

***STRUCTURAL ADJUSTMENT AND THE
BALANCE OF PAYMENTS***

Lessons From Guyana's Recent Experience

by

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I. INTRODUCTION

In 1989, the Government of Guyana, in an effort to improve that country's negative foreign exchange reserves and stabilize an economy characterized by persistently declining real income, poor and deteriorating standards of living, deteriorating physical infrastructure, exodus of skilled, unskilled and professional/managerial personnel, an unstable economic climate, a relatively large and growing parallel market for goods, services and money, extremely low morale among workers, industrial unrest, lack of confidence in the political regime, uncertainty and hopelessness about the future, etc, implemented a three-year structural adjustment programme (popularly called the Economic Recovery Programme or ERP) monitored by the International Monetary Fund, (IMF).

As part of the ERP, steps were taken to stabilize the country's money supply, stabilize export growth, increase employment, improve incentives and resource allocation, promote economic growth, enhance the contribution of the private sector to Guyana's economic development, improve the efficiency and financial performance of public enterprises, reduce the central government deficit, and reduce cost and increase production in the agriculture, forestry, fishing, mining, manufacturing and services sectors. Both individually and collectively these measures were aimed at improving the overall balance of payments position of the country, which had consistently been in deficit since 1979.

The object of this study is to identify the factors that determine the balance of payments and the extent to which they do so. The study also seeks to assess the appropriateness and explain the impact of the measures actually introduced as part of the ERP, for improving the balance of payments in Guyana. An econometric model of the determination of the balance of payments is specified and estimated and on the basis of the results obtained the appropriateness and potential for improving the balance of payments, of the measures introduced, are assessed.

In the subsequent section a brief overview of the balance of payments and structural adjustment is presented. Section III, presents a brief review of the Guyanese economy up to 1988, the year before the ERP was introduced. In Section IV, the main features of the Economic Recovery Programme are highlighted while Section V, reviews the performance of the economy during the period of the ERP. The econometric model of the Balance of Payments is specified in Section VI, while the estimation methods and the econometric techniques employed in the estimation of the model are described in Section VII. Section VIII, presents an interpretation of the estimation results, while a summary of the exercise and the conclusions arrived at are presented in Section IX.

II. THE BALANCE OF PAYMENTS AND STRUCTURAL ADJUSTMENT

The Guyanese economy like most economies, has extensive economic links with the rest of the world. In 1990, for example,

of every dollar worth of final goods and services produced in Guyana almost 1.99 dollars worth of goods and services were imported from other countries. In like manner, of every dollar's worth of goods and services produced in Guyana in that year, 1.2 dollars worth was exported. In the five-year period 1985-1990 Guyana had an overall deficit in its trading and capital transactions with the rest of the world of close to US\$896.4m. During that same period the value of the Guyana dollar fell by almost 971% from G\$4.2 = US\$1 in 1986 to G\$45 = US\$1 in 1990.

The money flows arising from transactions in goods services and assets between Guyana and other countries, over a given period of time are summarized in Guyana's balance of payments accounts. A country's balance of payments accounts is a good deal more than a summary of the data of its international transactions. It is, more importantly, an analytical tool which can sometimes reveal more about the international position and problems of the country than any ~~other~~ single source.

One of the most important tasks of economic theory is to analyse the conditions of equilibrium and the results to be expected to follow from any change in the relevant variables. In the case of the balance of payments, equilibrium refers to a "state of balance" among the various accounts into which the balance of payments is divided, so that in applying equilibrium analysis to the balance of payments the task is to discover what relationships

among the four accounts (viz. current account, capital account, unilateral transfers accounts, and monetary/gold movements account) of the balance of payments constitute an equilibrium situation or what relationships would constitute a disequilibrium situation.

The crucial relationships in balance of payments analysis is that between the current account on one hand and the other accounts, on the other. The current account embraces all current international payments and receipts of a country so that as long as such current payments and receipts are equal the country is, as it were, "paying it own way", in the sense that it need not borrow, draw down its assets, or receive gifts in order to meet its bill for imported goods and services. When the current account is not in balance the potential for disequilibrium is greatest. This does not mean, however, that current account imbalance is in itself evidence of disequilibrium. Indeed, there are situations in which current account imbalance is an essential element of equilibrium, eg., if a country is engaging in net lending or borrowing internationally, it is both desirable and necessary ~~that~~ its current account should be out of balance positively if it is lending net, and negatively if it is borrowing net.

If, however, a country has a current account deficit not matched by either a long term capital inflow or regular unilateral receipt, but financed by short term capital movements, gold movements, or special unilateral transfers, there is evidence of

balance of payments disequilibrium. Two major types of balance of payments disequilibrium may be distinguished according to the nature of their origins: (a) structural and (b) cyclical and monetary. It is at the former that the focus of this study is directed.

