, Primary as proportion of GDP
NFSPN	Public Sector Borrowing Requirements, Nominal (Millions of Reais,1980 prices)
NFSPNN	Public Sector Borrowing Requirements, Nominal (Millions of Reais)
NFSPNPIB	Public Sector Borrowing Requirements, Nominal as proportion of GDP
NFSPO	Public Sector Borrowing Requirements, Operational (Millions of Reais,1980 prices)
NFSPON	Public Sector Borrowing Requirements, Operational (Millions of Reais)
NFSPOPIB	Public Sector Borrowing Requirements, Operational as proportion of GDP
NFSPP	Public Sector Borrowing Requirements, Primary (Millions of Reais,1980 prices)
NFSPPN	Public Sector Borrowing Requirements, Primary (Millions of Reais)
NFSPPPIB	Public Sector Borrowing Requirements, Primary as proportion of GDP
ODCCGG	Other General Government Current Expenditures (Millions of Reais,1980 prices)
ODCCGGN	Other General Government Current Expenditures (Thousands of Reais)
ODCCGGPIB	Other General Government Current Expenditures as proportion of GDP
ORCCGG	Other General Government Current Revenue (Millions of Reais,1980 prices)
ORCLN	Other General Government Net Current Revenues (Thousands of Reais)
ORCLPIB	Other General Government Net Current Revenues as proportion of GDP
OSNF	Net Other Non-Factor Services (Millions of US$)
OSNFDES	Other Non-Factor Services Expenditures (Millions of US$)
OSNFREC	Other Non-Factor Services Revenues (Millions of US$)
OTGG	Other General Government Taxes (Millions of Reais, 1980 prices)
OTGGN	General Government Revenue from Other Taxes (Millions of Reais)
OTGGPIB	General Government Revenue from Other Taxes as proportion of GDP
PELPIB	Net External Liabilities as a proportion of GDP
PIB	Real Gross Domestic Product (Reais, 1980 prices)
PIBN	Nominal Gross Domestic Product(Thousands of Reais)
POUCCGG	General Government Current Account Surplus (Millions of Reais,1980 prices)

(continue)

POUCCGGN	General Government Current Account Surplus (Millions of Reais)
POUCCGGPIB	General Government Current Account Surplus as proportion of GDP
RDOPP	Private Sector Disposable Income (Millions of Reais,1980 prices)
RES	International Reserves - International Liquidity (Millions of US$)
RESMTV	International Reserves as a proportion of Total Imports
RESPIB	International Reserves as a proportion of GDP
RLE	Net Factor Income Payments to the Rest of the World (Millions of US$)
RTCCGG	General Government Current Revenue (Millions of Reais,1980 prices)
RTCCGGN	General Government Current Revenue (Millions of Reais)
RTCCGGPIB	General Government Current Revenue as proportion of GDP
SALN	Nominal Wage Index (Year Average)
SALR	Real Wage Index (Year Average)
SBC	Trade Balance (Millions ofUS$)
SER	Net Services (Millions of US$)
SERPIB	Net Services as a proportion of GDP
SF	Net Factor Services (Millions of US$)
SFEXJ	Net Factor Services less Interest (Millions of US$)
SFEXJPIB	Net Factor Services less Interest as a proportion of GDP
SFPIB	Net Factor Services as a proportion of GDP
SNF	Net Non-Factor Services (Millions of US$)
SNFPIB	Net Non-Factor Services as a proportion of GDP
STC	Current Account Balance (Millions of US$)
STCPIB	Current Account Balance as a proportion of GDP
SUB	Domestic Subsidies (Millions of Reais, 1980 prices)
TAPGG	Transfers to Households (Millions of Reais,1980 prices)
TAPGGN	Transfers to Households(Thousands of Reais)
TAPGGPIB	Transfers to Households as proportion of GDP
TCMEE	Public Enterprises Rate of Monetary Correction
TCMGG	General Government Rate of Monetary Correction
TJCDB	Real Interest Rate - Bank Deposits (% a.a.)
TJCDBN	Nominal Interest Rate - Bank Deposits (% a.a.)
TJOVER	Nominal Interest Rate - Overnight (% per month)
TJRDEXEE	Public Enterprises Foreign Debt Real Interest Rate
TJRDEXGG	General Government Foreign Debt Real Interest Rate
TJRDINEE	Public Enterprises Internal Debt Real Interest Rate
TJRDINGG	General Government Internal Debt Real Interest Rate
TRPSEG	Net Freight and Insurance (Millions of US$)
TRPSEGD	Freight and Insurance Expenditure (Millions of US$)
TRPSEGR	Freight and Insurance Revenue (Millions of US$)
TUNPIB	Unrequited Transfers (Net) as a proportion of GDP
TUR	Net International Travel (Millions of US$)
TURDES	International Travel Expenditure (Millions of US$)
TURREC	International Travel Revenue (Millions of US$)
TXDES	Unemployment Rate
UTIND	Rate of Capacity Utilization
XBSNF	Exports of Goods and Non-Factor Services (Millions of US$)
XBV	Exports Primary Products (Millions of US$)
XMV	Exports - Manufactured Products (Millions of US$)
XSV	Exports - Semi-manufactured Products (Millions of US$)
XTEV	Exports - Special Transactions (Millions of US$)
XTV	Total Exports (Millions of US$)
XTVPIB	Total Exports as a proportion of GDP

Exogenous Variables

DESVD	"Desired" Nominal Exchange Rate Devaluation
DEXEEPCT	Share of Public Enterprises in Total Foreign Debt
DEXPRPCT	Share of Private Sector in Total Foreign Debt
FBKFGN	Gross Fixed Capital Formation - General Government (Thousands of Reais)
FBKOPCT	Share of Other Gross Fixed Capital Formation in Total Private Investment
GDPUS	United States GDP
HACP	Variation in International Reserves (Millions of US$)
IEDL	Net Foreign Direct Investment (Millions of US$)
IEPL	Net Foreign Portfolio Investment (Millions of US$)
IPAUS	United States' Wholesale Price Index (1980=100)
IPCUS	United States' Consumer Price Index (1990=100)
LIBOR	6-month, US$, Libor Rate (in %)
MCLV	Imports Fuels and Lubrificants (Millions of US$)
MW	World Imports (US$ billions)
NFEEP	Public Enterprises Borrowing Requirements, Primary (Millions of Reais, 1980 prices)
PEAURB	Active Urban Population (Number of Persons)
PND	Privatization Revenues (Millions of US$)
PNDPCT	Share of Privatization Revenues used in Debt Reduction (Millions of US$)
PTF	Total Factor Productivity Index
REINV	Reinvestment (Millions of US$)
RISCO	Risk Premium
SPREAD	Implicit Spread on Foreign Interest Payments
SUBN	Domestic Subsidies (Thousands of Reais)
SXB	Index of Incentives to Exports of Primary Products
SXM	Index of Incentives to Exports of Semi-manufactured Products
SXS	Index of Incentives to Exports of Manufactured Products
TJCDBND	"Desired" Nominal Interest Rate - Bank Deposits (% a.a.)
TLBC	Index of Tariffs for Imports of Consumer Goods
TLBI	Index of Tariffs for Imports of Intermediate Goods
TLBK	Index of Tariffs for Imports of Capital Goods
TREND	Deterministic Trend
TUN	Net Unrequited Transfers (Millions of US$)
TXCAEAL	Nominal Exchange Rate DM/US$, end of period
TXCAEJP	Nominal Exchange Rate Yen/US$, end of period
TXCRFFR	Nominal Exchange Rate FFR/US$, end of period
TXDEPR	Rate of Foreign Capital Depreciation
XTEVPCT	Share of Special Transactions in Total Exports

Notation

The model is written in TROLL language.

LOG(X)	is the natural logarithm of variable X
X(-i)	is the i-th lag of variable X
DEL(i:X)	is the i-th difference of variable X

EQUATIONS

1 - Aggregate Demand

Real Gross Domestic Product (Reais, 1980 prices)

1: PIB PIB = (CFT+FBKF+(XBSNF-MBSNF)*ERV/DIPIB)*1000000

Total Final Consumption (Millions of Reais,1980 prices)

2: CFT CFT = CFTPP+CTGG

Total Private Final Consumption (Millions of Reais,1980 prices)

3: CFTPP DEL(1: LOG(CFTPP)) = A24.1*DEL(1: LOG(RDOPP))+A24.2*DEL(1: LOG(EMPTR))+A24.3*(LOG(CFTPP(-1))-LOG(RDOPP(-1)))+A24.4*DEL(1: TJCDB)

Private Sector Disposable Income (Millions of Reais,1980 prices)

4: RDOPP RDOPP = PIB/1000000-CTRIBL-(RLE*ERV)/DIPIB

General Government Final Consumption (Millions of Reais,1980 prices)

5: CTGG CTGG = GPGG+ODCCGG-SUB

Gross Fixed Capital Formation - Total (Millions of Reais,1980 prices)

6: FBKF FBKF = FBKFP+FBKFGG

Gross Fixed Capital Formation - Private Sector (Millions of Reais,1980 prices)

7: FBKFP FBKFP = FBKCP+FBKMP+FBKO

Gross Fixed Capital Formation - Construction - Private Sector (Millions of Reais,1980 prices)

8: FBKCP DEL(1: LOG(FBKCP)) = A21.0+A21.1*TJCDB+A21.2*(LOG(FBKCP(-1))-LOG(PIB(-1)))

Gross Fixed Capital Formation - Machinery and Equipment - Private Sector (Millions of Reais,1980 prices)

9: FBKMP FBKMP = FBKMPD+MBKV*ERV/DIPIB

Gross Fixed Capital Formation - Domestic Machinery and Equipment - Private Sector (Millions of Reais,1980 prices)

10: FBKMPD DEL(1: LOG(FBKMPD)) = A25.1*UTIND(-1)+A25.2*DEL(1: UTIND(-2))+A25.3*TJCDB(-1)

Gross Fixed Capital Formation - Other - Private Sector (Millions of Reais,1980 prices)

11: FBKO FBKO = FBKFP*FBKOPCT Gross Fixed Capital Formation – Machinery - Total (Millions of Reais,1980 prices)

12: FBKM FBKM = FBKMG+FBKMP

Gross Fixed Capital Formation - Machinery - General Government (Millions of Reais,1980 prices)

13: FBKMG FBKMG = FBKFGG-FBKCG

Gross Fixed Capital Formation - Construction - Total (Millions of Reais,1980 prices)

14: FBKC FBKC = FBKCG+FBKCP

Gross Fixed Capital Formation - Construction - General Government (Millions of Reais,1980 prices)

15: FBKCG FBKCG = 0.85*FBKFGG

2 - Aggregate Supply

Aggregate Production Function
16: PROD DEL(1: PIB)/PIB(-1) = PTF/PTF(-1)-1+A26.1*DEL(1: ELKT*UTIND)/(ELKT(-1)*UTIND(-1))+(1-A26.1)*DEL(1: PEAURB*(1-TXDES/100))/(PEAURB(-1)*(1-TXDES(-1)/100)) Total Net Domestic Capital Stock (Millions of Reais,1980 prices)
17: ELKT ELKT = ELKCER+ELKCENR+ELKM
Net Domestic Capital Stock in Residential Construction (Millions of Reais,1980 prices)
18: ELKCER ELKCER = ELKCER(-1)+FBKCER-1/50*(0.5*(FBKCER+FBKCER(-50))+SUM(I = -49 TO 0: FBKCER(I)))
Net Domestic Capital Stock in Non-Residential Construction (Millions of Reais,1980 prices)
19: ELKCENR ELKCENR = ELKCENR(-1)+FBKCENR-1/40*(0.5*(FBKCENR+FBKCENR (-40))+SUM(I = -39 TO 0: FBKCENR(I)))
Gross Fixed Capital Formation - Residential Construction - Total (Millions of Reais,1980 prices)
20: FBKCER FBKCER = 0.6*FBKC
Gross Fixed Capital Formation - Non-Residential Construction - Total (Millions of Reais,1980 prices)
21: FBKCENR FBKCENR = FBKC-FBKCER
Net Domestic Capital Stock in Machinery and Equipment (Millions of Reais,1980 prices)
22: ELKM ELKM = ELKM(-1)+FBKM-0.05*(0.5*(FBKM+FBKM(-20))+SUM(I = -19 TO 0: FBKM(I)))

3 - Employment and Prices

Labour Demand - Employed Workers Index (Year Average)
23: DTRAB DEL(1: LOG(PEAURB*(1-TXDES/100))) = A27.0+A27.1*LOG(SALR)+A27.2*DEL(1: LOG(PIB))
Wage Curve - Real Wage Index (Year Average)
24: SALR LOG(SALR) = 6.003-4*TXDES/100
Wholesale Price Index, period average (1980=1)
25: IPA DEL(1: IPA)/IPA(-1) = 0.35*DEL(1: IPA(-1))/IPA(-2)+0.65*DEL(1: ERV*IPAUS)/(ERV(-1)*IPAUS(-1))+1.1*(UTIND-0.835)
General Price Index, period average (1980=1)
26: IGP IGP/IGP(-1) = IPA/IPA(-1)
General Price Index, end of period
27: IGPF IGPF/IGPF(-1) = IGP/IGP(-1)
Consumer Price Index, period average (1990=100)
28: IPC IPC/IPC(-1) = IGP/IGP(-1)
GDP Implicit Price Deflator, period average (1980=1)
29: DIPIB DIPIB/DIPIB(-1) = IGP/IGP(-1)
Nominal Wage Index (Year Average)
30: SALN SALN = SALR*IGP

4 - Monetary Sector

Real M1 (Millions of Reais, 1980 prices)
31: M1 M1 = M1PIB*DIPIB/IGP*PIB/1000000
Velocity of Money
32: M1PIB DEL(1: M1PIB) = A28.1*DEL(1: TJCDBN)/TJCDBN(-1)
Real Monetary Base, Year Average (Millions of Reais,1980 prices)
33: M0 M0 = 0.62*M1
Real Monetary Base, End of Period (Millions of Reais,1980 prices)
34: M0FR M0FR/M0FR(-1) = M0/M0(-1)

Total Credit to Private Sector (Millions of Reais, 1980 prices)
35: EMPTR DEL(1: EMPTR)/EMPTR(-1) = A29.1*DEL(1: M1)/M1(-1)
Nominal Interest Rate - Bank Deposits (% a.a.)
36: TJCDBN TJCDBN = MAX(TJCDBND,LIBOR+DEL(1: ERV)/ERV(-1)*100+RISCO)Nominal Interest Rate - Overnight (% per month)
37: TJOVER TJOVER = ((1+TJCDBN/100)**(1/12)-1)*100
Real Interest Rate - Bank Deposits (% a.a.)
38: TJCDB TJCDB = ((1+TJCDBN/100)/(IGPF/IGPF(-1))-1)*100
Real Exchange Rate (US$/R$)
39: CR CR = ERV*IPAUS/IPA
Nominal Exchange Rate, Real/US$, period average
40: ERV DEL(1: ERV)/ERV(-1) = DESVD
Nominal Exchange Rate, Real/US$, end of period
41: ERVF ERVF/ERVF(-1) = ERV/ERV(-1)
Nominal Exchange Rate, Real/US$
42: ER ER/ER(-1) = ERV/ERV(-1)
Nominal Exchange Rate, Real/US$, corrected for exchange auction
43: ERNPT ERNPT/ERNPT(-1) = ERV/ERV(-1)

5 - Public Sector

Public Sector Borrowing Requirements, Nominal (Millions of Reais,1980 prices)
44: NFSPN NFSPN = NFGGN+NFEEN
Public Sector Borrowing Requirements, Operational (Millions of Reais,1980 prices)
45: NFSPO NFSPO = NFGGO+NFEEO
Public Sector Borrowing Requirements, Primary (Millions of Reais,1980 prices)
46: NFSPP NFSPP = NFGGP+NFEEP

5.1 - General government

General Government Borrowing Requirements, Nominal (Millions of Reais, 1980 prices)
47: NFGGN NFGGN*IGP/DIPIB = NFGGO*IGP/DIPIB+CMGG*IGP/DIPIB
General Government Borrowing Requirements, Operational (Millions of Reais, 1980 prices)
48: NFGGO NFGGO*IGP/DIPIB = NFGGP*IGP/DIPIB+JRDGG
General Government Borrowing Requirements, Primary (Millions of Reais, 1980 prices)
49: NFGGP NFGGP*IGP/DIPIB = FBKFGG-POUCCGG-JNDTGG
General Government Current Account Surplus (Millions of Reais,1980 prices)
50: POUCCGG POUCCGG = RTCCGG-DTCCGG
General Government Current Revenue (Millions of Reais,1980 prices)
51: RTCCGG RTCCGG = IR+IPI+ICMS+OTGG+CPMF+ORCCGG
Income Tax Revenue (Millions of Reais,1980 prices)
52: IR LOG(1000*IR) = G1.0+G1.1*LOG(PIB/1000)+G1.2*LOG(MAX(1.0001,DIPIB/DIPIB(-1))-1)
53: G1.0 = LOG(EXP(G1.0(-1))+E1.0)
Industrialized Product Tax Revenue (Millions of Reais,1980 prices)
54: IPI LOG(1000*IPI) = G2.0+G2.1*LOG(PIB/1000)+G2.2*LOG(MAX(1.0001,DIPIB/DIPIB(-1))-1)
55: G2.0 = LOG(EXP(G2.0(-1))+E2.0)
Circulation of Goods and Services Tax Revenue (Millions of Reais,1980 prices)
56: ICMS LOG(1000*ICMS) = G3.0+G3.1*LOG(PIB/1000)+G3.2*LOG(MAX(1.0001, DIPIB/DIPIB(-1))-1)
57: G3.0 = LOG(EXP(G3.0(-1))+E3.0)
Other General Government Taxes (Millions of Reais, 1980 prices)
58: OTGG LOG(1000*OTGG) = G4.0+G4.1*LOG(PIB/1000)+G4.2*LOG(MAX(1.0001, DIPIB/DIPIB(-1))-1)

59: G4.0 = LOG(EXP(G4.0(-1))+E4.0)
CPMF Revenue (Millions of Reais,1980 prices)
60: CPMF CPMF = CPMF(-1)*(1+DEL(1: PIB)/PIB(-1))
Other General Government Current Revenue (Millions of Reais,1980 prices)
61: ORCCGG ORCCGG/PIB = ORCCGG(-1)/PIB(-1)
Inflationary Tax (Millions of Reais,1980 prices)
62: IINF IINF = 12*M0*((IGPF/IGPF(-1))**(1/12)-1)
Total Gross Tax Revenue (Millions of Reais, 1980 prices)
63: CTRIB CTRIB = IR+ICMS+IPI+OTGG+CPMF
Total Net Tax Revenue (Millions of Reais, 1980 prices)
64: CTRIBL CTRIBL = CTRIB-TAPGG-SUB
Domestic Subsidies (Millions of Reais, 1980 prices)
65: SUB SUB = SUBN/DIPIB/1000
Gross Fixed Capital Formation - General Government (Millions of Reais,1980 prices)
66: FBKFGG FBKFGG = FBKFGN/(1000*DIPIB)
General Government Current Expenditure (Millions of Reais,1980 prices)
67: DTCCGG DTCCGG = GPGG+TAPGG+ODCCGG+JNDTGG
General Government Expenditure - Employees/Contributions (Millions of Reais,1980 prices)
68: GPGG LOG(GPGG*1000) =
G6.0+G6.1*LOG(PIB/1000)+G6.2*LOG(MAX(1.0001, DIPIB/DIPIB(-1))-1)
69: G6.0 = LOG(EXP(G6.0(-1))+E6.0)
Transfers to Households (Millions of Reais,1980 prices)
70: TAPGG LOG(TAPGG*1000) =
G7.0+G7.1*LOG(PIB/1000)+G7.2*LOG(MAX(1.0001, DIPIB/DIPIB(-1))-
1)+G7.3*TREND
71: G7.0 = LOG(EXP(G7.0(-1))+E7.0)
Other General Government Current Expenditures (Millions of Reais,1980 prices)
72: ODCCGG LOG(ODCCGG*1000) =
G8.0+G8.1*LOG(PIB/1000)+G8.2*LOG(MAX(1.0001, DIPIB/DIPIB(-1))-1)
73: G8.0 = LOG(EXP(G8.0(-1))+E8.0) General Government Nominal Interest Payments on Total Debt (Millions of Reais,1980 prices)
74: JNDTGG JNDTGG = JRDGG+CMGG*IGP/DIPIB General Government Real Interest Payments on Total Debt (Millions of Reais,1980 prices)
75: JRDGG JRDGG = (JRDINGG+JRDEXGG)*IGP/DIPIB General Government Real Interest Payments on Internal Debt (Millions of Reais, 1980 prices)
76: JRDINGG JRDINGG = TJRDINGG*(DINGG(-1)-M0FR(-1)) General Government Real Interest Payments on External Debt (Millions of Reais, 1980 prices)
77: JRDEXGG JRDEXGG = TJRDEXGG*DEXGG(-1)
General Government Internal Debt Real Interest Rate
78: TJRDINGG TJRDINGG/TJRDINGG(-1) = TJCDB/TJCDB(-1)
General Government Foreign Debt Real Interest Rate
79: TJRDEXGG LOG(1+TJRDEXGG) = G14.1*LOG(1+LIBOR(-1)/100)
General Government Monetary Correction Payments (Millions of Reais, 1980 prices)
80: CMGG CMGG = TCMGG*(DINGG(-1)-M0FR(-1))
General Government Rate of Monetary Correction
81: TCMGG TCMGG = IGPF/IGPF(-1)-1

5.2 - Public enterprises

Public Enterprises Borrowing Requirements, Operational (Millions of Reais, 1980 prices)
82: NFEEO NFEEO*IGP/DIPIB = NFEEP*IGP/DIPIB+JRDEE
Public Enterprises Borrowing Requirements, Nominal (Millions of Reais, 1980 prices)
83: NFEEN NFEEN*IGP/DIPIB = NFEEO*IGP/DIPIB+CMEE*IGP/DIPIB
Public Enterprises Real Interest Payments on Total Debt (Millions of Reais,1980 prices)
84: JRDEE JRDEE = (JRDINEE+JRDEXEE)*IGP/DIPIB
Public Enterprises Real Interest Payments on Internal Debt (Millions of Reais, 1980 prices)