Given a set of relative factor endowments, states of technological development, and patterns of consumers preferences in trading countries, each country will tend in the long run to export certain goods and services and to import others. In equilibrium the value of imports and exports will, within the framework of demand and supply conditions, balance out. However, shifts in relative international demand or supply of productive resources or goods and services will tend to upset previously balanced relationships, thereby producing structural disequilibrium. If within each country all productive resources were perfectly mobile occupationally and spatially, and their owners were willing to accept free market rates of returns, structural maladjustments would theoretically be short-lived. In reality, however, there is never perfect adaptability of resource use to changing conditions because various obstacles of a psychological, institutional, economic, or other nature, prevent the immediate reallocation of resources in accordance with changing patterns of demand and relative cost conditions. Some of the more specific sources of structural disequilibrium include capital losses, the pattern of production, the pattern of demand, the terms of trade, the pattern

of trade, changes in long-term capital flows and institutional changes. Structural imbalance may continue for years or even decades, constituting a source of persistent balance of payments disequilibrium.

Of the many different specific means of eliminating a current account balance of payments deficit, three basic methods may be distinguished: exchange depreciation, price and income changes and direct controls. Each of these methods is associated, though not exclusively, with a particular type of exchange rate system. Exchange depreciation with a freely fluctuating and flexible rate system; price and income changes with the international gold standard, and direct controls with a system of exchange controls.

On the other hand, with respect to the question of what corrective measures are appropriate when the source of disequilibrium is structural changes, it might be noted that structural disequilibrium is generally the most difficult to cope with and less susceptible to quick solution because it is rooted in fundamental shifts in the international demand or supply of goods and services. Moreover, the origins of structural disequilibrium may be quite diverse and not at all amenable to the same type of remedy.

Throughout the 1980s less developed countries (LDCs) have faced the formidable challenge both of carrying out the structural

transformation of their domestic economies, and of dealing with mounting debt burden and growing payments difficulties. These efforts have been undertaken against a background of shrinking foreign exchange receipts due to a slackening world demand, depressed commodity markets, growing protectionist pressures, insufficient expansion of concessionary flows, and the virtual collapse of commercial bank lending to developing countries. Major policy reforms have been launched in LDCs since the late 1970s and early 1980s to face up to these challenges.

The manner in which these reforms have been pursued naturally differed among the LDCs according to individual characteristics and policy perceptions. the mix of policy reforms employed includes external-sector adjustments, demand management measures, mobilisation of domestic savings and of human resources, promoting the role of the private sector, and improving the efficiency of public enterprises. Some LDCs have carried out reforms in the context of adjustment programmes agreed upon with the International Monetary Fund (IMF), while others have pressed ahead with programmes of a similar nature but outside the framework of formal IMF agreements.

It is difficult to ascertain on objective grounds the actual impact of the national measures which have been taken with a view to improving the efficiency of resource use and allocation in the context of the adjustment programmes, both those negotiated with

the IMF and those carried out outside the IMF framework. Indeed, the issue of the effectiveness of adjustment programmes has become the subject of vigorous debate, even among international institutions. A joint report by the World Bank and United Nations Development Programme (UNDP) (1989), on sub-Saharan Africa, concluded that the evidence of the past three years leaves room for optimism as regards countries following Bank/Fund prescribed adjustment programmes. By contrast the Economic Commission for Africa (1989) argued that all indications are to the effect that structural adjustment programmes are not achieving their objectives, in Africa and this has given rise to frustrations on all sides, primarily because the performance indicators of these programmes do not correspond to Africa's basic development objectives.

Empirical evidence indicates that the performance of those LDCs which have had consecutive adjustment programmes throughout most of the 1980s does not differ significantly from the performance of the LDCs as a whole. Very few of them registered a higher average annual rate of growth in 1980-87 than that of the LDCs as a whole (2.3 per cent); and fewer still improved their growth performance in 1980-87 as compared to the 1970s. On the other hand, the value of the current account deficit as a proportion of the value of exports of goods decreased markedly or steadily in two thirds of these LDCs. Inflation rates were in turn reduced significantly between the 1970s and the 1980s in half of

these LDCs, whereas they increased noticeable in the other half. Hence, there seems to be no consistent relation between the existence of adjustment programmes on the one hand and economic performances in terms of growth rates and improvement in current account, and the question of the adequacy of these programmes for LDCs is left wide open.

Awareness of the short-comings related to adjustment programmes has been increasing, including among multilateral lending institutions, and policy approaches to address external and fiscal disequilibrium are evolving. Difficulties relating to the adjustment time frame are now widely acknowledged. That adjustment is a longer process than originally anticipated is increasingly recognised. Reform packages are therefore beginning to pay greater attention to the time needed to take effect. They are also being seen in a much broader context as regards the scope of their impact. Not only are short-term stabilisation programmes viewed as the prelude to structural adjustment, but the latter process itself is recognised as having to encompass social and distributional questions as well as targeting key macroeconomic aggregates.