85: JRDINEE JRDINEE = TJRDINEE*DINEE(-1)
Public Enterprises Real Interest Payments on External Debt (Millions of Reais, 1980 prices)
86: JRDEXEE JRDEXEE = TJRDEXEE*DEXEE(-1)
Public Enterprises Internal Debt Real Interest Rate
87: TJRDINEE TJRDINEE/TJRDINEE(-1) = TJCDB/TJCDB(-1)
Public Enterprises Foreign Debt Real Interest Rate
88: TJRDEXEE LOG(1+TJRDEXEE) = G15.1*LOG(1+LIBOR(-1)/100)
Public Enterprises Monetary Correction Payments (Millions of Reais, 1980 prices)
89: CMEE CMEE = TCMEE*DINEE(-1)
Public Enterprises Rate of Monetary Correction
90: TCMEE TCMEE = IGPF/IGPF(-1)-1

5.3 - Public debt

General Government Total Debt (Millions of Reais,1980 prices)
91: DTGG DTGG = DINGG+DEXGG
General Government Internal Debt (Millions of Reais,1980 prices)
92: DINGG DEL(1: DINGG) = NFGGN-DEL(1: DEXGG)-DEL(1: M0FR)-
PNDPCT*PND*ERV/IGP-IINF General Government External Debt (Millions of Reais,1980 prices)
93: DEXGG DEL(1: DEXGG) = DEL(1: DEXT*ERVF/IGPF)-DEL(1: DEXEE)-
DEL(1: DEXPR*ERVF/IGPF)-DEL(1: RES*ERVF/IGPF)
Private Sector External Debt (Millions of US$)
94: DEXPR DEL(1: DEXPR) = DEXPRPCT*DEL(1: DEXT)
Public Enterprises External Debt(Millions of Reais)
95: DEXEEN DEL(1: DEXEEN) = DEXEEPCT*DEL(1: DEXT)*ERVF
Public Enterprises External Debt (Millions of Reais,1980 prices)
96: DEXEE DEXEE = DEXEEN/IGPF
Public Enterprises Total Debt (Millions of Reais,1980 prices)
97: DTEE DTEE = DINEE+DEXEE
Public Enterprises Internal Debt (Millions of Reais,1980 prices)
98: DINEE DEL(1: DINEE) = -(DEL(1: DEXEE))+NFEEN

6 - Foreign Sector

Current Account Balance (Millions of US$)
99: STC STC = SBC+SER+TUN
Trade Balance (Millions of US$)
100: SBC SBC = XTV-MTV
Total Exports (Millions of US$)
101: XTV XTV = XMV+XSV+XBV+XTEV
Exports - Manufactured Products (Millions of US$)
102: XMV DEL(1: LOG(XMV/IPAUS)) = A3.0+A3.1*DEL(1: LOG(XMV(-1)/IPAUS
(-1)))+A3.2*DEL(1: LOG(MW/IPAUS))+A3.3*DEL(1:
LOG(ER*SXM*IPAUS/IPA))+A3.4*DEL(1: LOG(ER(-1)*SXM(-
1)*IPAUS(-1)/IPA(-1)))+A3.5*(LOG(XMV(-1)/IPAUS(-1))-
1.613*LOG(ER(-1)*IPAUS(-1)*SXM(-1)/IPA(-1))-2.118*LOG(MW(-
1)/IPAUS(-1))+1.986*UTIND(-1))+A3.6*D5563 Exports - Semi-manufactured Products
(Millions of US$)
103: XSV DEL(1: LOG(XSV/IPAUS)) = A4.0+A4.1*DEL(1: LOG(XSV(-
1)/IPAUS(-1)))+A4.2*DEL(1: LOG(XSV(-2)/IPAUS(-2)))+A4.3*DEL(1:
LOG(MW/IPAUS))+A4.4*DEL(1: LOG(MW(-1)/IPAUS(-
1)))+A4.5*DEL(1: LOG(ER(-2)*SXS(-2)*IPAUS(-2)/IPA(-
2)))+A4.6*(LOG(XSV(-3)/IPAUS(-3))-0.1365*LOG(ER(-3)*IPAUS(-
3)*SXS(-3)/IPA(-3))-1.392*LOG(MW(-3)/IPAUS(-3)))+A4.7*D82
Exports - Primary Products (Millions of US$)
104: XBV DEL(1: LOG(XBV/IPAUS)) = A5.0+A5.1*DEL(1:

LOG(MW/IPAUS))+A5.2*(LOG(XBV(-1)/IPAUS(-1))-0.7747*LOG(ER(-1)*IPAUS(-1)*SXB(-1)/IPA(-1))-0.2806*LOG(MW(-1)/IPAUS(-1)))+A5.3*D62+A5.4*D7273 Exports - Special Transactions (Millions of US$)

105: XTEV XTEV = (XMV+XSV+XBV)*XTEVPCT
Total Imports (Millions of US$)

106: MTV MTV = MBKV+MBIV+MBCV+MCLV
Imports - Capital Goods (Millions of US$)

107: MBKV DEL(1: LOG(MBKV/IPAUS)) = A30.0+A30.1*DEL(1:LOG(PIB))+A30.2*DEL(1:LOG(ERNPT*TLBK*IPAUS/IPA))+A30.3*(LOG(MBKV(-1)/IPAUS(-1))+3.452*LOG(ERNPT(-1)*IPAUS(-1)*TLBK(-1)/IPA(-1))-0.5333*LOG(PIB(-1)))+A30.4*D73+A30.5*D86 Imports - Intermediate Goods (Millions of US$)

108: MBIV DEL(1: LOG(MBIV/IPAUS)) = A31.0+A31.1*DEL(1:LOG(PIB))+A31.2*DEL(1:LOG(ERNPT*TLBI*IPAUS/IPA))+A31.3*(LOG(MBIV(-1)/IPAUS(-1))+1.437*LOG(ERNPT(-1)*IPAUS(-1)*TLBI(-1)/IPA(-1))-0.7546*LOG(PIB(-1)))+A31.4*D74
Imports - Consumption Goods (Millions of US$)

109: MBCV DEL(1: LOG(MBCV/IPAUS)) = A32.0+A32.1*DEL(1:LOG(PIB))+A32.2*DEL(1:LOG(ERNPT*TLBC*IPAUS/IPA))+A32.3*(LOG(MBCV(-1)/IPAUS(-1))+1.714*LOG(ERNPT(-1)*IPAUS(-1)*TLBC(-1)/IPA(-1))-0.9231*LOG(PIB(-1)))+A32.4*D86+A32.5*D80+A32.6*D95 Net Services (Millions of US$)

110: SER SER = SF+SNF
Net Factor Services (Millions of US$)

111: SF SF = JUR+SFEXJ
Net Foreign Interest Revenues(Millions of US$)

112: JUR JUR = JURREC-JURDES
Foreign Interest Revenues (Millions of US$)

113: JURREC JURREC/RES(-1) = JURDES/DEXT(-1)-SPREAD
Foreign Interest Expenditures (Millions of US$)

114: JURDES JURDES/DEXT(-1) = A19.1+A19.2*LIBOR/100
Net Factor Services less Interest (Millions of US$)

115: SFEXJ LOG(-SFEXJ) = A18.0*LOG(-SFEXJ(-1))+A18.1*LOG(PIB)+A18.2*LOG(KED)+A18.3*D78 Net Non-Factor Services (Millions of US$)

116: SNF SNF = TUR+TRPSEG+OSNF
Net International Travel (Millions of US$)

117: TUR TUR = TURREC-TURDES
International Travel Revenue (Millions of US$)

118: TURREC LOG(TURREC+1) = A10.0+A10.1*LOG(TURREC(-1)+1)+A10.2*LOG(GDPUS(-1))+A10.3*D82 International Travel Expenditure (Millions of US$)

119: TURDES LOG(TURDES) = A9.0+A9.1*LOG(TURDES(-1))+A9.2*LOG(ER*IPCUS/IPC)+A9.3*LOG(ER(-1)*IPCUS(-1)/IPC(-1))+A9.4*LOG(RDOPP)+A9.6*D77+A9.7*D82+A9.8*D87
Net Freight and Insurance (Millions of US$)

120: TRPSEG TRPSEG = TRPSEGR-TRPSEGD Freight and Insurance Revenue (Millions of US$)

121: TRPSEGR LOG(TRPSEGR) = A16.0+A16.1*LOG(TRPSEGR(-1))+A16.2*LOG(MTV(-1))+A16.3*LOG(MTV(-2))+A16.4*LOG(XTV)+A16.5*LOG(XTV(-2))+A16.6*D58
Freight and Insurance Expenditure (Millions of US$)

122: TRPSEGD LOG(TRPSEGD) = A15.0+A15.1*LOG(TRPSEGD(-1))+A15.2*LOG(MTV)+A15.3*LOG(MTV(-

1))+A15.4*LOG(XTV)+A15.5*LOG(XTV(-2))+A15.6*D65
Net Other Non-Factor Services (Millions of US$)
123: OSNF OSNF = OSNFREC-OSNFDES
Other Non-Factor Services Revenues (Millions of US$)
124: OSNFREC LOG(OSNFREC) = A13.0+A13.1*LOG(OSNFREC(-1))+A13.2*LOG(MTV+XTV)+A13.3*LOG(MTV(-2)+XTV(-2))+A13.4*D90+A13.5*D96
Other Non-Factor Services Expenditures (Millions of US$)
125: OSNFDES LOG(OSNFDES) = A12.0+A12.1*LOG(OSNFDES(-1))+A12.2*LOG(MTV+XTV)+A12.3*LOG(MTV(-1)+XTV(-1))+A12.4*D90+A12.5*D93+A12.6*D72 Exports of Goods and Non-Factor Services (Millions of US$)
126: XBSNF XBSNF = XTV+TURREC+OSNFREC+TRPSEGR
Imports of Goods and Non-Factor Services (Millions of US$)
127: MBSNF MBSNF = MTV+TURDES+OSNFDES+TRPSEGD
International Reserves - International Liquidity (Millions of US$)
128: RES RES = RES(-1)-HACP
Total External Debt (Millions of US$)
129: DEXT DEXT = -STC-(IEDL+IEPL)-HACP+DEXT(-1)*(1+0.048*(TXCAEJP(-1)/TXCAEJP-1)+0.044*(TXCAEAL(-1)/TXCAEAL-1)+0.029*(TXCRFFR(-1)/TXCRFFR-1))
Net Foreign Capital Stock (Millions of Dollars)
130: KED KED = KED(-1)*(1-TXDEPR)+IEDL+REINV
Net Factor Income Payments to the Rest of the World (Millions of US$)
131: RLE RLE = -(SF+TUN)

7 - Variables as Proportion of GDP

Public Enterprises Monetary Correction Payments as proportion of GDP
132: CMEEPIB CMEEPIB = CMEEN/(PIBN/1000)
General Government Monetary Correction Payments as proportion of GDP
133: CMGGPIB CMGGPIB = CMGGN/(PIBN/1000)
Total Gross Tax Revenue as a proportion of GDP
134: CTRIBPIB CTRIBPIB = CTRIBN/(PIBN/1000)
Public Enterprises External Debt as proportion of GDP
135: DEXEEPIB DEXEEPIB = DEXEEN/(PIBN/1000)
General Government External Debt as proportion of GDP
136: DEXGGPIB DEXGGPIB = DEXGGN/(PIBN/1000)
Total External Debt as a proportion of GDP
137: DEXTPIB DEXTPIB = DEXT*ERV/(PIBN/1000)
Total External Debt as a proportion of Total Exports
138: DEXTXTV DEXTXTV = DEXT/XTV
Public Enterprises Internal Debt as proportion of GDP
139: DINEEPIB DINEEPIB = DINEEN/(PIBN/1000)
General Government Internal Debt as proportion of GDP
140: DINGGPIB DINGGPIB = DINGGN/(PIBN/1000)
General Government Current Expenditure as proportion of GDP
141: DTCCGGPIB DTCCGGPIB = DTCCGGN/(PIBN/1000)
Public Enterprises Total Debt as proportion of GDP
142: DTEEPIB DTEEPIB = DTEEN/(PIBN/1000)
General Government Total Debt as proportion of GDP
143: DTGGPIB DTGGPIB = DTGGN/(PIBN/1000)
Gross Fixed Capital Formation - Construction - Private Sector as proportion of GDP
144: FBKCPPIB FBKCPPIB = FBKCPN/PIBN
Gross Fixed Capital Formation - General Government as proportion of GDP
145: FBKFGGPIB FBKFGGPIB = FBKFGN/PIBN
Gross Fixed Capital Formation - Total as proportion of GDP

146: FBKFPIB FBKFPIB = FBKF/PIB*1000000
Gross Fixed Capital Formation - Private Sector as proportion of GDP
147: FBKFPPIB FBKFPPIB = FBKFPN/PIBN
Gross Fixed Capital Formation - Machinery and Equipment - Private Sector as proportion of GDP
148: FBKMPPIB FBKMPPIB = FBKMPN/PIBN
General Government Expenditure - Employees/Contributions as proportion of GDP
149: GPGGPIB GPGGPIB = GPGGN/PIBN
Circulation of Goods and Services Tax Revenue as proportion of GDP
150: ICMSPIB ICMSPIB = ICMSN/(PIBN/1000)
Inflationary Taxes as a proportion of GDP
151: IINFPIB IINFPIB = IINFN/(PIBN/1000)
Industrialized Product Tax Revenue as proportion of GDP
152: IPIPIB IPIPIB = IPIN/(PIBN/1000)
Income Tax Revenue as proportion of GDP
153: IRPIB IRPIB = IRN/(PIBN/1000)
General Government Nominal Interest Payments on Total Debt as proportion of GDP
154: JNDTGGPIB JNDTGGPIB = JNDTGGN/(PIBN/1000)
Public Enterprises Real Interest Payments on Total Debt as proportion of GDP
155: JRDEEPIB JRDEEPIB = JRDEEN/(PIBN/1000)
Public Enterprises Real Interest Payments on External Debt as proportion of GDP
156: JRDEXEEPIB JRDEXEEPIB = JRDEXEEN/(PIBN/1000)
General Government Real Interest Payments on External Debt as proportion of GDP
157: JRDEXGGPIB JRDEXGGPIB = JRDEXGGN/(PIBN/1000)
General Government Real Interest Payments on Total Debt as proportion of GDP
158: JRDGGPIB JRDGGPIB = JRDGGN/(PIBN/1000)
Public Enterprises Real Interest Payments on Internal Debt as proportion of GDP
159: JRDINEEPIB JRDINEEPIB = JRDINEEN/(PIBN/1000)
General Government Real Interest Payments on Internal Debt as proportion of GDP
160: JRDINGGPIB JRDINGGPIB = JRDINGGN/(PIBN/1000)
Foreign Interest Payments as a proportion of GDP
161: JURDESPIB JURDESPIB = JURDES*ERV/(PIBN/1000)
Net Foreign Interest Payments as a proportion of GDP
162: JURPIB JURPIB = JUR*ERV/(PIBN/1000)
Total Imports as a proportion of GDP
163: MTVPIB MTVPIB = MTV*ERV/(PIBN/1000)
Public Enterprises Borrowing Requirements, Nominal as proportion of GDP
164: NFEENPIB NFEENPIB = NFEENN/(PIBN/1000)
Public Enterprises Borrowing Requirements, Operational as proportion of GDP
165: NFEEOPIB NFEEOPIB = NFEEON/(PIBN/1000)
Public Enterprises Borrowing Requirements, Primary as proportion of GDP
166: NFEEPPIB NFEEPPIB = NFEEPN/(PIBN/1000)
General Government Borrowing Requirements, Nominal as proportion of GDP
167: NFGGNPIB NFGGNPIB = NFGGNN/(PIBN/1000)
General Government Borrowing Requirements, Operational as proportion of GDP
168: NFGGOPIB NFGGOPIB = NFGGON/(PIBN/1000)
General Government Borrowing Requirements, Primary as proportion of GDP
169: NFGGPPIB NFGGPPIB = NFGGPN/(PIBN/1000)
Public Sector Borrowing Requirements, Nominal as proportion of GDP
170: NFSPNPIB NFSPNPIB = NFSPNN/(PIBN/1000)
Public Sector Borrowing Requirements, Operational as proportion of GDP
171: NFSPOPIB NFSPOPIB = NFSPON/(PIBN/1000)
Public Sector Borrowing Requirements, Primary as proportion of GDP
172: NFSPPPIB NFSPPPIB = NFSPPN/(PIBN/1000)
Other General Government Current Expenditures as proportion of GDP
173: ODCCGGPIB ODCCGGPIB = ODCCGGN/PIBN

Other General Government Net Current Revenues as proportion of GDP
174: ORCLPIB ORCLPIB = ORCLN/PIBN
General Government Revenue from Other Taxes as proportion of GDP
175: OTGGPIB OTGGPIB = OTGGN/(PIBN/1000)
Net External Liabilities as a proportion of GDP
176: PELPIB PELPIB = (DEXT+KED)*ERVF/(PIBN/1000)
General Government Current Account Surplus as proportion of GDP
177: POUCCGGPIB POUCCGGPIB = POUCCGGN/(PIBN/1000)
International Reserves as a proportion of Total Imports
178: RESMTV RESMTV = RES/MTV
International Reserves as a proportion of GDP
179: RESPIB RESPIB = RES*ERV/(PIBN/1000)
General Government Current Revenue as proportion of GDP
180: RTCCGGPIB RTCCGGPIB = RTCCGGN/(PIBN/1000)
Net Services as a proportion of GDP
181: SERPIB SERPIB = SER*ERV/(PIBN/1000)
Net Factor Services less Interest as a proportion of GDP
182: SFEXJPIB SFEXJPIB = SFEXJ*ERV/(PIBN/1000)
Net Factor Services as a proportion of GDP
183: SFPIB SFPIB = SF*ERV/(PIBN/1000)
Net Non-Factor Services as a proportion of GDP
184: SNFPIB SNFPIB = SNF*ERV/(PIBN/1000)
Current Account Balance as a proportion of GDP
185: STCPIB STCPIB = STC*ERV/(PIBN/1000)
Transfers to Households as proportion of GDP
186: TAPGGPIB TAPGGPIB = TAPGGN/PIBN
Unrequited Transfers (Net) as a proportion of GDP
187: TUNPIB TUNPIB = TUN*ERV/(PIBN/1000)
Total Exports as a proportion of GDP
188: XTVPIB XTVPIB = XTV*ERV/(PIBN/1000)

8 - Variables in Nominal Terms

Public Enterprises Monetary Correction Payments (Millions of Reais)
189: CMEEN CMEEN = CMEE*IGP
General Government Monetary Correction Payments (Millions of Reais)
190: CMGGN CMGGN = CMGG*IGP
CPMF Revenue (Millions of Reais)
191: CPMFN CPMFN = CPMF*DIPIB
Total Net Tax Revenue (Millions of Reais)
192: CTRIBLN CTRIBLN = CTRIBL*DIPIB
Total Gross Tax Revenue (Millions of Reais)
193: CTRIBN CTRIBN = CTRIB*DIPIB
General Government External Debt(Millions of Reais)
194: DEXGGN DEXGGN = DEXGG*IGPF
Public Enterprises Internal Debt (Millions of Reais)
195: DINEEN DINEEN = DINEE*IGPF
General Government Internal Debt (Millions of Reais)
196: DINGGN DINGGN = DINGG*IGPF
General Government Current Expenditure (Millions of Reais)
197: DTCCGGN DTCCGGN = DTCCGG*DIPIB
Public Enterprises Total Debt(Millions of Reais)
198: DTEEN DTEEN = DTEE*IGPF
General Government Total Debt (Millions of Reais)
199: DTGGN DTGGN = DTGG*IGPF
Gross Fixed Capital Formation - Construction - Private Sector(Thousands of Reais)
200: FBKCPN FBKCPN/1000 = FBKCP*DIPIB

Gross Fixed Capital Formation - Private Sector (Thousands of Reais)
201: FBKFPN FBKFPN/1000 = FBKFP*DIPIB
Gross Fixed Capital Formation - Domestic Machinery and Equipment - Private Sector (Thousands of Reais)
202: FBKMPDN FBKMPDN = FBKMPD*1000*DIPIB
Gross Fixed Capital Formation - Machinery and Equipment - Private Sector(Thousands of Reais)
203: FBKMPN FBKMPN/1000 = FBKMP*DIPIB
General Government Expenditure - Employees/Contributions (Thousands of Reais)
204: GPGGN GPGGN = GPGG*1000*DIPIB
Circulation of Goods and Services Tax Revenue (Millions of Reais)
205: ICMSN ICMSN = ICMS*DIPIB
Inflationary Tax (Millions of Reais)
206: IINFN IINFN = IINF*IGP
Industrialized Products Tax (Millions of Reais)
207: IPIN IPIN = IPI*DIPIB
Income Tax (Millions of Reais)
208: IRN IRN = IR*DIPIB
General Government Nominal Interest Payments on Total Debt (Millions of Reais)
209: JNDTGGN JNDTGGN = JNDTGG*DIPIB
Public Enterprises Real Interest Payments on Total Debt (Millions of Reais)
210: JRDEEN JRDEEN = JRDEE*DIPIB
Public Enterprises Real Interest Payments on External Debt (Millions of Reais)
211: JRDEXEEN JRDEXEEN = JRDEXEE*DIPIB
General Government Real Interest Payments on External Debt (Millions of Reais)
212: JRDEXGGN JRDEXGGN = JRDEXGG*IGP
General Government Real Interest Payments on Total Debt (Millions of Reais)
213: JRDGGN JRDGGN = JRDGG*DIPIB
Public Enterprises Real Interest Payments on Internal Debt (Millions of Reais)
214: JRDINEEN JRDINEEN = JRDINEE*DIPIB
General Government Real Interest Payments on Internal Debt (Millions of Reais)
215: JRDINGGN JRDINGGN = JRDINGG*IGP
Public Enterprises Borrowing Requirements, Nominal (Millions of Reais)
216: NFEENN NFEENN = NFEEN*IGP
Public Enterprises Borrowing Requirements, Operational (Millions of Reais)
217: NFEEON NFEEON = NFEEO*IGP
Public Enterprises Borrowing Requirements, Primary (Millions of Reais)
218: NFEEPN NFEEPN = NFEEP*IGP
General Government Borrowing Requirements, Nominal (Millions of Reais)
219: NFGGNN NFGGNN = NFGGN*IGP
General Government Borrowing Requirements, Operational(Millions of Reais)
220: NFGGON NFGGON = NFGGO*IGP
General Government Borrowing Requirements, Primary (Millions of Reais)
221: NFGGPN NFGGPN = NFGGP*IGP
Public Sector Borrowing Requirements, Nominal (Millions of Reais)
222: NFSPNN NFSPNN = NFSPN*IGP
Public Sector Borrowing Requirements, Operational (Millions of Reais)
223: NFSPON NFSPON = NFSPO*IGP
Public Sector Borrowing Requirements, Primary (Millions of Reais)
224: NFSPPN NFSPPN = NFSPP*IGP
Other General Government Current Expenditures(Thousands of Reais)
225: ODCCGGN ODCCGGN = ODCCGG*1000*DIPIB
Other General Government Net Current Revenues (Thousands of Reais)
226: ORCLN ORCLN = ORCCGG*1000*DIPIB
General Government Revenue from Other Taxes (Millions of Reais)
227: OTGGN OTGGN = OTGG*DIPIB
Nominal Gross Domestic Product(Thousands of Reais)

228: PIBN PIBN = PIB/1000*DIPIB
General Government Current Account Surplus (Millions of Reais)
229: POUCCGGN POUCCGGN = POUCCGG*DIPIB
General Government Current Revenue (Millions of Reais)
230: RTCCGGN RTCCGGN = RTCCGG*DIPIB
Transfers to Households(Thousands of Reais)
231: TAPGGN TAPGGN = TAPGG*1000*DIPIB

COEFFICIENTS*

A3.0: -2.731	A10.0: -33.69	A22.3: -0.026	G1.0: -2.834 (1996)
A3.1: 0.182	A10.1: 0.72	A22.4: -0.088	G1.1: 1.084
A3.2: 1.496	A10.2: 1.208	A22.5: -0.056	G1.2: -0.008 (1996)
A3.3: 0.352	A10.3: -1.297	A22.6: 0.04	G1.3: -0.008
A3.4: -0.593	A12.0: -3.453	A23.1: -0.006	G2.0: -3.234 (1996)
A3.5: -0.826	A12.1: 0.443	A23.2: -0.003	G2.1: 1.125
A3.6: -0.474	A12.2: 1.413	A23.3: -1.104	G2.2: 0.011 (1996)
A3.7: -0.703	A12.3: -0.775	A23.4: 0.399	G3.0: -1.827 (1996)
A3.8: -0.504	A12.4: 0.889	A23.5: -0.386	G3.1: 1.157
A4.0: -0.529	A12.5: 0.499	A23.6: -0.325	G3.2: 0.007 (1996)
A4.1: -0.243	A12.6: 0.567	A23.7: -0.319	G4.0: -1.356 (1996)
A4.2: -0.664	A13.0: -2.176	A24.1: 0.397	G4.1: 1.11
A4.3: 1.186	A13.1: 0.686	A24.2: 0.111	G4.2: 0.027 (1996)
A4.4: 0.659	A13.2: 0.828	A24.3: -0.131	G6.0: -2.216 (1996)
A4.5: -0.28	A13.3: -0.484	A24.4: -0.001	G6.1: 1.006
A4.6: -0.489	A13.4: 1.078	A25.1: 0.071	G6.2: -0.021 (1996)
A4.7: -0.308	A13.5: 0.337	A25.2: 2.539	G7.0: -5.526 (1996)
A5.0: 0.514	A15.0: -0.744	A25.3: -0.006	G7.1: 0.787
A5.1: 0.397	A15.1: 0.663	A26.1: 0.7	G7.2: -0.017 (1996)
A5.2: 0.325	A15.2: 0.536	A27.0: 0.281	G7.3: 0.051
A5.3: -0.153	A15.3: -0.324	A27.1: -0.048	G8.0: -2.166 (1996)
A5.4: 0.212	A15.4: 0.366	A27.2: 0.302	G8.1: 1.091
A5.5: -0.254	A15.5: -0.238	A28.1: -0.007	G8.2: 0.029 (1996)
A5.6: -0.178	A15.6: -0.305	A29.1: 0.342	G9.0: -13.471
A6.0: 1.58	A16.0: -0.828	A30.0: 5.42	G9.1: 0.471
A6.1: 3.242	A16.1: 0.726	A30.1: 2.956	G9.2: 0.439
A6.2: -0.586	A16.2: 0.349	A30.2: -0.756	G9.3: -0.613
A6.3: -0.25	A16.3: -0.384	A30.3: -0.156	G9.4: 0.48
A6.4: 0.172	A16.4: 0.511	A30.4: -0.189	G10.1: -0.642
A7.0: 1.061	A16.5: -0.204	A30.5: 0.25	G10.2: 0.374
A7.1: 2.907	A16.6: -0.462	A31.0: 3.55	G10.3: -1.651
A7.2: -0.581	A16.7: -0.322	A31.1: 2.574	G10.4: -1.819
A7.3: -0.173	A18.0: 0.491	A31.2: -0.453	G10.5: 1.508
A7.4: 0.56	A18.1: 1.061	A31.3: -0.224	G10.6: 0.683
A7.5: 0.123	A18.2: 0.224	A31.4: 0.552	G10.7: -0.456
A8.0: 1.001	A18.3: 0.842	A32.0: 3.602	G11.0: 1.623
A8.1: 2.368	A19.1: 0.02	A32.1: 2.882	G11.1: 0.237
A8.2: -0.647	A19.2: 0.967	A32.2: -0.687	G12.1: 0.165
A8.3: -0.239	A20.0: -5.017	A32.3: -0.21	G13.1: 0.109
A8.4: 0.737	A20.1: 0.364	A32.4: 0.687	G14.1: 1.278
A8.5: 0.252	A20.2: -0.003	A32.5: -0.378	G15.1: 1.198
A9.0: 17.034	A20.3: -0.514	A32.6: 0.365	
A9.1: 0.658	A20.4: -0.301		
A9.2: -1.65	A21.0: -7.242		
A9.3: 1.215	A21.1: -0.003		
A9.4: 0.788	A21.2: -0.456		
A9.6: -0.659	A22.0: 0.02		
A9.7: 0.691	A22.1: 0.389		
A9.8: -0.925	A22.2: -0.123		

* *For time-varying coefficients we present the latest estimated value (1996).*

MODEL ANALYSIS

Block Structure and Normalization

The model has 172 blocks, including 1 simultaneous block.
The largest block has 60 equations and the next largest has 1.

Block	Size	Eqn	Variable Solved For	Block	Size	Eqn	Variable Solved For
1	1	53	G1.0			28	IPC
2	1	40	ERV			29	DIPIB
3	1	36	TJCDBN			31	M1
4	1	10	FBKMPD			35	EMPTR
5	1	42	ER			38	TJCDB
6	1	57	G3.0			52	IR
7	1	55	G2.0			54	IPI
8	1	59	G4.0			56	ICMS
9	1	71	G7.0			58	OTGG
10	1	114	JURDES			60	CPMF
11	1	113	JURREC			63	CTRIB
12	1	112	JUR			64	CTRIBL
13	1	130	KED			65	SUB
14	1	32	M1PIB			66	FBKFGG
15	1	69	G6.0			68	GPGG
16	1	73	G8.0			70	TAPGG
17	1	103	XSV			72	ODCCGG
18	1	104	XBV			101	XTV
19	1	118	TURREC			102	XMV
20	60	1	PIB			105	XTEV
		2	CFT			106	MTV
		3	CFTPP			107	MBKV
		4	RDOPP			108	MBIV
		5	CTGG			109	MBCV
		6	FBKF			111	SF
		7	FBKFP			115	SFEXJ
		8	FBKCP			119	TURDES
		9	FBKMP			121	TRPSEGR
		11	FBKO			122	TRPSEGD
		12	FBKM			124	OSNFREC
		13	FBKMG			125	OSNFDES
		14	FBKC			126	XBSNF
		15	FBKCG			127	MBSNF
		16	UTIND			131	RLE
		17	ELKT	21	1	30	SALN
		18	ELKCER	22	1	33	M0
		19	ELKCENR	23	1	34	M0FR
		20	FBKCER	24	1	37	TJOVER
		21	FBKCENR	25	1	39	CR
		22	ELKM	26	1	41	ERVF
		23	TXDES	27	1	43	ERNPT
		24	SALR	28	1	61	ORCCGG
		25	IPA	29	1	51	RTCCGG
		26	IGP	30	1	78	TJRDINGG
		27	IGPF	31	1	76	JRDINGG

(continue)

Block	Size	Eqn	Variable Solved For	Block	Size	Eqn	Variable Solved For
32	1	79	TJRDEXGG	84	1	38	DEXTXTV
33	1	77	JRDEXGG	85	1	195	DINEEN
34	1	75	JRDGG	86	1	139	DINEEPIB
35	1	81	TCMGG	87	1	196	DINGGN
36	1	80	CMGG	88	1	140	DINGGPIB
37	1	74	JNDTGG	89	1	197	DTCCGGN
38	1	67	DTCCGG	90	1	141	DTCCGGPIB
39	1	50	POUCCGG	91	1	198	DTEEN
40	1	49	NFGGP	92	1	142	DTEEPIB
41	1	48	NFGGO	93	1	199	DTGGN
42	1	47	NFGGN	94	1	143	DTGGPIB
43	1	87	TJRDINEE	95	1	200	FBKCPN
44	1	85	JRDINEE	96	1	144	FBKCPPIB
45	1	88	TJRDEXEE	97	1	145	FBKFGGPIB
46	1	86	JRDEXEE	98	1	146	FBKFPIB
47	1	84	JRDEE	99	1	201	FBKFPN
48	1	82	NFEEO	100	1	147	FBKFPPIB
49	1	90	TCMEE	101	1	203	FBKMPN
50	1	89	CMEE	102	1	148	FBKMPPIB
51	1	83	NFEEN	103	1	204	GPGGN
51	1	83	NFEEN	104	1	149	GPGGPIB
52	1	44	NFSPN	105	1	205	ICMSN
53	1	45	NFSPO	106	1	150	ICMSPIB
54	1	46	NFSPP	107	1	206	IINFN
55	1	62	IINF	108	1	151	IINFPIB
56	1	100	SBC	109	1	207	IPIN
57	1	117	TUR	110	1	152	IPIPIB
58	1	120	TRPSEG	111	1	208	IRN
59	1	123	OSNF	112	1	153	IRPIB
60	1	116	SNF	113	1	209	JNDTGGN
61	1	110	SER	114	1	154	JNDTGGPIB
62	1	99	STC	115	1	210	JRDEEN
63	1	129	DEXT	116	1	155	JRDEEPIB
64	1	95	DEXEEN	117	1	211	JRDEXEEN
65	1	96	DEXEE	118	1	156	JRDEXEEPIB
66	1	94	DEXPR	119	1	212	JRDEXGGN
67	1	128	RES	120	1	157	JRDEXGGPIB
68	1	93	DEXGG	121	1	213	JRDGGN
69	1	92	DINGG	122	1	158	JRDGGPIB
70	1	91	DTGG	123	1	214	JRDINEEN
71	1	98	DINEE	124	1	159	JRDINEEPIB
72	1	97	DTEE	125	1	215	JRDINGGN
73	1	189	CMEEN	126	1	160	JRDINGGPIB
74	1	228	PIBN	127	1	161	JURDESPIB
75	1	132	CMEEPIB	128	1	162	JURPIB
76	1	190	CMGGN	129	1	163	MTVPIB
77	1	133	CMGGPIB	130	1	216	NFEENN
78	1	193	CTRIBN	131	1	164	NFEENPIB
79	1	134	CTRIBPIB	132	1	217	NFEEON
79	1	134	CTRIBPIB	133	1	165	NFEEOPIB
80	1	135	DEXEEPIB	134	1	218	NFEEPN
81	1	194	DEXGGN	135	1	166	NFEEPPIB
82	1	136	DEXGGPIB	136	1	219	NFGGNN
83	1	137	DEXTPIB	137	1	167	NFGGNPIB

(continue)

Block	Size	Eqn	Variable Solved For	Block	Size	Eqn	Variable Solved For
138	1	220	NFGGON	156	1	177	POUCCGGPIB
139	1	168	NFGGOPIB	157	1	178	RESMTV
140	1	221	NFGGPN	158	1	179	RESPIB
141	1	169	NFGGPPIB	159	1	230	RTCCGGN
142	1	222	NFSPNN	160	1	180	RTCCGGPIB
143	1	170	NFSPNPIB	161	1	181	SERPIB
144	1	223	NFSPON	162	1	182	SFEXJPIB
145	1	171	NFSPOPIB	163	1	183	SFPIB
146	1	224	NFSPPN	164	1	184	SNFPIB
147	1	172	NFSPPPIB	165	1	185	STCPIB
148	1	225	ODCCGGN	166	1	231	TAPGGN
149	1	173	ODCCGGPIB	167	1	186	TAPGGPIB
150	1	226	ORCLN	168	1	187	TUNPIB
151	1	174	ORCLPIB	169	1	188	XTVPIB
152	1	227	OTGGN	170	1	191	CPMFN
153	1	175	OTGGPIB	170	1	191	CPMFN
154	1	176	PELPIB	171	1	192	CTRIBLN
155	1	229	POUCCGGN	172	1	202	FBKMPDN

USE OF CONTEMPORANEOUS VARIABLES

Variable	Used Unlagged in Equations	Variable	Used Unlagged in Equations
CFT	1 2	DTGGPIB	143
CFTPP	2 3	ELKCENR	17 19
CMEE	83 89 189	ELKCER	17 18
CMEEN	132 189	ELKM	17 22
CMEEPIB	132	ELKT	16 17
CMGG	47 74 80 190	EMPTR	3 35
CMGGN	133 190	ER	42 102 107 108 109 119
CMGGPIB	133	ERNPT	43
CPMF	51 60 63 191	ERV	1 4 9 25 36* 39 40 41 42 43 92 137 161 162 163 179 181 182 183 184 185 187 188
CPMFN	191	ERVF	41 93 95 176
CR	39	FBKC	14 20 21
CTGG	2 5	FBKCENR	19 21
CTRIB	63 64 193	FBKCER	18 20 21
CTRIBL	4 64 192	FBKCG	13 14 15
CTRIBLN	192	FBKCP	7 8 14 200
CTRIBN	134 193	FBKCPN	44 200
CTRIBPIB	134	FBKCPPIB	44
DEXEE	93 96 97 98	FBKF	1 6 146
DEXEE	93 96 97 98	FBKFGG	6 13 15 49 66
DEXEEN	95 96 135	FBKFGGPIB	145
DEXEEPIB	135	FBKFP	6 7 11 201
DEXGG	91 92 93 194	FBKFPIB	146
DEXGGN	136 194	FBKFPN	147 201
DEXGGPIB	136	FBKFPPIB	147
DEXGGPIB	136	FBKM	12 22
DEXPR	93 94	FBKMG	12 13
DEXT	93 94 95 129 137 138 176	FBKMP	7 9 12 203
DEXTPIB	137	FBKMPD	9 10 202
DEXTXTV	138	FBKMPDN	202
DINEE	97 98 195	FBKMPN	148 203
DINEEN	139 195	FBKMPPIB	148
DINEEPIB	139	FBKO	7 11
DINGG	91 92 196	G1.0	52 53
DINGGN	140 196	G2.0	54 55
DINGGPIB	140	G3.0	56 57
DIPIB	1 4 9 29 31 47 48 49 49 52* 54* 56* 58* 65 66 68* 70* 72* 74 75 82 83 84 191 192 193 197 200 201 202 203 204 205 207 208 209 210 211 213 214 225 226 227 228 229 230 231	G4.0	58 59
DTCCGG	50 67 197	G6.0	68 69
DTCCGGN	141 197	G7.0	70 71
DTCCGGPIB	141	G8.0	72 73
DTEE	97 198	GPGG	5 67 68 204
DTEEN	142 198	GPGGN	149 204
DTEEPIB	142	GPGGPIB	149
DTGG	91 199	ICMS	51 56 63 205
DTGGN	143 199	ICMSN	150 205

(continue)

Variable	Used Unlagged in Equations	Variable	Used Unlagged in Equations
ICMSPIB	150	JURDES	112 113 114 161
IGP	26 27 28 29 30 31 47 48 49 74 75 82 83 84 92 189 190 206 212 215 216 217 218 219 220 221 222 223 224	JURDESPIB	161
IGPF	27 38 62 81 90 93 96 194 195 196 198 199	JURPIB	162
IINF	62 92 206	JURREC	112 113
IINFN	151 206	KED	115 130 176
IINFPIB	151	M0	33 34 62
IPA	25 26 39 102 107 108 109	M0FR	34 92
IPC	28 119	M1	31 33 35
IPI	51 54 63 207	M1PIB	31 32
IPIN	152 207	MBCV	106 109
IPIPIB	152	MBIV	106 108
IR	51 52 63 208	MBKV	9 106 107
IRN	153 208	MBSNF	1 127
IRPIB	153	MTV	100 106 122 124 125 127 163 178
JNDTGG	49 67 74 209	MTVPIB	163
JNDTGGN	154 209	NFEEN	44 83 98 216
JNDTGGPIB	154	NFEENN	164 216
JRDEE	82 84 210	NFEENPIB	164
JRDEEN	155 210	NFEEO	45 82 83 217
JRDEEPIB	155	NFEEON	165 217
JRDEXEE	84 86 211	NFEEOPIB	165
JRDEXEEN	156 211	NFEEPN	166 218
JRDEXEEPIB	156	NFEEPPIB	166
JRDEXGG	75 77 212	NFGGN	44 47 92 219
JRDEXGGN	157 212	NFGGNN	167 219
JRDEXGGPIB	157	NFGGNPIB	167
JRDGG	48 74 75 213	NFGGO	45 47 48 220
JRDGGN	158 213	NFGGON	168 220
JRDGGPIB	158	NFGGOPIB	168
JRDINEE	84 85 214	NFGGP	46 48 49 221
JRDINEEN	159 214	NFGGPN	169 221
JRDINEEPIB	159	NFGGPPIB	169
JRDINGG	75 76 215	NFSPN	44 222
JRDINGGN	160 215	NFSPNN	170 222
JRDINGGPIB	160	NFSPNPIB	170
JRDINGGPIB	160	NFSPO	45 223
JUR	111 112 162	NFSPON	171 223

(continue)

Variable	Used Unlagged in Equations	Variable	Used Unlagged in Equations
NFSPOPIB	171	SF	110 111 131 183
NFSPP	46 224	SFEXJ	111 115 182
NFSPPN	172 224	SFEXJPIB	182
NFSPPPIB	172	SFPIB	183
ODCCGG	5 67 72 225	SNF	110 116 184
ODCCGGN	173 225	SNFPIB	184
ODCCGGPIB	173	STC	99 129 185
ORCCGG	51 61 226	STCPIB	185
ORCLN	174 226	SUB	5 64 65
ORCLPIB	174	TAPGG	64 67 70 231
OSNF	116 123	TAPGGN	186 231
OSNFDES	123 125 127	TAPGGPIB	186
OSNFREC	123 124 126	TCMEE	89 90
OTGG	51 58 63 227	TCMGG	80 81
OTGG	51 58 63 227	TJCDB	3 8 38 78 87
OTGGN	175 227	TJCDBN	32 36 37 38
OTGGPIB	175	TJOVER	37
PELPIB	176	TJRDEXEE	86 88
PIB	1 4 16 23 31 52 54 56 58 60 61 68 70 72 107 108 109 115 146 228	TJRDEXGG	77 79
PIBN	132 133 134 135 136 137 139 140 141 142 143 144 145 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 179 180 181 182 183 184 185 186 187 188 228	TJRDINEE	85 87
POUCCGG	49 50 229	TJRDINGG	76 78
POUCCGGN	177 229	TRPSEG	116 120
POUCCGGPIB	177	TRPSEGD	120 122 127
RDOPP	3 4 119	TRPSEGR	120 121 126
RES	93 128 178 179	TUNPIB	187
RESMTV	178	TUR	116 117
RESPIB	179	TURDES	117 119 127
RLE	4 131	TURREC	117 118 126
RTCCGG	50 51 230	TXDES	16 23 24
RTCCGGN	180 230	UTIND	16 25
RTCCGGPIB	180	XBSNF	1 25
SALN	30	XBV	101 104 105
SALR	23 24 30	XMV	101 102 105
SBC	99 100	XSV	101 103 105
SER	99 110 181	XTEV	101 105
SERPIB	181	XTV	100 101 121 122 124 125 126 138 188
		XTVPIB	188

[*] *This equation cannot be solved for that variable.*

RANGE OF TIME-SUBSCRIPT ("HORIZON") FOR EACH VARIABLE

HORIZON:			
Min	Max	Symboltype	Symbolname
0	0	ENDOGENOUS	CFT
-1	0	ENDOGENOUS	CFTPP
0	0	ENDOGENOUS	CMEE
0	0	ENDOGENOUS	CMEEN
0	0	ENDOGENOUS	CMEEPIB
0	0	ENDOGENOUS	CMGG
0	0	ENDOGENOUS	CMGGN
0	0	ENDOGENOUS	CMGGPIB
-1	0	ENDOGENOUS	CPMF
0	0	ENDOGENOUS	CPMFN
0	0	ENDOGENOUS	CR
0	0	ENDOGENOUS	CTGG
0	0	ENDOGENOUS	CTRIB
0	0	ENDOGENOUS	CTRIBL
0	0	ENDOGENOUS	CTRIBLN
0	0	ENDOGENOUS	CTRIBN
0	0	ENDOGENOUS	CTRIBPIB
0	0	EXOGENOUS	DESVD
-1	0	ENDOGENOUS	DEXEE
-1	0	ENDOGENOUS	DEXEEN
0	0	EXOGENOUS	DEXEEPCT
0	0	ENDOGENOUS	DEXEEPIB
-1	0	ENDOGENOUS	DEXGG
0	0	ENDOGENOUS	DEXGGN
0	0	ENDOGENOUS	DEXGGPIB
-1	0	ENDOGENOUS	DEXPR
0	0	EXOGENOUS	DEXPRPCT
-1	0	ENDOGENOUS	DEXT
0	0	ENDOGENOUS	DEXTPIB
0	0	ENDOGENOUS	DEXTXTV
-1	0	ENDOGENOUS	DINEE
0	0	ENDOGENOUS	DINEEN
0	0	ENDOGENOUS	DINEEPIB
-1	0	ENDOGENOUS	DINGG
0	0	ENDOGENOUS	DINGGN
0	0	ENDOGENOUS	DINGGPIB
-1	0	ENDOGENOUS	DIPIB
0	0	ENDOGENOUS	DTCCGG
0	0	ENDOGENOUS	DTCCGGN
0	0	ENDOGENOUS	DTCCGGPIB
0	0	ENDOGENOUS	DTEE
0	0	ENDOGENOUS	DTEEN
0	0	ENDOGENOUS	DTEEPIB
0	0	ENDOGENOUS	DTGG
0	0	ENDOGENOUS	DTGGN
0	0	ENDOGENOUS	DTGGPIB
-1	0	ENDOGENOUS	ELKCENR
-1	0	ENDOGENOUS	ELKCER
-1	0	ENDOGENOUS	ELKM
-1	0	ENDOGENOUS	ELKT

(continue)

HORIZON:			
Min	Max	Symboltype	Symbolname
-1	0	ENDOGENOUS	EMPTR
-3	0	ENDOGENOUS	ER
-1	0	ENDOGENOUS	ERNPT
-1	0	ENDOGENOUS	ERV
-1	0	ENDOGENOUS	ERVF
0	0	ENDOGENOUS	FBKC
-40	0	ENDOGENOUS	FBKCENR
-50	0	ENDOGENOUS	FBKCER
0	0	ENDOGENOUS	FBKCG
-1	0	ENDOGENOUS	FBKCP
0	0	ENDOGENOUS	FBKCPN
0	0	ENDOGENOUS	FBKCPPIB
0	0	ENDOGENOUS	FBKF
0	0	ENDOGENOUS	FBKFGG
0	0	ENDOGENOUS	FBKFGGPIB
0	0	EXOGENOUS	FBKFGN
0	0	ENDOGENOUS	FBKFP
0	0	ENDOGENOUS	FBKFPIB
0	0	ENDOGENOUS	FBKFPN
0	0	ENDOGENOUS	FBKFPPIB
-20	0	ENDOGENOUS	FBKM
0	0	ENDOGENOUS	FBKMG
0	0	ENDOGENOUS	FBKMP
-1	0	ENDOGENOUS	FBKMPD
0	0	ENDOGENOUS	FBKMPDN
0	0	ENDOGENOUS	FBKMPN
0	0	ENDOGENOUS	FBKMPPIB
0	0	ENDOGENOUS	FBKO
0	0	EXOGENOUS	FBKOPCT
-1	-1	EXOGENOUS	GDPUS
0	0	ENDOGENOUS	GPGG
0	0	ENDOGENOUS	GPGGN
0	0	ENDOGENOUS	GPGGPIB
0	0	EXOGENOUS	HACP
0	0	ENDOGENOUS	ICMS
0	0	ENDOGENOUS	ICMSN
0	0	ENDOGENOUS	ICMSPIB
0	0	EXOGENOUS	IEDL
0	0	EXOGENOUS	IEPL
-1	0	ENDOGENOUS	IGP
-1	0	ENDOGENOUS	IGPF
0	0	ENDOGENOUS	IINF
0	0	ENDOGENOUS	IINFN
0	0	ENDOGENOUS	IINFPIB
-3	0	ENDOGENOUS	IPA
-3	0	EXOGENOUS	IPAUS
-1	0	ENDOGENOUS	IPC
-1	0	EXOGENOUS	IPCUS
0	0	ENDOGENOUS	IPI
0	0	ENDOGENOUS	IPIN
0	0	ENDOGENOUS	IPIPIB
0	0	ENDOGENOUS	IR

(continue)

HORIZON:			
Min	Max	Symboltype	Symbolname
0	0	ENDOGENOUS	IRN
0	0	ENDOGENOUS	IRPIB
0	0	ENDOGENOUS	JNDTGG
0	0	ENDOGENOUS	JNDTGGN
0	0	ENDOGENOUS	JNDTGGPIB
0	0	ENDOGENOUS	JRDEE
0	0	ENDOGENOUS	JRDEEN
0	0	ENDOGENOUS	JRDEEPIB
0	0	ENDOGENOUS	JRDEXEE
0	0	ENDOGENOUS	JRDEXEEN
0	0	ENDOGENOUS	JRDEXEEPIB
0	0	ENDOGENOUS	JRDEXGG
0	0	ENDOGENOUS	JRDEXGGN
0	0	ENDOGENOUS	JRDEXGGPIB
0	0	ENDOGENOUS	JRDGG
0	0	ENDOGENOUS	JRDGGN
0	0	ENDOGENOUS	JRDGGPIB
0	0	ENDOGENOUS	JRDINEE
0	0	ENDOGENOUS	JRDINEEN
0	0	ENDOGENOUS	JRDINEEPIB
0	0	ENDOGENOUS	JRDINGG
0	0	ENDOGENOUS	JRDINGGN
0	0	ENDOGENOUS	JRDINGGPIB
0	0	ENDOGENOUS	JUR
0	0	ENDOGENOUS	JURDES
0	0	ENDOGENOUS	JURDESPIB
0	0	ENDOGENOUS	JURPIB
0	0	ENDOGENOUS	JURREC
-1	0	ENDOGENOUS	KED
-1	0	EXOGENOUS	LIBOR
-1	0	ENDOGENOUS	M0
-1	0	ENDOGENOUS	M0FR
-1	0	ENDOGENOUS	M1
-1	0	ENDOGENOUS	M1PIB
-1	0	ENDOGENOUS	MBCV
-1	0	ENDOGENOUS	MBIV
-1	0	ENDOGENOUS	MBKV
0	0	ENDOGENOUS	MBSNF
0	0	EXOGENOUS	MCLV
-2	0	ENDOGENOUS	MTV
0	0	ENDOGENOUS	MTVPIB
-3	0	EXOGENOUS	MW
0	0	ENDOGENOUS	NFEEN
0	0	ENDOGENOUS	NFEENN
0	0	ENDOGENOUS	NFEENPIB
0	0	ENDOGENOUS	NFEEO
0	0	ENDOGENOUS	NFEEON
0	0	ENDOGENOUS	NFEEOPIB
0	0	EXOGENOUS	NFEEP

(continue)

HORIZON:			
Min	Max	Symboltype	Symbolname
0	0	ENDOGENOUS	NFEEPN
0	0	ENDOGENOUS	NFEEPPIB
0	0	ENDOGENOUS	NFGGN
0	0	ENDOGENOUS	NFGGNN
0	0	ENDOGENOUS	NFGGNPIB
0	0	ENDOGENOUS	NFGGO
0	0	ENDOGENOUS	NFGGON
0	0	ENDOGENOUS	NFGGOPIB
0	0	ENDOGENOUS	NFGGP
0	0	ENDOGENOUS	NFGGPN
0	0	ENDOGENOUS	NFGGPPIB
0	0	ENDOGENOUS	NFSPN
0	0	ENDOGENOUS	NFSPNN
0	0	ENDOGENOUS	NFSPNPIB
0	0	ENDOGENOUS	NFSPO
0	0	ENDOGENOUS	NFSPON
0	0	ENDOGENOUS	NFSPOPIB
0	0	ENDOGENOUS	NFSPP
0	0	ENDOGENOUS	NFSPPN
0	0	ENDOGENOUS	NFSPPPIB
0	0	ENDOGENOUS	ODCCGG
0	0	ENDOGENOUS	ODCCGGN
0	0	ENDOGENOUS	ODCCGGPIB
-1	0	ENDOGENOUS	ORCCGG
0	0	ENDOGENOUS	ORCLN
0	0	ENDOGENOUS	ORCLPIB
0	0	ENDOGENOUS	OSNF
-1	0	ENDOGENOUS	OSNFDES
-1	0	ENDOGENOUS	OSNFREC
0	0	ENDOGENOUS	OTGG
0	0	ENDOGENOUS	OTGGN
0	0	ENDOGENOUS	OTGGPIB
-1	0	EXOGENOUS	PEAURB
0	0	ENDOGENOUS	PELPIB
-1	0	ENDOGENOUS	PIB
0	0	ENDOGENOUS	PIBN
0	0	EXOGENOUS	PND
0	0	EXOGENOUS	PNDPCT
0	0	ENDOGENOUS	POUCCGG
0	0	ENDOGENOUS	POUCCGGN
0	0	ENDOGENOUS	POUCCGGPIB
-1	0	EXOGENOUS	PTF
-1	0	ENDOGENOUS	RDOPP
0	0	EXOGENOUS	REINV
-1	0	ENDOGENOUS	RES
0	0	ENDOGENOUS	RESMTV
0	0	ENDOGENOUS	RESPIB
0	0	EXOGENOUS	RISCO
0	0	ENDOGENOUS	RLE
0	0	ENDOGENOUS	RTCCGG
0	0	ENDOGENOUS	RTCCGGN
0	0	ENDOGENOUS	RTCCGGPIB

(continue)

HORIZON:			
Min	Max	Symboltype	Symbolname
0	0	ENDOGENOUS	SALN
0	0	ENDOGENOUS	SALR
0	0	ENDOGENOUS	SBC
0	0	ENDOGENOUS	SER
0	0	ENDOGENOUS	SERPIB
0	0	ENDOGENOUS	SF
-1	0	ENDOGENOUS	SFEXJ
0	0	ENDOGENOUS	SFEXJPIB
0	0	ENDOGENOUS	SFPIB
0	0	ENDOGENOUS	SNF
0	0	ENDOGENOUS	SNFPIB
0	0	EXOGENOUS	SPREAD
0	0	ENDOGENOUS	STC
0	0	ENDOGENOUS	STCPIB
0	0	ENDOGENOUS	SUB
0	0	EXOGENOUS	SUBN
-1	-1	EXOGENOUS	SXB
-2	0	EXOGENOUS	SXM
-3	-2	EXOGENOUS	SXS
0	0	ENDOGENOUS	TAPGG
0	0	ENDOGENOUS	TAPGGN
0	0	ENDOGENOUS	TAPGGPIB
0	0	ENDOGENOUS	TCMEE
0	0	ENDOGENOUS	TCMGG
-1	0	ENDOGENOUS	TJCDB
-1	0	ENDOGENOUS	TJCDBN
0	0	EXOGENOUS	TJCDBND
0	0	ENDOGENOUS	TJOVER
0	0	ENDOGENOUS	TJRDEXEE
0	0	ENDOGENOUS	TJRDEXGG
-1	0	ENDOGENOUS	TJRDINEE
-1	0	ENDOGENOUS	TJRDINGG
-1	0	EXOGENOUS	TLBC
-1	0	EXOGENOUS	TLBI
-1	0	EXOGENOUS	TLBK
0	0	EXOGENOUS	TREND
0	0	ENDOGENOUS	TRPSEG
-1	0	ENDOGENOUS	TRPSEGD
-1	0	ENDOGENOUS	TRPSEGR
0	0	EXOGENOUS	TUN
0	0	ENDOGENOUS	TUNPIB
0	0	ENDOGENOUS	TUR
-1	0	ENDOGENOUS	TURDES
-1	0	ENDOGENOUS	TURREC
-1	0	EXOGENOUS	TXCAEAL
-1	0	EXOGENOUS	TXCAEJP
-1	0	EXOGENOUS	TXCRFFR
0	0	EXOGENOUS	TXDEPR
-1	0	ENDOGENOUS	TXDES
-3	0	ENDOGENOUS	UTIND
0	0	ENDOGENOUS	XBSNF
-1	0	ENDOGENOUS	XBV

(continue)

HORIZON:			
Min	Max	Symboltype	Symbolname
-2	0	ENDOGENOUS	XMV
-3	0	ENDOGENOUS	XSV
0	0	ENDOGENOUS	XTEV
0	0	EXOGENOUS	XTEVPCT
-2	0	ENDOGENOUS	XTV
0	0	ENDOGENOUS	XTVPIB

APPENDIX 2

ESTIMATION RESULTS

TOTAL PRIVATE FINAL CONSUMPTION
(Millions of R$,1980 Prices)

IV Estimation (1964 to 1996): DEL(LOG(CFTPP))

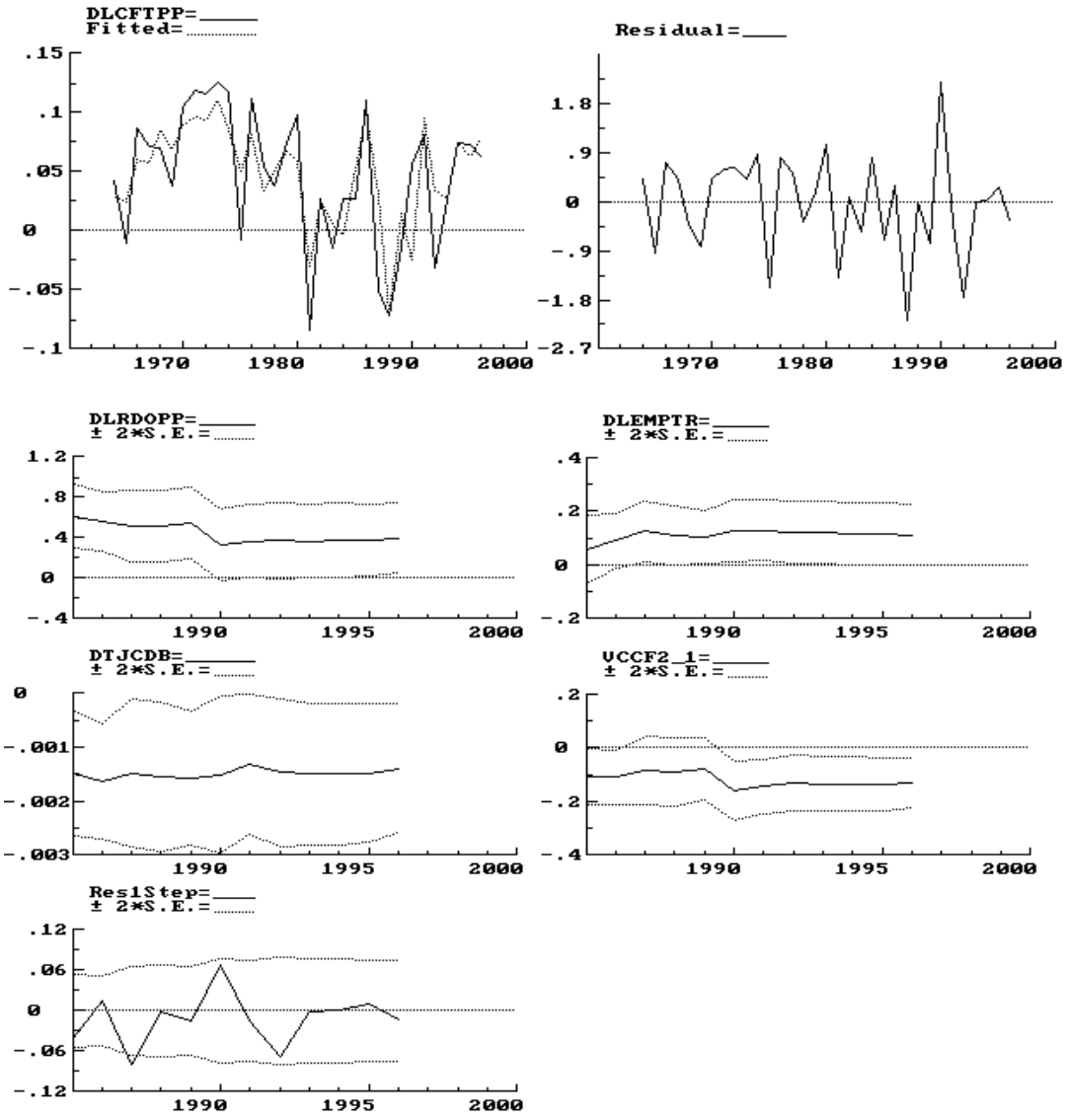
Variable	Coefficient	*Std.Error*	t-value	t-prob
DEL(LOG(RDOPP))	0.39663	0.17195	2.307	0.0293
DEL(LOG(EMPTR))	0.11134	0.056937	1.956	0.0613
DEL(TJCDB)	-0.0013847	0.00060100	-2.304	0.0295
VCCF(-1)	-0.13083	0.046012	-2.843	0.0086
D88	-0.10229	0.041265	-2.479	0.0200
D93	-0.11110	0.050704	-2.191	0.0376
D94	0.06846	0.0019956	1.616	0.1181

where VCCF = LOG(CFTPP) - LOG(RDOPP)

Endogenous: DEL(LOG(CFTPP)) DEL(LOG(RDOPP)) DEL(LOG(EMPTR))
Additional Instruments used: DEL(TJCDB(-1)) DEL(TJCDB(-2)) D81 Constant DEL(LOG(RDOPP(-1)))

å = 0.037377 DW = 2.56
RSS = 0.03632312218 for 7 variables and 33 observations
3 endogenous and 5 exogenous variables with 10 instruments
Reduced Form å = 0.0475696
Specification Chiý(3) = 4.7167 [0.1938]
Testing á = 0: Chiý(7) = 33.443 [0.0000] **

Testing for Error Autocorrelation from lags 1 to 2
Chiý(2) = 4.6149 [0.0995]
ARCH 1 F(1, 24) = 0.79215 [0.3823]
Normality Chiý(2)= 2.1244 [0.3457]
Xiý F(14, 11) = 0.71412 [0.7273]



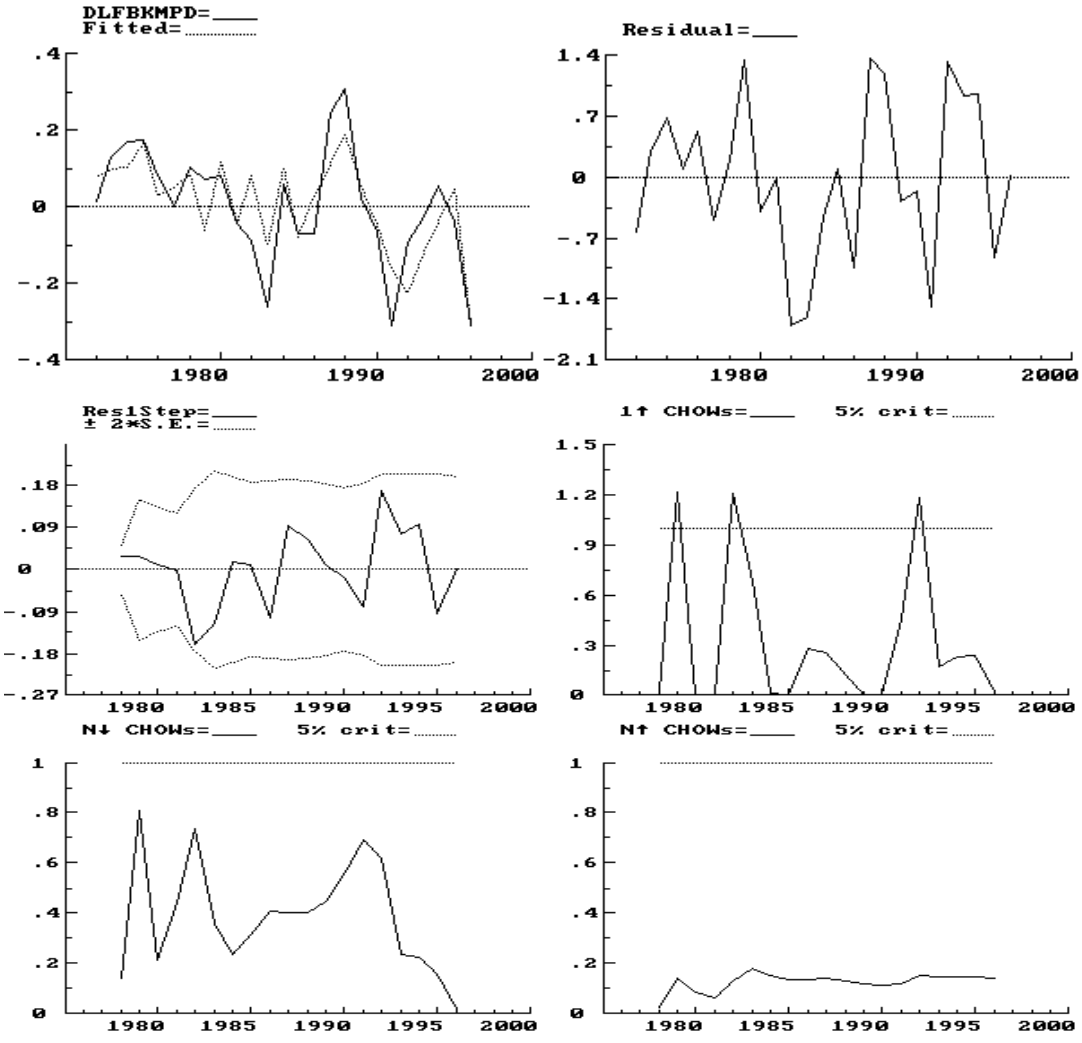
GROSS FIXED CAPITAL FORMATION — MACHINERY AND EQUIPMENT — DOMESTIC PRIVATE SECTOR (Millions of R$, 1980 Prices)

OLS Estimation (1972 to 1996): DEL(LOG(FBKMPD))

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
DEL(UTIND(2))	2.5393	0.66318	3.829	0.0010	0.4230
UTIND(1)	0.070901	0.027540	2.574	0.0181	0.2489
TJCDB(1)	0.0054535	0.0014649	3.723	0.0013	0.4093
D96	0.26718	0.11061	2.416	0.0254	0.2259
D81	0.21750	0.11214	1.939	0.0667	0.1583

Rý = 0.645018 å = 0.100274 DW = 1.76
* Rý does NOT allow for the mean *
RSS = 0.2010964182 for 5 variables and 25 observations

AR 1- 2F(2, 18) = 0.26169 [0.7726]
ARCH 1 F(1, 18) = 0.68597 [0.4184]
Normality Chiý(2) = 0.51388 [0.7734]
Xiý F(10, 9) = 0.65757 [0.7389]
RESET F(1, 19) = 1.6894 [0.2092]



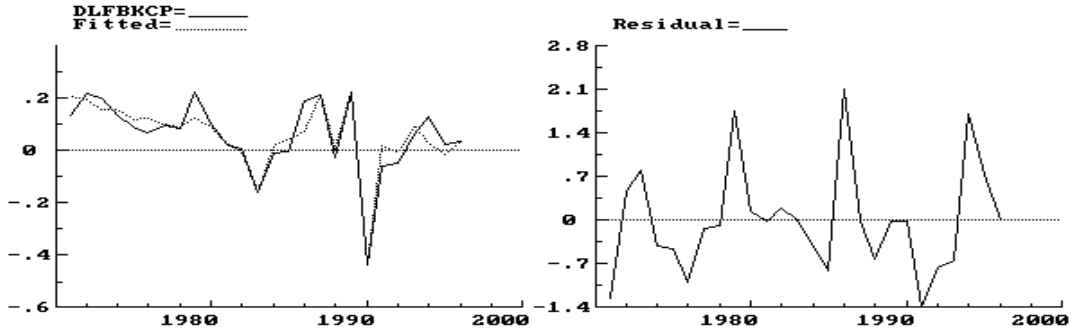
GROSS FIXED CAPITAL FORMATION - CONSTRUCTION — PRIVATE SECTOR
(Millions of R$, 1980 Prices)

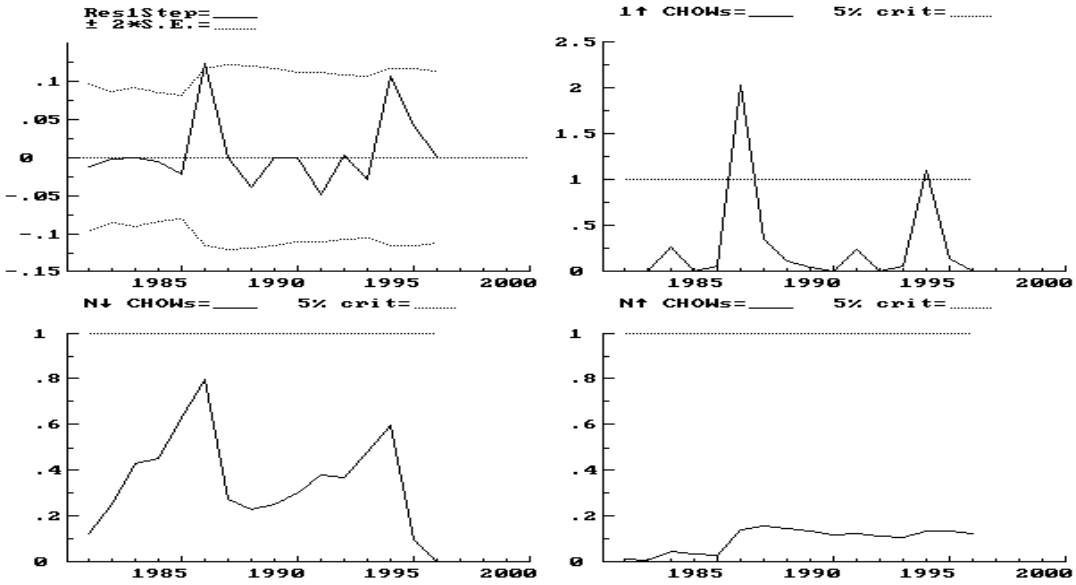
OLS Estimation (1971 to 1996): DEL(LOG(FBKCP))

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-5.9286	1.2443	-4.764	0.0001	0.5444
TCE(-1)	-0.37444	0.077428	-4.836	0.0001	0.5517
TJCDB	-0.0027444	0.00086693	-3.166	0.0051	0.3453
D83	-0.20603	0.063422	-3.248	0.0042	0.3571
D87	0.15876	0.058270	2.725	0.0135	0.2809
D89	0.26907	0.061828	4.352	0.0003	0.4992
D90	-0.23525	0.077350	-3.041	0.0067	0.3274

where TCE=LOG(FBKCP)-LOG(PIB)

Rý = 0.880189 F(6, 19) = 23.264 [0.0000] å = 0.0562415 DW = 1.84
RSS = 0.06009891702 for 7 variables and 26 observations
AR 1- 2F(2, 17) = 0.69733 [0.5116]
ARCH 1 F(1, 17) = 0.45044 [0.5111]
Normality Chiý(2) = 3.8227 [0.1479]
Xiý F(12, 6) = 0.095328 [0.9996]
RESET F(1, 18) = 0.83134 [0.3739]





AGGREGATE PRODUCTION FUNCTION

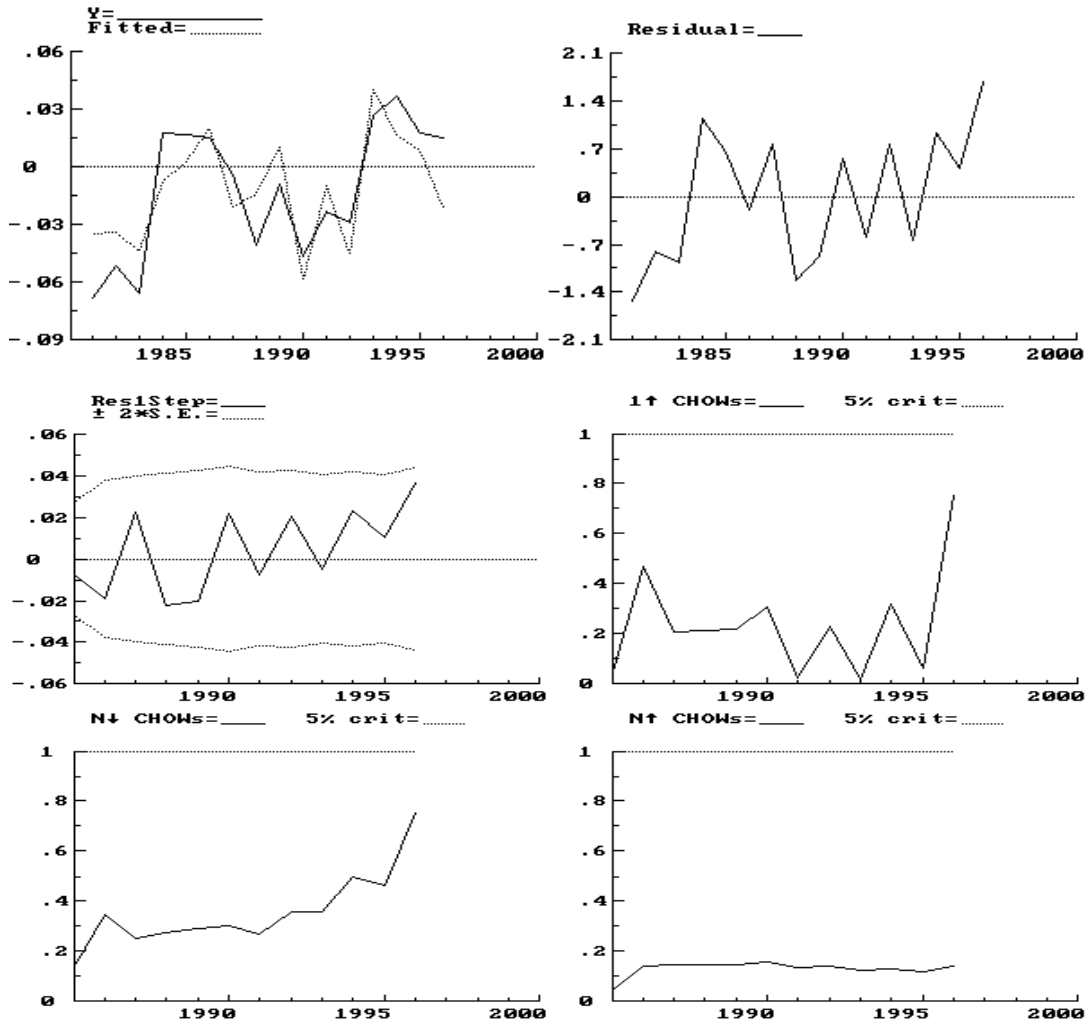
OLS Estimation (1981 to 1996): DEL(PIB)/PIB(-1)-DEL(LD)/LD(-1)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.020212	0.0057491	-3.516	0.0034	0.4689
X	0.70868	0.14607	4.852	0.0003	0.6271

where LD = PEAURB*(1-TXDES/100)
X = DEL(ELKT*UTIND)/(ELKT(-1)*UTIND(-1))-DEL(LD)/LD(-1)

Rý = 0.627055 F(1, 14) = 23.539 [0.0003] å = 0.0218883 DW = 1.61
RSS = 0.0067073848 for 2 variables and 16 observations

AR 1- 2F(2, 12) = 0.28861 [0.7544]
ARCH 1 F(1, 12) = 0.40361 [0.5372]
Normality Chiý(2) = 1.476 [0.4781]
Xiý F(2, 11) = 1.3193 [0.3065]
Xi*Xj F(2, 11) = 1.3193 [0.3065]
RESET F(1, 13) = 0.141 [0.7133]



LABOUR DEMAND — Employed Workers Index (Year Average)

OLS Estimation (1981 to 1997): DEL(LOG(LD))

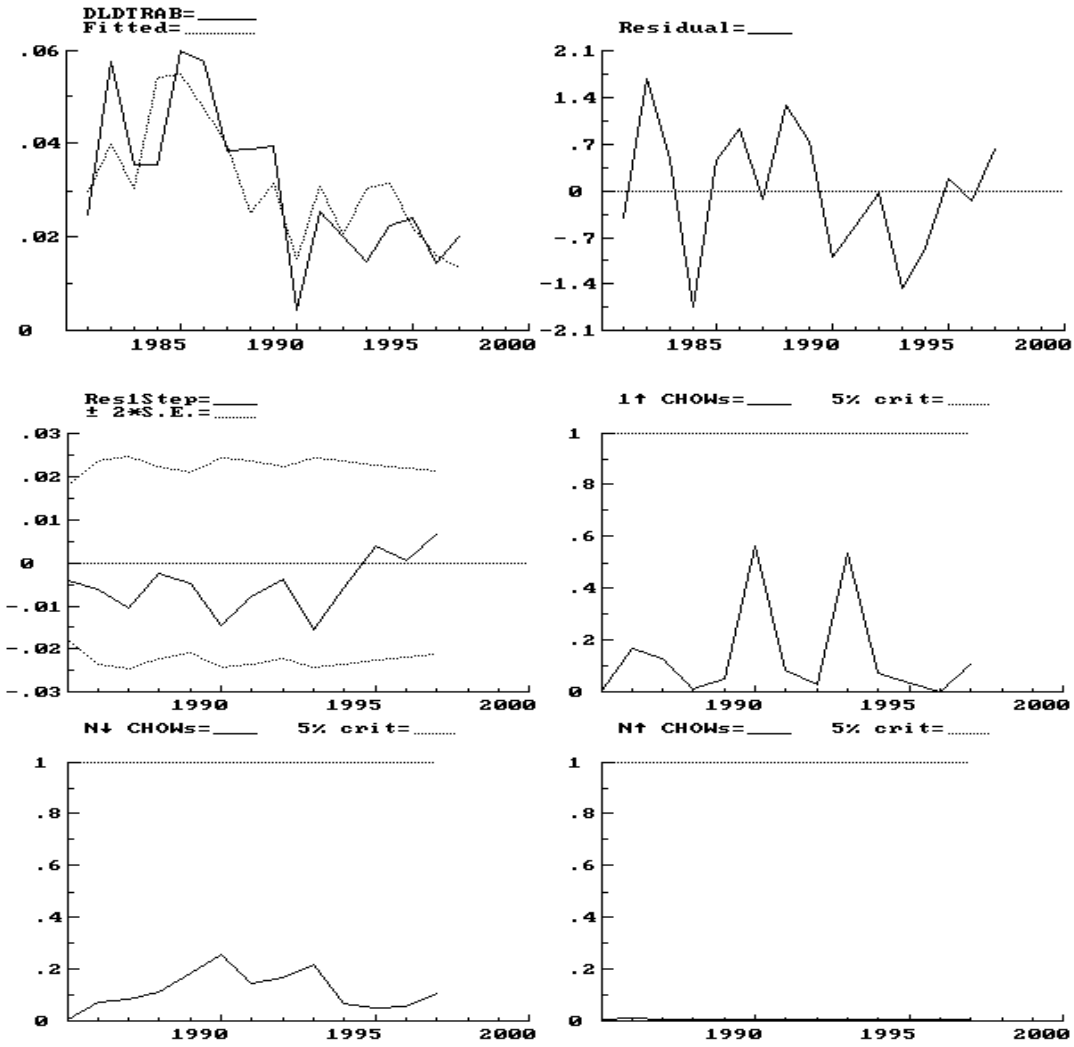
Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	0.28116	0.063819	4.406	0.0006	0.5809
LOG(SALR)	-0.047873	0.012037	-3.977	0.0014	0.5305
DEL(LOG(PIB))	0.30234	0.078039	3.874	0.0017	0.5174

where LD = PEAURB*(1-TXDES/100)

Rý = 0.614119 F(2, 14) = 11.14 [0.0013] å = 0.010646 DW = 1.90
RSS = 0.001586725418 for 3 variables and 17 observations

AR 1- 2F(2, 12) = 0.79653 [0.4734]
ARCH 1 F(1, 12) = 2.2282 [0.1613]

Normality Chiý(2) = 0.11318 [0.9450]
Xiý F(4, 9) = 0.74667 [0.5842]
Xi*Xj F(5, 8) = 0.62847 [0.6841]
RESET F(1, 13) = 0.26317 [0.6166]



VELOCITY OF MONEY

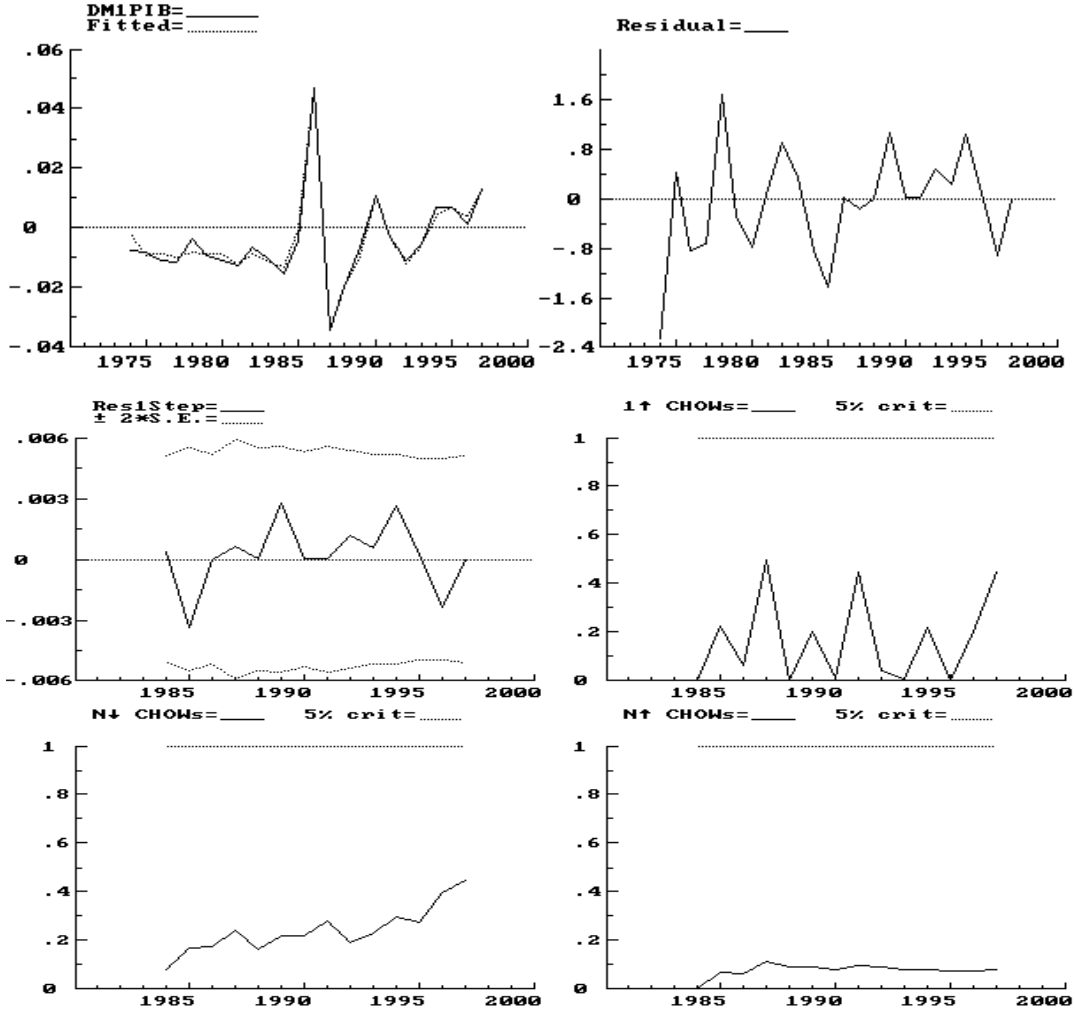
OLS Estimation (1974 to 1997): DEL(M1PIB)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
X	-0.0071575	0.00047357	-15.114	0.0000	0.9307
D7584	-0.0078725	0.00082175	-9.580	0.0000	0.8437
D86	0.041890	0.0025893	16.178	0.0000	0.9390
D88	-0.0098002	0.0026480	-3.701	0.0018	0.4462
D90	0.0089500	0.0025684	3.485	0.0028	0.4167
D91	-0.0079539	0.0025853	-3.077	0.0068	0.3577
D97	0.012316	0.0025664	4.799	0.0002	0.5753

where X = DEL(TJCDBN)/TJCDBN(-1)

Rý = 0.979546 å = 0.00256623 DW = 1.76
* Rý does NOT allow for the mean *
RSS = 0.0001119538106 for 7 variables and 24 observations

AR 1- 2F(2, 15) = 0.47478 [0.6311]
ARCH 1 F(1, 15) = 0.71335 [0.4116]
Normality Chiý(2) = 2.7718 [0.2501]
Xiý F(13, 3) = 0.82608 [0.6551]
RESET F(1, 16) = 0.052935 [0.8209]



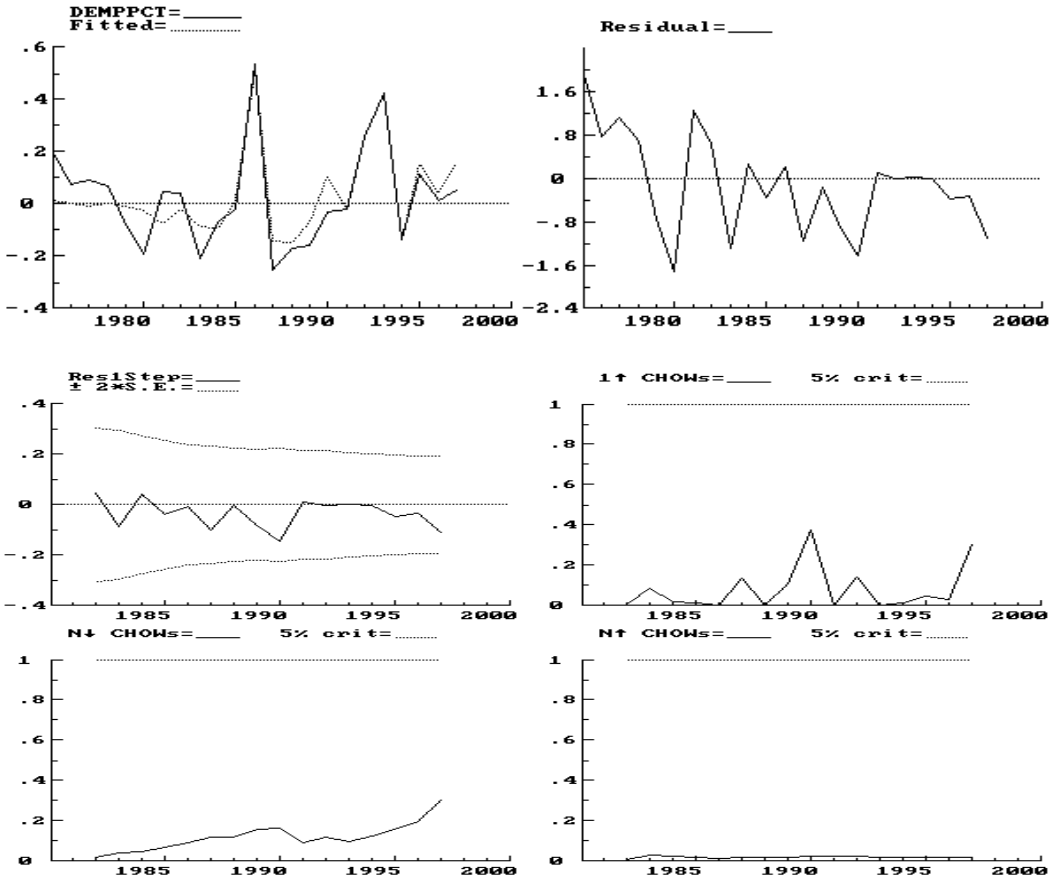
TOTAL CREDIT TO PRIVATE SECTOR
(Millions of R$,1980 Prices)

OLS Estimation (1975 to 1997): DEL(EMPTR)/EMPTR(-1)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
DEL(M1)/M1(-1)	0.34160	0.052129	6.553	0.0000	0.6933
D93	0.50421	0.097243	5.185	0.0001	0.5859
D92	0.38015	0.098223	3.870	0.0010	0.4408
D94	-0.30524	0.099878	-3.056	0.0065	0.3296

Rý = 0.789976 å = 0.0964723 DW = 1.43
* Rý does NOT allow for the mean *
RSS = 0.176831176 for 4 variables and 23 observations

AR 1- 2F(2, 17) = 0.37759 [0.6911]
ARCH 1 F(1, 17) = 0.04261 [0.8389]
Normality Chiý(2) = 0.2563 [0.8797]
Xiý F(8, 10) = 1.017 [0.4802]
Xi*Xj F(9, 9) = 0.96547 [0.5204]
RESET F(1, 18) = 0.040866 [0.8421]



MANUFACTURED PRODUCTS EXPORTS
(Millions of US$)

Cointegration analysis (Johansen): 1957 to 1997

Endogenous: LXM LERM LMW UTIND
Number of lags: 2; Variables unrestricted: Constant D64S

Ho:rank=p	-Tlog(1-æ)	using T-nm	95%	-Tälg(1-æ)	using T-nm	95%
p == 0	48.1**	38.71**	27.1	77.85**	62.66**	47.2
p <= 1	21.36*	17.2	21.0	9.75*	23.95	29.7
p <= 2	7.95	6.399	14.1	8.388	6.751	15.4
p <= 3	0.4375	0.3522	3.8	0.4375	0.3522	3.8

Weak exogeneity test: 1957 to 1997

standardized β' eigenvectors

LXM	LERM	LMW	UTIND
1.000	-1.613	-2.118	1.986

standardized α coefficients

LXM	LERM	LMW	UTIND
-0.8274	0.0000	0.0000	0.0000

LR-test, rank=1: Chiý(÷3) = 1.2964 [0.7300]

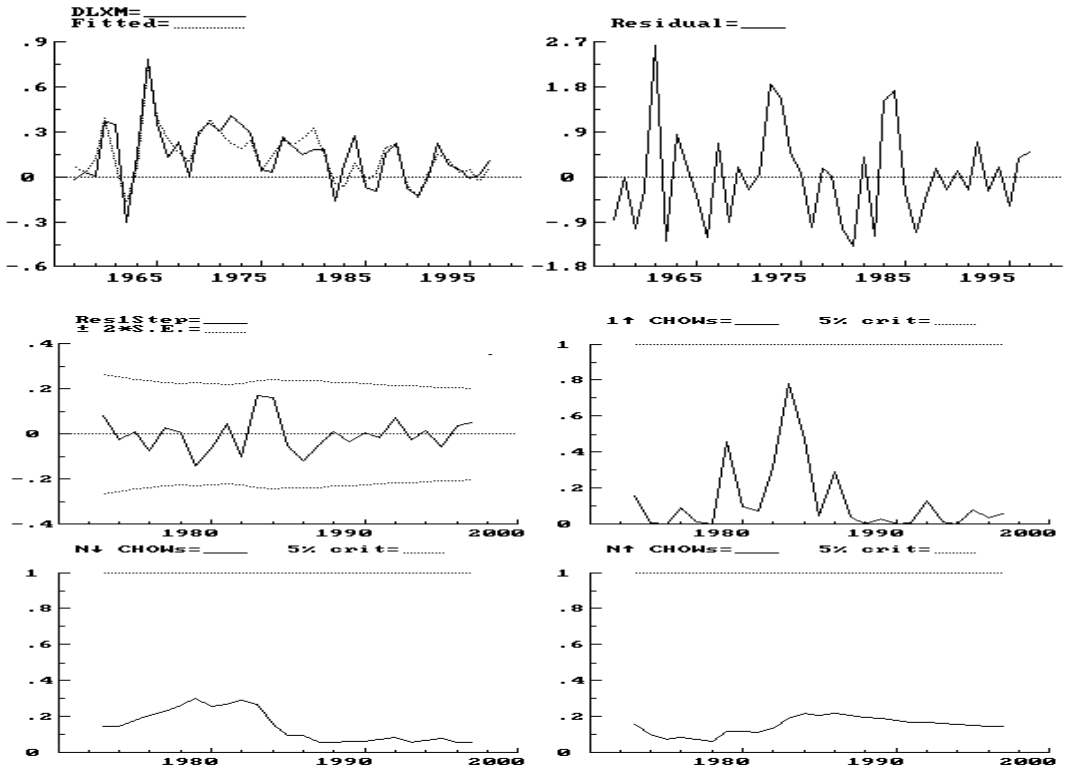
Error Correction Model (1957 to 1997): DLXM

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-3.2050	0.36955	-8.673	0.0000	0.6887
DLXM_1	0.18202	0.085170	2.137	0.0399	0.1184
DLERM	0.35194	0.12568	2.800	0.0084	0.1874
DLERM_1	-0.59307	0.15357	-3.862	0.0005	0.3049
DLMW	1.4962	0.24722	6.052	0.0000	0.5186
TCEM_1	-0.82605	0.094080	-8.780	0.0000	0.6940
D64S	0.47401	0.066395	7.139	0.0000	0.5999

where TCEM = LXM -1.613 LERM -2.118 LMW +1.986 UTIND

Rý = 0.767929 F(6, 34) = 18.751 [0.0000] å = 0.101644 DW = 2.07
RSS = 0.3512695196 for 7 variables and 41 observations

AR 1- 2F(2, 32) = 0.097007 [0.9078]
ARCH 1 F(1, 32) = 0.4637 [0.5008]
Normality Chiý(2)= 4.3753 [0.1122]
Xiý F(11, 22) = 0.76661 [0.6680]
Xi*Xj F(26, 7) = 0.77431 [0.7067]
RESET F(1, 33) = 0.21835 [0.6434]



SEMIMANUFACTURED PRODUCTS EXPORTS
(Millions of US$)

Cointegration analysis (Johansen): 1958 to 1997

Endogenous: LXS LERS LMW
Number of lags: 3; Variables unrestricted: Constant D82

Ho:rank=p	-Tlog(1-æ)	using T-nm	95%	-Tälg(1-æ)	using T-nm	95%
p == 0	29.48**	22.85*	21.0	36.26**	28.1	29.7
p <= 1	6.346	4.918	14.1	6.779	5.254	15.4
p <= 2	0.4332	0.3357	3.8	0.4332	0.3357	3.8

Weak exogeneity test: 1958 to 1997

standardized β' eigenvectors

LXS	LERS	LMW
1.000	-0.1136	-1.397

standardized α coefficients

LXS	LERS	LMW
-0.5326	0.0000	0.0000

LR-test, rank=1: Chiý(÷2) = 1.1938 [0.5505]

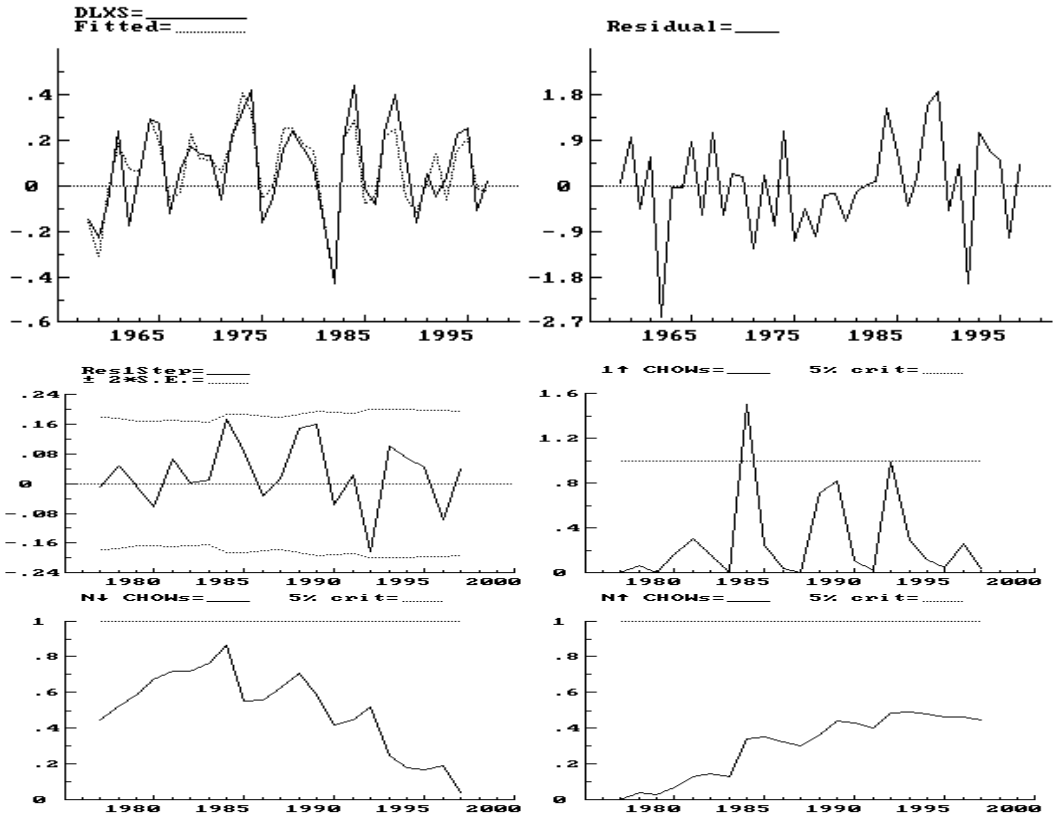
Error Correction Model (1958 to 1997): DLXS

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.57349	0.10858	-5.282	0.0000	0.4581
DLXS_1	0.18655	0.082584	2.259	0.0306	0.1339
DLXS_2	-0.29410	0.077040	-3.818	0.0006	0.3063
DLERS_2	-0.27094	0.11937	-2.270	0.0299	0.1350
DLMW	1.2609	0.24475	5.152	0.0000	0.4458
TCES_1	-0.50727	0.091295	-5.556	0.0000	0.4834
D82	-0.31160	0.10752	-2.898	0.0066	0.2029

where TCES = LXS -0.1136 LERS -1.397 LMW

Rý = 0.796941 F(6, 33) = 21.586 [0.0000] å = 0.0965281 DW = 2.29
RSS = 0.3074830048 for 7 variables and 40 observations

AR 1- 2F(2, 31) = 0.96705 [0.3914]
ARCH 1 F(1, 31) = 0.19776 [0.6596]
Normality Chiý(2) = 2.5261 [0.2828]
Xiý F(12, 20) = 0.83977 [0.6129]
Xi*Xj F(23, 9) = 0.41984 [0.9550]
RESET F(1, 32) = 1.5632 [0.2203]



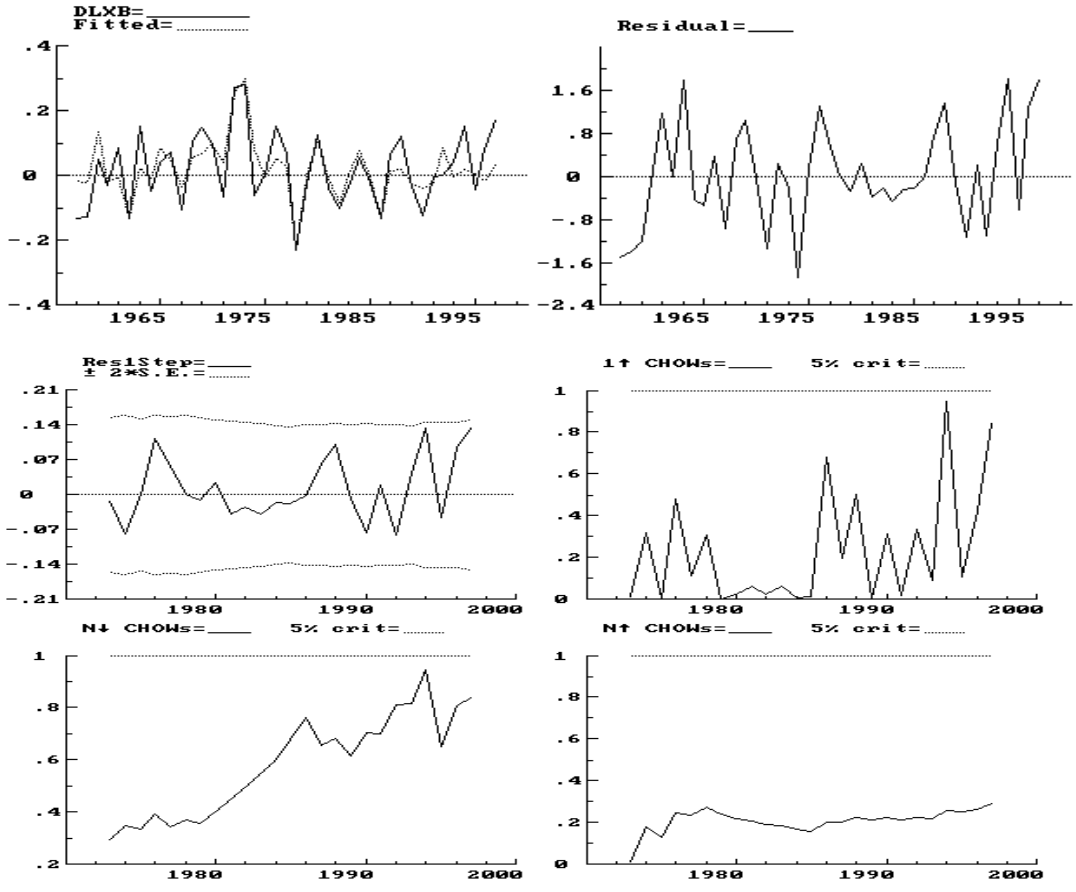
PRIMARY PRODUCTS EXPORTS
(Millions of US$)

OLS Estimation (1957 to 1997): DLXB

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
DLERB_1	0.32516	0.092480	3.516	0.0012	0.2610
DLMW	0.39657	0.14599	2.716	0.0102	0.1741
D7273	0.21219	0.058377	3.635	0.0009	0.2740
D86	-0.17806	0.077630	-2.294	0.0279	0.1307
D62	-0.15317	0.076021	-2.015	0.0517	0.1039
D78	-0.25390	0.076386	-3.324	0.0021	0.2399

Rý = 0.629805 å = 0.0756884 DW = 1.57
RSS = 0.2005054926 for 6 variables and 41 observations

AR 1- 2F(2, 33) = 0.78459 [0.4646]
ARCH 1 F(1, 33) = 0.79476 [0.3791]
Normality Chiý(2)= 0.24588 [0.8843]
Xiý F(10, 24) = 1.0766 [0.4165]
Xi*Xj F(12, 22) = 0.85591 [0.5984]
RESET F(1, 34) = 3.4457 [0.0721]



CAPITAL GOODS IMPORTS
(Millions of US$)

Cointegration analysis (Johansen): 1956 to 1997

Endogenous: LMBKV LPIB LERBK
Number of lags: 1; Variables unrestricted: Constant

Ho:rank=p	-Tlog(1-æ)	using T-nm	95%	-Tälg(1-æ)	using T-nm	95%
p == 0	38.45**	35.71**	21.0	55.82**	51.83**	29.7
p <= 1	16.02*	14.87*	14.1	17.37*	16.13*	15.4
p <= 2	1.35	1.254	3.8	1.35	1.254	3.8

Weak exogeneity test: 1956 to 1997

standardized á' eigenvectors

LMBKV	LPIB	LERBK
1.000	-0.5333	3.452

standardized α coefficients

LMBKV	LPIB	LERBK
-0.1552	0.0000	0.0000

LR-test, rank=1: Chiý(÷2) = 2.0883 [0.3520]

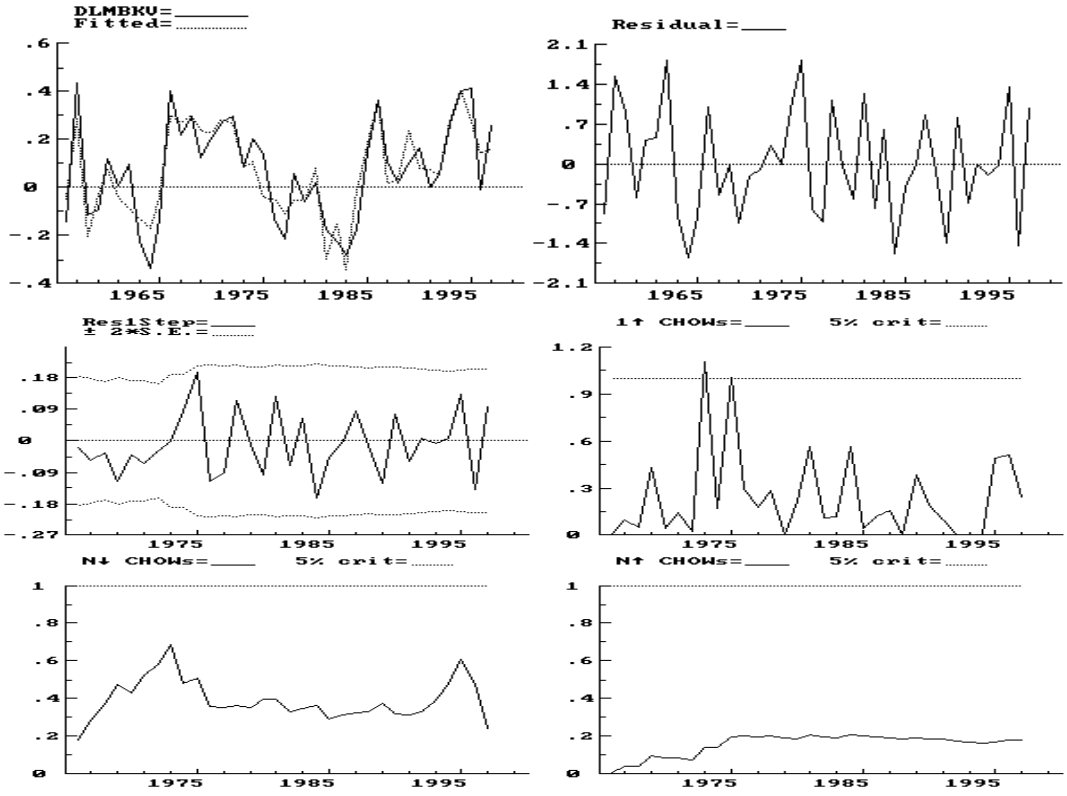
Error Correction Model (1956 to 1997): DLMBKV

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	5.4138	0.69391	7.802	0.0000	0.6284
DLPIB	2.9562	0.41741	7.082	0.0000	0.5822
DLERBK	-0.75588	0.10859	-6.961	0.0000	0.5737
TCEBK_1	-0.15547	0.019699	-7.892	0.0000	0.6337
D73	-0.18850	0.10877	-1.733	0.0917	0.0770
D86	0.24995	0.10399	2.404	0.0215	0.1383

where TCEBK=LMBKV-0.5333*LPIB+3.452*LERBK;

Rý = 0.784735 F(5, 36) = 26.247 [0.0000] å = 0.102226 DW = 2.34
RSS = 0.3762043444 for 6 variables and 42 observations

AR 1- 2F(2, 34) = 1.7896 [0.1824]
ARCH 1 F(1, 34) = 0.0023683 [0.9615]
Normality Chiý(2) = 1.6339 [0.4418]
Xiý F(10, 25) = 0.77553 [0.6509]
Xi*Xj F(15, 20) = 0.51991 [0.8998]
RESET F(1, 35) = 1.2214 [0.2766]



INTERMEDIATE GOODS IMPORTS
(Millions of US$)

Cointegration analysis (Johansen): 1956 to 1997

Endogenous: LMBIV LPIB LERBI
Number of lags: 1; Variables unrestricted: Constant

Ho:rank=p	-Tlog(1-æ)	using T-nm	95%	-Tälg(1-æ)	using T-nm	95%
p == 0	28.5**	26.47**	21.0	41.89**	38.89**	29.7
p <= 1	10.08	9.36	14.1	13.38	12.43	15.4
p <= 2	3.301	3.065	3.8	3.301	3.065	3.8

Weak exogeneity test: 1956 to 1997

standardized á' eigenvectors

LMBIV	LPIB	LERBI
1.000	-0.7546	1.437
LMBIV	LPIB	LERBI
-0.2239	0.0000	0.0000

LR-test, rank=1: Chiý(÷2) = 2.7218 [0.2564]

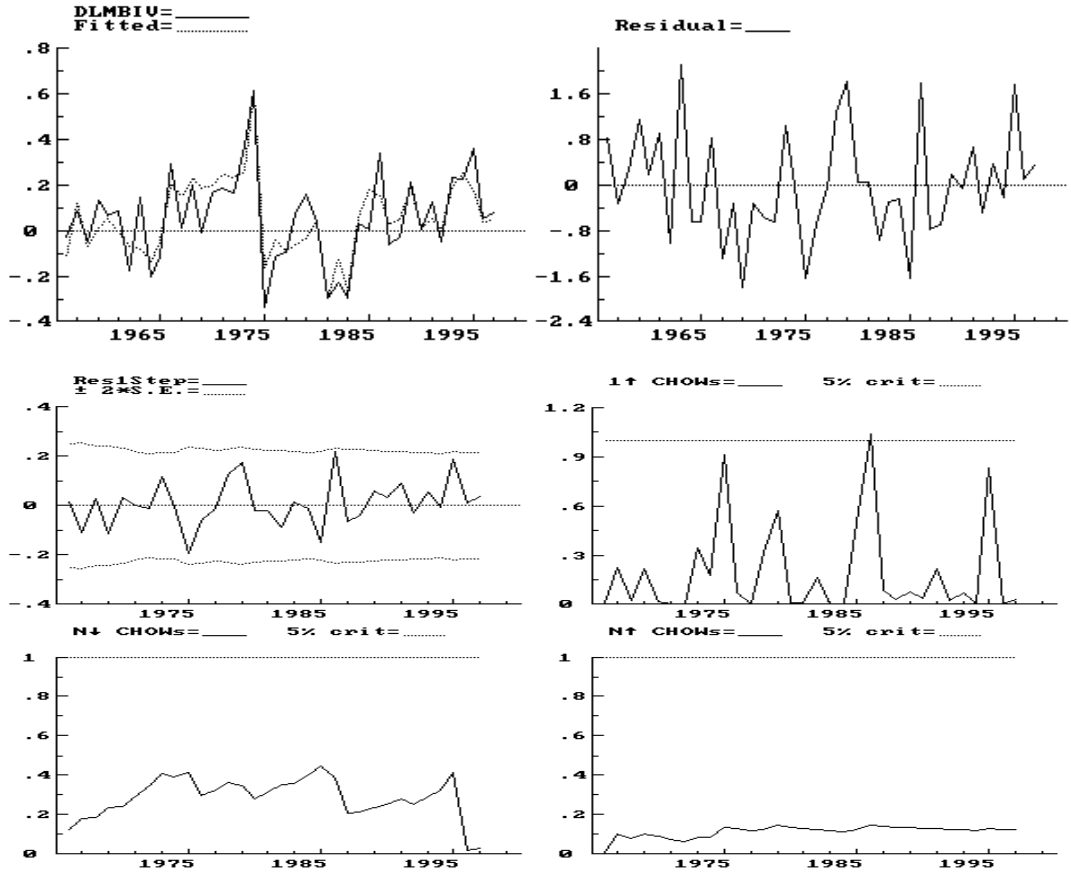
Error Correction Model (1956 to 1997): DLMBKI

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	3.5482	0.64795	5.476	0.0000	0.4477
DLPIB	2.5746	0.41293	6.235	0.0000	0.5124
DLERBI	-0.45371	0.11853	-3.828	0.0005	0.2837
TCEBI_1	-0.22388	0.039981	-5.600	0.0000	0.4587
D74	0.55161	0.10880	5.070	0.0000	0.4099

where TCEBI=LMBIV-0.7546*LPIB+1.437*LERBI;

Rý = 0.727914 F(4, 37) = 24.747 [0.0000] å = 0.106811 DW = 2.21
RSS = 0.4221156694 for 5 variables and 42 observations

AR 1- 2F(2, 35) = 0.47976 [0.6229]
ARCH 1 F(1, 35) = 0.20003 [0.6574]
Normality Chiý(2) = 0.94439 [0.6236]
Xiý F(8, 28) = 0.40446 [0.9084]
Xi*Xj F(14, 22) = 0.40647 [0.9569]
RESET F(1, 36) = 0.51514 [0.4776]



CONSUMER GOODS IMPORTS
(Millions of US$)

Cointegration analysis (Johansen): 1956 to 1997

Endogenous: LMBIC LPIB LERBC
Number of lags: 1; Variables unrestricted: Constant

Ho:rank=p	-Tlog(1-æ)	Using T-nm	95%	-Tälg(1-æ)	using T-nm	95%
p == 0	26.11**	24.25*	21.0	38.53**	35.77**	29.7
p <= 1	9.835	9.132	14.1	12.41	11.53	15.4
p <= 2	2.579	2.394	3.8	2.579	2.394	3.8

Weak exogeneity test: 1956 to 1997

standardized á' eigenvectors

LMBCV	LPIB	LERBC
1.000	-0.9231	1.714
LMBCV	LPIB	LERBC
-0.3444	0.0000	0.0000

LR-test, rank=1: Chiý(÷2) = 6.1091 [0.0471] *

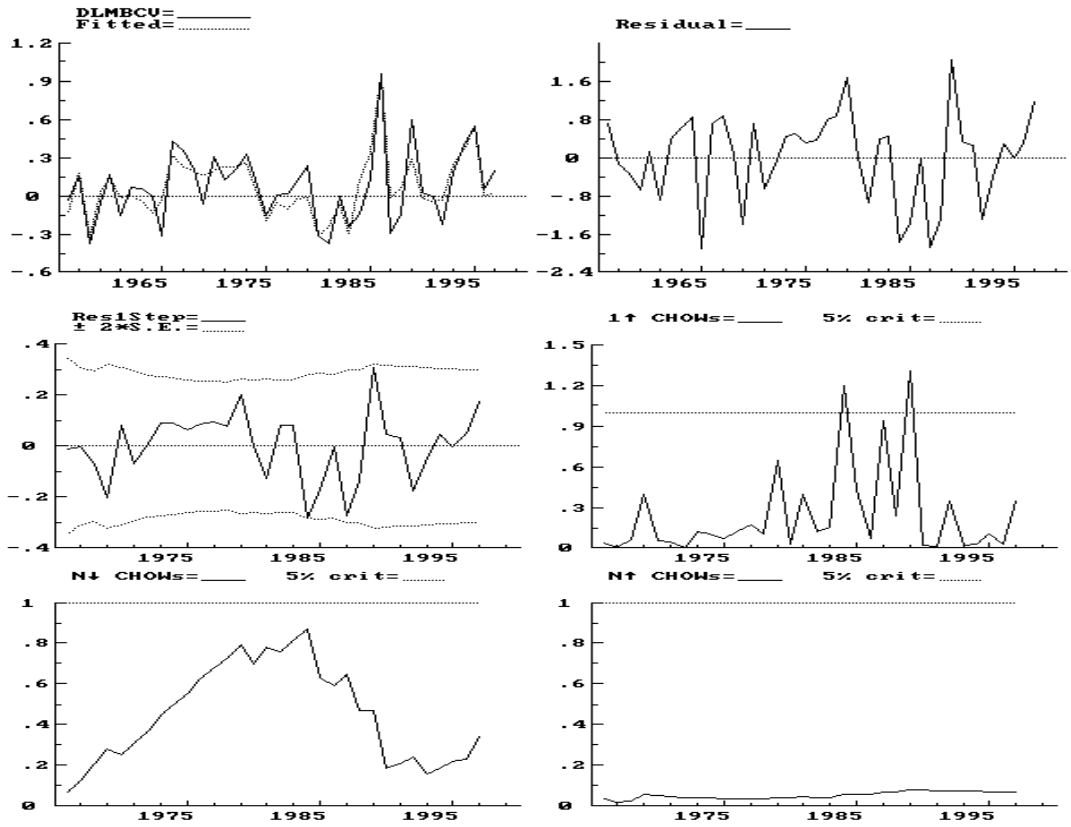
Error Correction Model (1956 to 1997): DLMBKC

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	3.6030	1.0927	3.297	0.0022	0.2370
DLPIB	2.8835	0.60278	4.784	0.0000	0.3953
DLERBC	-0.68722	0.13862	-4.958	0.0000	0.4125
TCEBC_1	-0.21001	0.062293	-3.371	0.0018	0.2451
D86	0.68711	0.15990	4.297	0.0001	0.3454
D80	-0.37800	0.15864	-2.383	0.0227	0.1396
D95	0.36471	0.15910	2.292	0.0280	0.1305

where TCEBC = LMBCV-0.9231*LPIB+1.714*LERBC

Rý = 0.74432 F(6, 35) = 16.982 [0.0000] å = 0.150513 DW = 1.84
RSS = 0.7928915583 for 7 variables and 42 observations

AR 1- 2F(2, 33) = 0.63359 [0.5370]
ARCH 1 F(1, 33) = 0.027759 [0.8687]
Normality Chiý(2) = 1.2364 [0.5389]
Xiý F(12, 22) = 0.80598 [0.6419]
Xi*Xj F(16, 18) = 0.61429 [0.8338]
RESET F(1, 34) = 0.27224 [0.6052]



FREIGHT AND INSURANCE REVENUE
(Millions of US$)

OLS Estimation (1949 to 1997): LOG(TRPSEGR)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	0.50512	0.47969	1.053	0.2984	0.0257
LOG(TRPSEGR(-1))	0.84928	0.095703	8.874	0.0000	0.6522
LOG(MTV(-1))	0.37478	0.15068	2.487	0.0169	0.1284
LOG(MTV(-2))	0.31778	0.16406	1.937	0.0595	0.0820
LOG(XTV(-1))	0.55809	0.25085	2.225	0.0315	0.1054
LOG(XTV(-2))	0.45662	0.22620	2.019	0.0499	0.0884
D58	0.48482	0.20061	2.417	0.0201	0.1221

Rý = 0.988229 F(6, 42) = 587.68 [0.0000] å = 0.189886 DW = 2.02
RSS = 1.514379444 for 7 variables and 49 observations

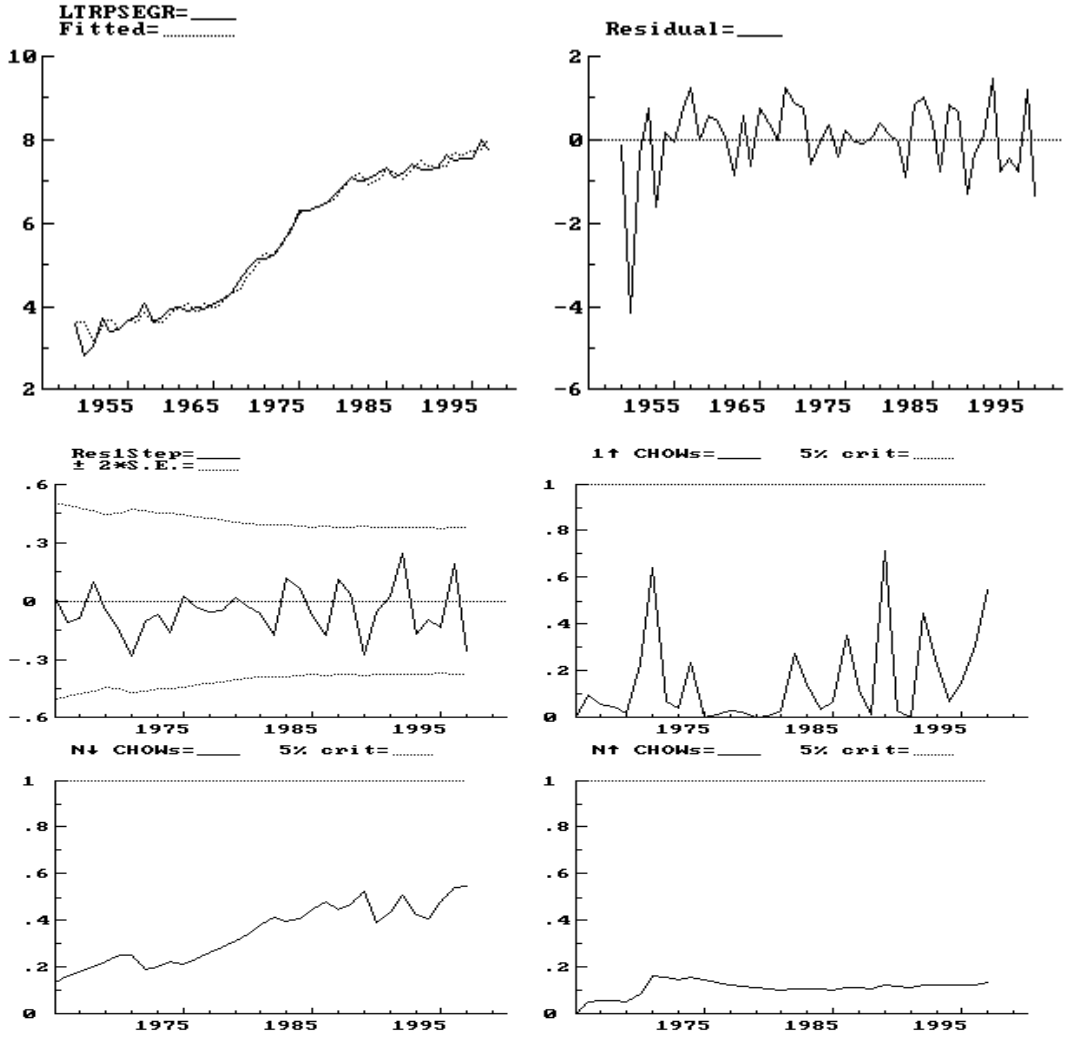
AR 1- 2F(2, 40) = 0.52686 [0.5945]
ARCH 1 F(1, 40) = 0.17631 [0.6768]
Normality Chiý(2) = 18.682 [0.0001] **

Xiý F(11, 30) = 0.60043 [0.8133]
Xi*Xj F(21, 20) = 0.3402 [0.9911]
RESET F(1, 41) = 7.349 [0.0098] **

Solved Static Long Run equation

LOG(TRPSEGR) = -3.351 +0.3782 LOG(MTV) +0.6733 LOG(XTV) -3.217 D58
(SE) (1.448) (0.7532) (0.7234) (2.581)

WALD test Chiý(3) = 71.642 [0.0000] **



FREIGHT AND INSURANCE EXPENDITURE
(Millions of US$)

OLS Estimation (1949 to 1997): LOG(TRPSEGD)

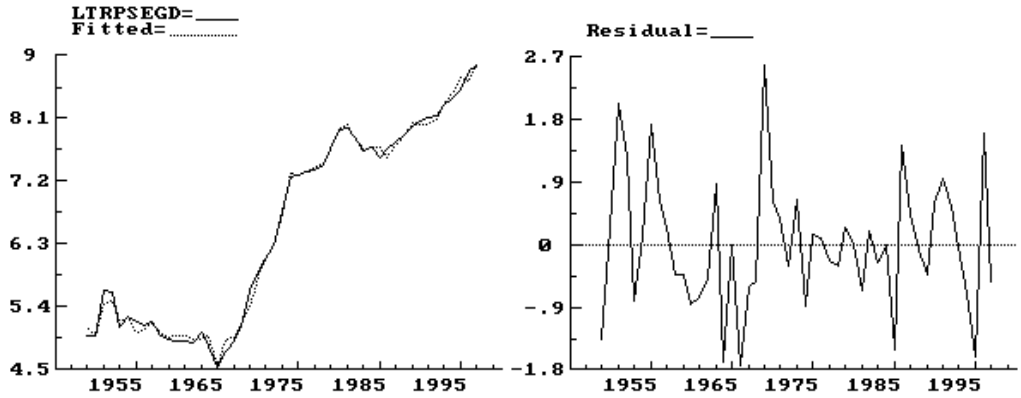
Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.78748	0.19269	-4.087	0.0002	0.2845
LOG(TRPSEGD(-1))	0.63159	0.080102	7.885	0.0000	0.5968
LOG(MTV)	0.56424	0.088265	6.393	0.0000	0.4931
LOG(MTV(-1))	-0.35192	0.10507	-3.349	0.0017	0.2108
LOG(XTV)	0.42352	0.10326	4.101	0.0002	0.2860
LOG(XTV(-2)	-0.26786	0.083319	-3.215	0.0025	0.1975
D65	-0.31467	0.10154	-3.099	0.0035	0.1861

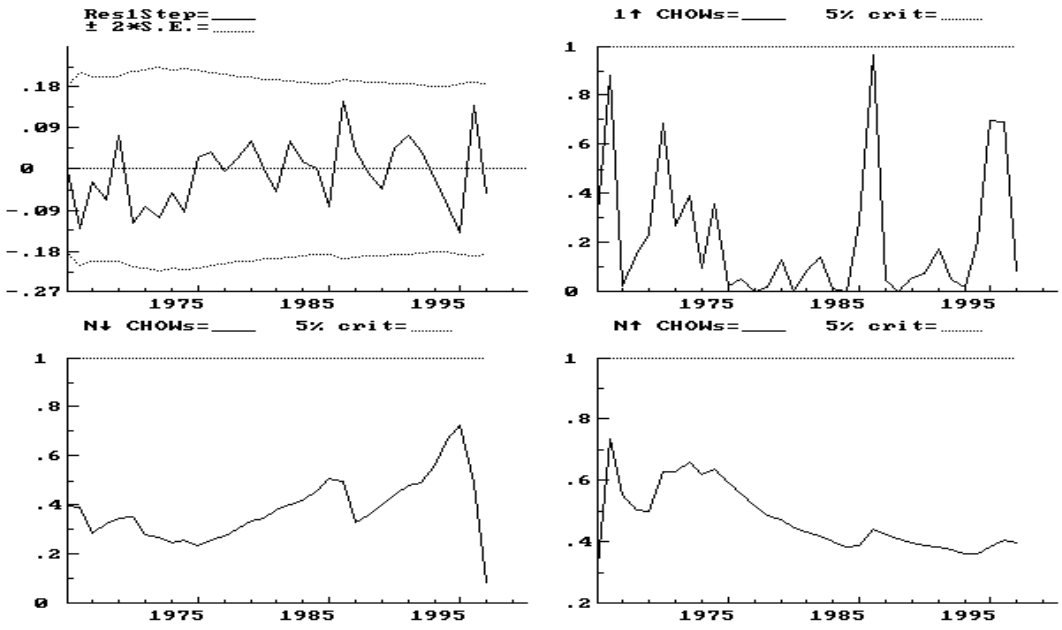
Rý = 0.996088 F(6, 42) = 1782.4 [0.0000] å = 0.0944259 DW = 1.94
RSS = 0.3744826884 for 7 variables and 49 observations

AR 1- 2F(2, 40) = 0.086864 [0.9170]
ARCH 1 F(1, 40) = 0.048761 [0.8264]
Normality Chiý(2) = 2.1469 [0.3418]
Xiý F(12, 29) = 1.8231 [0.0914]
Xi*Xj F(23, 18) = 2.5551 [0.0232]*
RESET F(1, 41) = 3.3012 [0.0765]

Solved Static Long Run equation

LOG(TRPSEGD) = -2.137 + 0.5763 LOG(MTV) +0.4225 LOG(XTV) -0.8541 D65
(SE) (0.2427) (0.155) (0.1476) (0.3071)
WALD test Chiý(3) = 1339.3 [0.0000] **





INTERNATIONAL TRAVEL REVENUE
(Millions of US$)

OLS Estimation (1955 to 1997): LOG(TURREC)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-18.285	9.8783	-1.851	0.0720	0.0827
LOG(TURREC(-1))	0.81915	0.078737	10.404	0.0000	0.7401
LOG(GDPUS(-1))	0.66014	0.35086	1.881	0.0676	0.0852
D82	-1.2775	0.37409	-3.415	0.0015	0.2348
D89	2.2068	0.38476	5.736	0.0000	0.4640

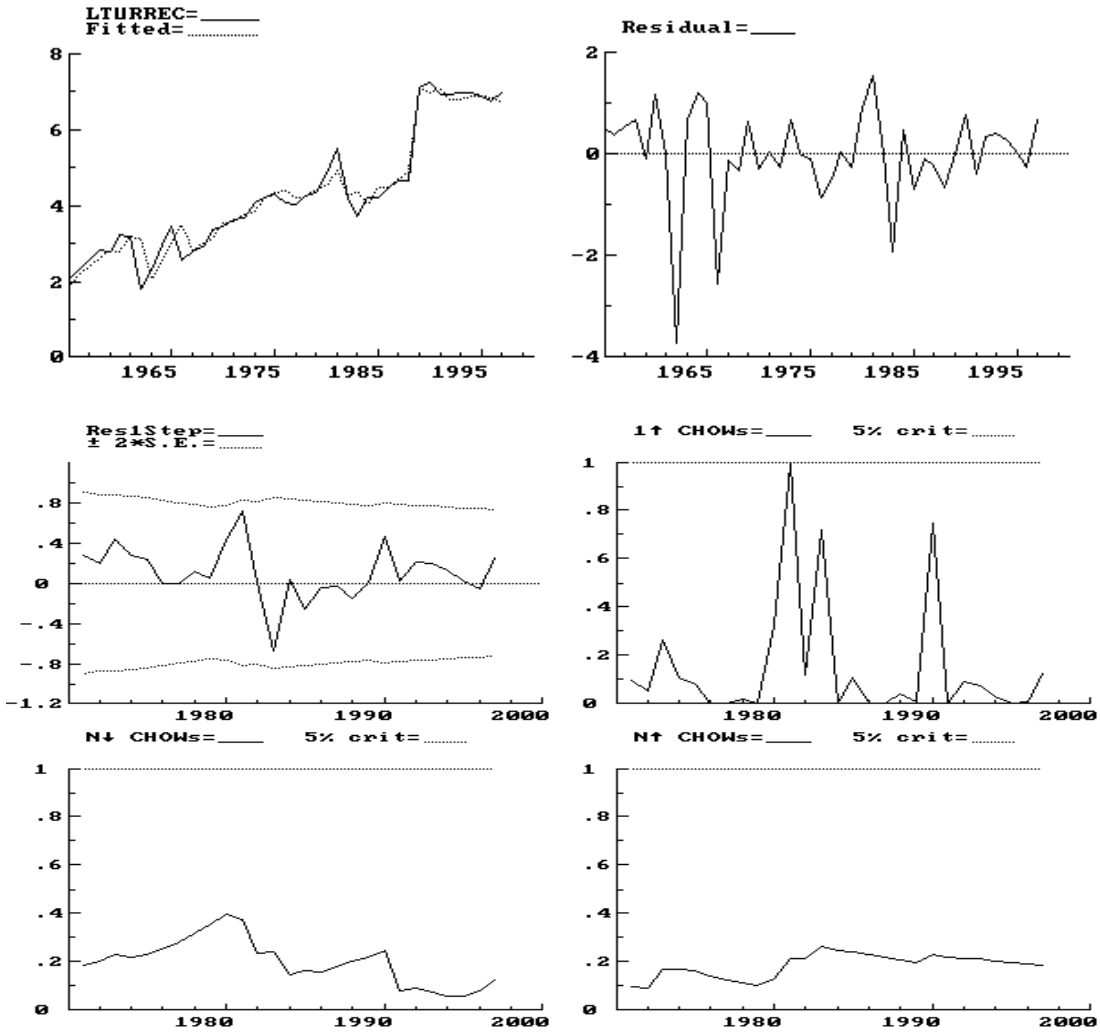
Rý = 0.953054 F(4, 38) = 192.86 [0.0000] å = 0.365343 DW = 2.11
RSS = 5.072057136 for 5 variables and 43 observations

AR 1- 2F(2, 36) = 2.717 [0.0796]
ARCH 1 F(1, 36) = 0.13355 [0.7169]
Normality Chiý(2) = 19.548 [0.0001]**
Xiý F(8, 29) = 0.73391 [0.6610]
Xi*Xj F(10, 27) = 0.69538 [0.7201]
RESET F(1, 37) = 5.8462 [0.0207]*

Solved Static Long Run equation

LOG(TURREC) = -101.1 + 3.65 LOG(GDPUS) -7.064 D82 +12.2 D89
(SE) (25.9) (0.8927) (3.917) (6.142)

WALD test Chiý(3) = 25.05 [0.0000] **



INTERNATIONAL TRAVEL EXPENDITURE
(Millions of US$)

OLS Estimation (1957 to 1996): LOG(TURDES)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	19.788	5.0129	3.947	0.0004	0.3143
LOG(TURDES(-1))	0.71352	0.10587	6.740	0.0000	0.5719
LOG(CR)	-0.96972	0.24933	-3.889	0.0004	0.3079
LOG(RDOPP)	0.56026	0.22758	2.462	0.0191	0.1513
D82	0.76010	0.34999	2.172	0.0369	0.1218
D85	0.90575	0.38255	2.368	0.0237	0.1415

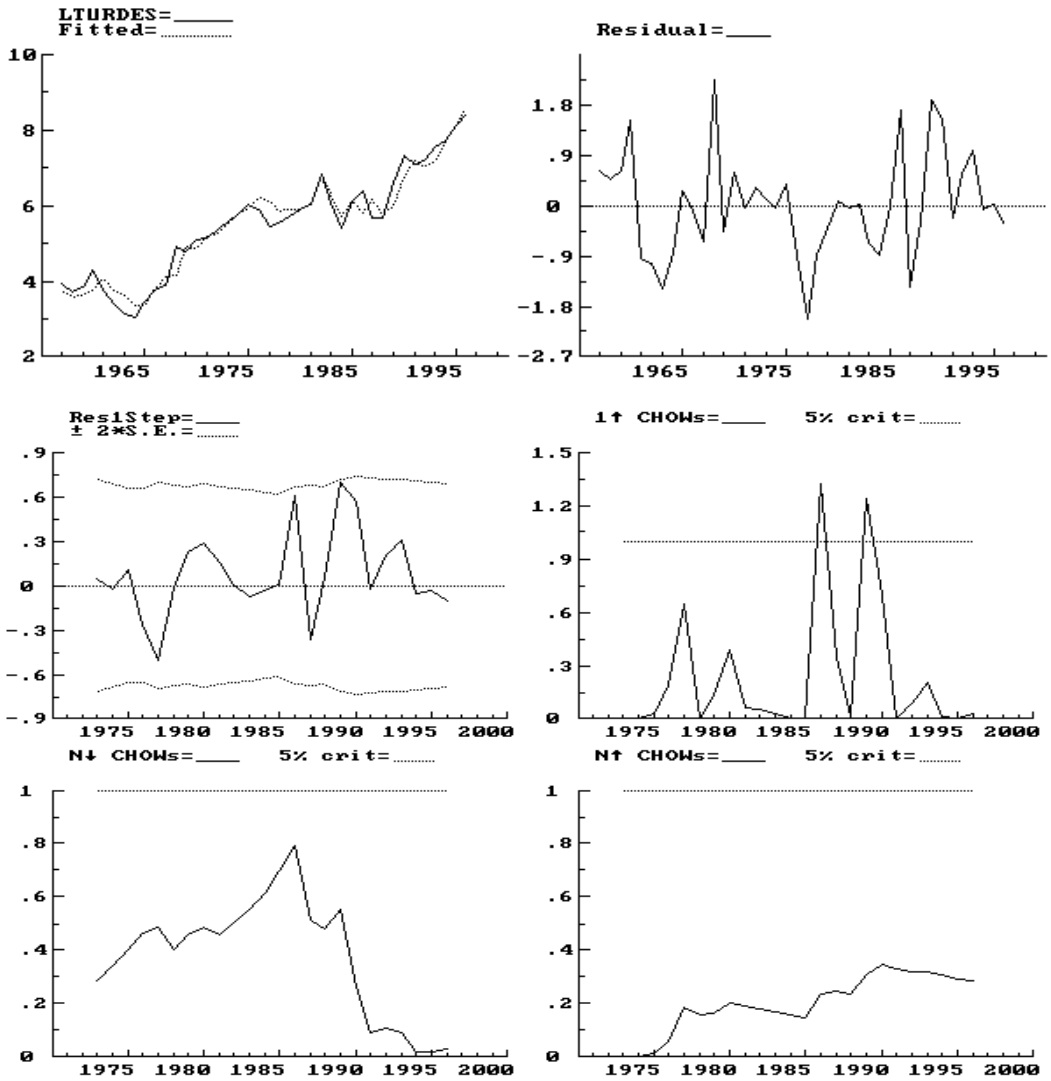
Rý = 0.949225 F(5, 34) = 127.12 [0.0000] å = 0.34248 DW = 1.67
RSS = 3.987947258 for 6 variables and 40 observations

AR 1- 2F(2, 32) = 0.6664 [0.5205]
ARCH 1 F(1, 32) = 0.21371 [0.6470]
Normality Chiý(2) = 1.396 [0.4976]
Xiý F(10, 23) = 0.40119 [0.9324]
Xi*Xj F(15, 18) = 0.36376 [0.9733]
RESET F(1, 33) = 0.0065107 [0.9362]

Solved Static Long Run equation

LOG(TURDES) = +69.07 -3.385 LOG(CR) +1.956 LOG(RDOPP) +2.65 D82 +3.16 D85
(SE) (14.56) (1.273) (0.3122) (1.59) (1.905)

WALD test Chiý(4) = 50.678 [0.0000] **



OTHER NON-FACTOR SERVICES REVENUES
(Millions of US$)

OLS Estimation (1972 to 1997): LOG(OSNFR)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-1.6126	0.82772	-1.948	0.0656	0.1595
LOG(OSNFR(-1))	0.60780	0.11151	5.451	0.0000	0.5977
LOG(COM)	0.76165	0.20617	3.694	0.0014	0.4056
LOG(COM(-2))	-0.43642	0.15487	-2.818	0.0106	0.2842
D90	1.0955	0.18873	5.804	0.0000	0.6275
D96S	0.48934	0.16048	3.049	0.0063	0.3174

where COM = XTV+MTV

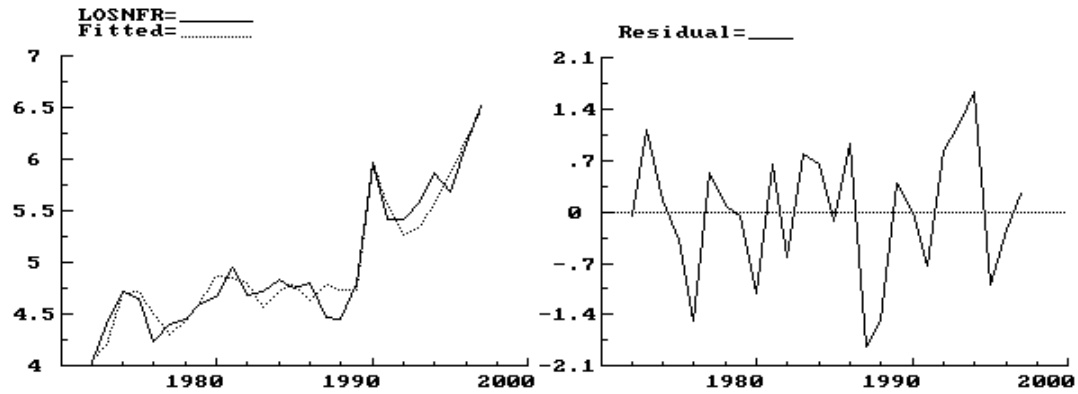
Rý = 0.936966 F(5, 20) = 59.458 [0.0000] å = 0.180315 DW = 2.00
RSS = 0.6502696945 for 6 variables and 26 observations

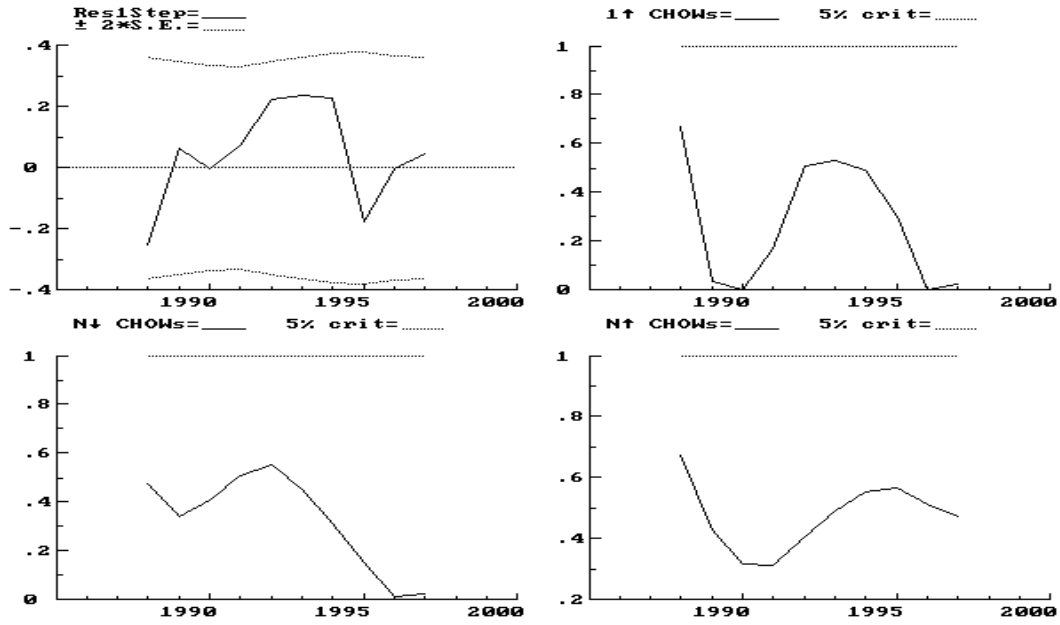
AR 1- 2F(2, 18) = 0.34204 [0.7148]
ARCH 1 F(1, 18) = 0.99939 [0.3307]
Normality Chiý(2) = 0.80779 [0.6677]
Xiý F(10, 9) = 0.41481 [0.9066]
RESET F(1, 19) = 0.34547 [0.5636]

Solved Static Long Run equation

LOG(OSNFR) = -4.112 +0.8293 LOG(COM) +2.793 D90 +1.248 D96S
(SE) (2.057) (0.1912) (0.989) (0.4696)

WALD test Chiý(3) = 36.799 [0.0000] **





OTHER NON-FACTOR SERVICES EXPENDITURES
(Millions of US$)

OLS Estimation (1972 to 1997): LOG(OSNFD)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-2.1881	0.78769	-2.778	0.0116	0.2784
LOG(OSNFD(-1))	0.53588	0.11286	4.748	0.0001	0.5299
LOG(COM)	1.3182	0.31488	4.186	0.0005	0.4670
LOG(COM(-1))	-0.85090	0.27553	-3.088	0.0058	0.3229
D90	0.87692	0.19697	4.452	0.0002	0.4977
D93	0.52772	0.19469	2.711	0.0135	0.2687

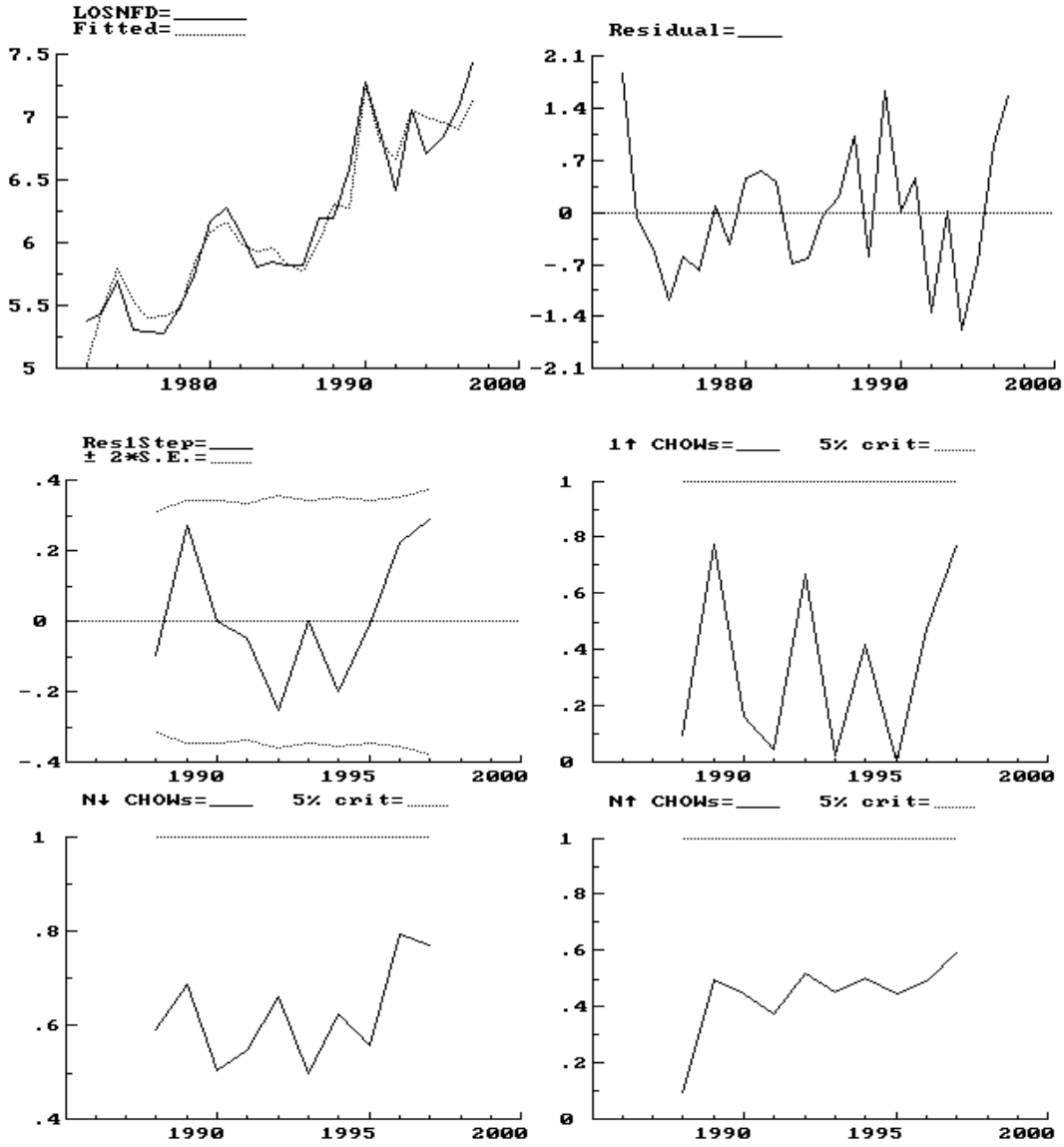
where COM = XTV+MTV

Rý = 0.934749 F(5, 20) = 57.302 [0.0000] å = 0.18759 DW = 1.52
RSS = 0.7038015188 for 6 variables and 26 observations

AR 1- 2F(2, 18) = 0.28468 [0.7556]
ARCH 1 F(1, 18) = 1.4247 [0.2481]
Normality Chiý(2) = 0.94417 [0.6237]
Xiý F(10, 9) = 1.0037 [0.5024]
RESET F(1, 19) = 0.82961 [0.3738]

Solved Static Long-Run Equation

LOG(OSNFD) = -4.714 +1.007 LOG(COM) +1.889 D90 +1.137 D93
(SE) (1.582) (0.1468) (0.5747) (0.51)
WALD test Chiý(3) = 54.717 [0.0000] **



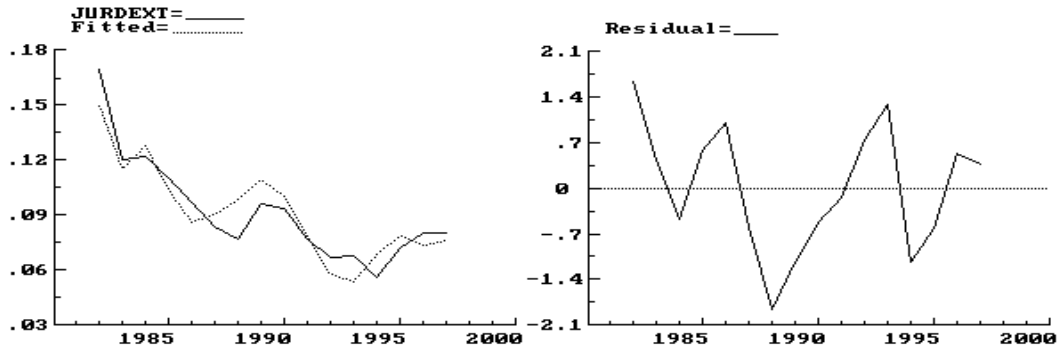
FOREIGN INTEREST EXPENDITURES
(Millions of US$)

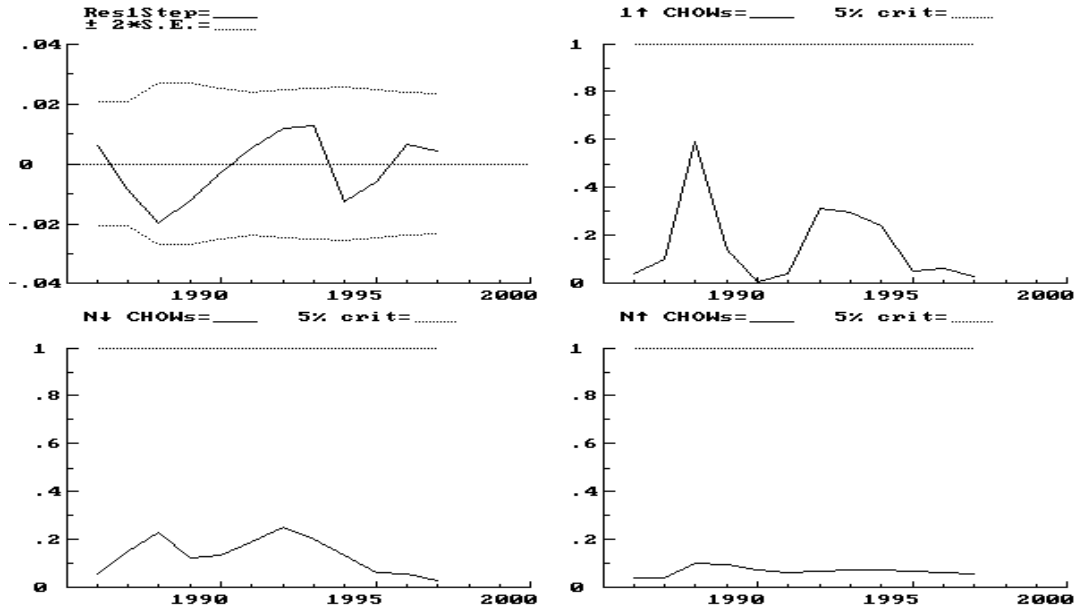
OLS Estimation (1982 to 1997): JURDES/DEXT(-1)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	0.020467	0.0088209	2.320	0.0359	0.2777
LIBOR	0.0095963	0.0011178	8.585	0.0000	0.8404

Rý = 0.840369 F(1, 14) = 73.702 [0.0000] å = 0.0116238 DW = 1.23
RSS = 0.0018915703 for 2 variables and 16 observations

AR 1- 2F(2, 12) = 2.2872 [0.1440]
ARCH 1 F(1, 12) = 0.0092894 [0.9248]
Normality Chiý(2)= 0.10955 [0.9467]
Xiý F(2, 11) = 1.1425 [0.3541]
Xi*Xj F(2, 11) = 1.1425 [0.3541]
RESET F(1, 13) = 7.8465 [0.0150] *





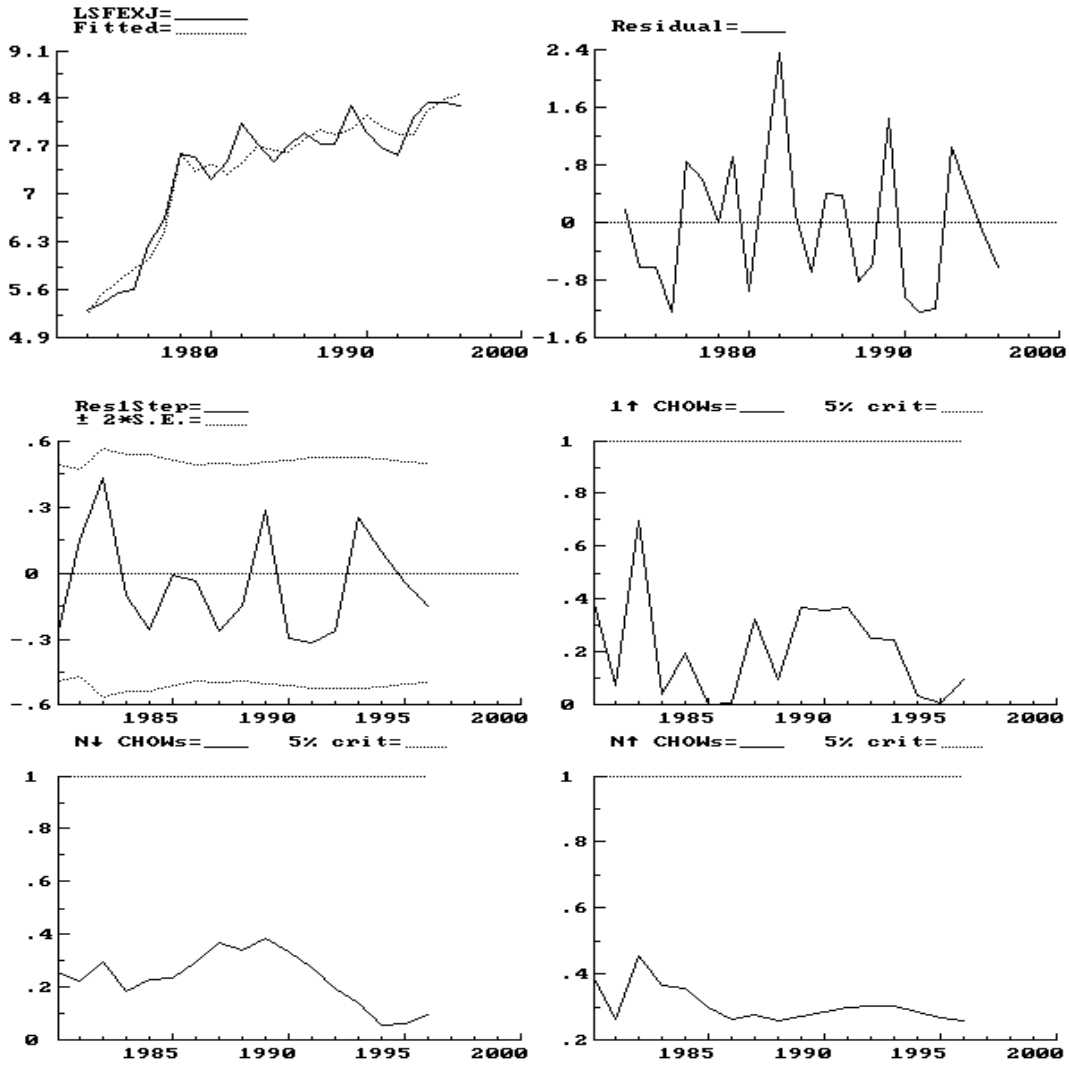
NET FACTOR SERVICES LESS INTEREST
(Millions of US$)

OLS Estimation (1972 to 1996): LOG(-SFEXJ)

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
LOG(-SFEXJ(-1))	0.49093	0.14502	3.385	0.0028	0.3531
LOG(KED)	0.22409	0.073960	3.030	0.0064	0.3042
LOG(PIB)	1.0612	0.54754	1.938	0.0662	0.1517
D78	0.84186	0.25319	3.325	0.0032	0.3449

Rý = 0.999062 å = 0.247402 DW = 1.92
* Rý does NOT allow for the mean *
RSS = 1.285361917 for 4 variables and 25 observations

AR 1- 2F(2, 19) = 2.2457 [0.1332]
ARCH 1 F(1, 19) = 0.082554 [0.7770]
Normality Chiý(2) = 1.8183 [0.4029]
Xiý F(7, 13) = 0.37145 [0.9031]
Xi*Xj F(10, 10) = 0.33602 [0.9499]
RESET F(1, 20) = 0.47736 [0.4976]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8.4
7.7
7
6.3
5.6
4.9
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1990
2000
Residual=
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1.6
.8
0
-.8
-1.6
1980
1990
2000
Res1Step=
± 2*S.E.=
.6
.3
0
-.3
-.6
1985
1990
1995
2000
1↑ CHOWs=
5% crit=
1
.8
.6
.4
.2
0
1985
1990
1995
2000
N↓ CHOWs=
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1
.8
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N↑ CHOWs=
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1
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1985
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2000

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