Attention has also increasingly been drawn to the fact that certain adjustment policies - devaluation, price decontrol, and budgetary cuts affecting social services - may adversely affect particular poverty stricken groups which, without compensatory programmes, have no access to the potential benefits of economic

reform. Moreover some of the early adjustment programmes are now viewed as having neglected the impact of the policies that supplement demand-management and growth-oriented approaches with clearly defined poverty reduction elements both within the programme of adjustment and as compensatory measures. Such shifts in the application of adjustment policies are of crucial importance to LDCs where large portions of the population live in absolute poverty, and where evident symptoms of poverty - high infant mortality and disease, extensive malnourishment, widespread illiteracy, and substantial unemployment - are prevalent.

LDCs are characterised not only by their massive poverty but also by extreme vulnerability to natural disasters. In the 1980s, a period of recession and adjustment, it is essential to recognise that disasters - natural and manmade - were constantly occurring and in many cases with greater frequency or severity. In addition, civil strife, movement of refugees, and transit and trade problems, among other things, imposed further constraints on LDCs economies. Early adjustment programmes made little or no provisions for such contingencies. Undoubtedly a programme that makes no allowance for them might be considered less than adequate.

III. BRIEF REVIEW OF THE GUYANESE ECONOMY TO 1988

Guyana's economy is based mainly on agriculture and the production of bauxite. Bauxite, sugar and rice accounted for 80% of domestic export earnings in 1987. According to estimates by the

World Bank, in 1987, Guyana's gross national product (GNP), measured at average 1985-1987 prices, was US\$310. Between 1980 and 1987 it was estimated, GNP declined in real terms at an average annual rate of 6%. GNP per capita, equivalent to US\$380 in 1987, was estimated to have decreased at an average rate of 6.8% per annum in real terms between 1980 and 1987. Since 1982 the agriculture sector has suffered from low productivity and the effects of the ending of government price subsidies.

By 1979, Guyana had become self-sufficient in sugar, rice, vegetables, fish, meat, poultry and fruit. Sugar accounted for about 31% of export earnings in 1985 but revenue had fallen since 1982 owing to poor harvests. Production of raw sugar was 300,790 metric tons in 1981, but annual output, affected by strikes and adverse weather, among other things, fell to 245,741 tons by 1984. Despite a slight increase to 246,888 tons in 1985, production was still 9% below the planned target and the state-owned Guyana Sugar Corporation (Guysuco), recorded operating losses of G\$77.8m.

In 1986 a restructuring plan for the sugar sector was introduced. The area planted with sugar cane was to be reduced and production of raw sugar was to be stabilised at 250,000 tons per year. Guysuco was also to diversify its activities to include the cultivation of rice, fruits and other crops, and dairy farming, including the production of butter and cheese. Sugar production increased slightly in 1986 to 249,367 tons. In late 1986, however,

the USA announced a reduction in its annual import quota for Guyanese sugar from 18,677 metric tons to 9,904 tons which, despite a US compensatory grant of US\$3.2m, threatened a considerable decline in foreign exchange earnings. Sugar production fell in 1987 to 224,542 tons and decreased further in 1988 by 24% to 170,200 tons, so that Guyana could not supply its quota for the USA. Furthermore sugar was imported for domestic consumption in order to supply the EEC quota.

The cultivation of rice in Guyana is highly mechanised but the crop is grown on uneconomic units of an average of 11 acres. In 1981 only about 30% of the land available for rice was cultivated. Production of milled rice has fluctuated from year to year and has been affected by disease and adverse weather conditions. Output increased by 24% in 1984 but fell by 13% to 156,124 tons in 1985 when export sales were only 50% of the planned target at US\$1.8m. Output in 1986 represented a 17% advance on the 1985 total. In 1987, however, output fell to 148,545 tons. Improvements in yield and milling facilities were more than offset by electricity outages and adverse weather conditions.

Bauxite is one of Guyana's principal sources of export earnings. By the end of 1975, the whole bauxite industry had been nationalised. Annual output declined from 3.6 million tons in 1973-1974 to 1.7 million by 1981. In 1982, the industry began to experience difficulties as the price of bauxite collapsed on the

world market and production fell to 1.25 million tons. Although output recovered slightly in 1983 about 1,700 workers were made redundant, the country's only refinery was closed and the state-owned mining company, Guymine, registered a loss of G\$131m. Production of bauxite increased in 1984 to 1.33 million tons and output continued to increase reaching 1.47 million tons in 1986.

As part of the government's plan to achieve a recovery of the bauxite industry, the US company, Reynolds, was invited to return to Guyana in 1985 to provide technical and marketing assistance and to rehabilitate the alumina refinery which was expected to re-open in 1989. Plans to revitalise the industry by 1989 and to increase the production of calcined bauxite by 40%, at a projected cost of approximately US\$22m, were announced in 1986. Plans were also announced for the marketing of a new re-factory-grade bauxite. Production increased slightly in 1987 to 1.48 million tons and exports earned G\$841.9m in that year.

More than 80% of Guyana is covered by tropical forest, and the estimated annual volume of marketable timber is one million m³ of which 25% is accessible. In 1985, Government signed an agreement with private sector sawmilling companies for the commercial exploitation of around one million acres of state-owned forest. In 1986, timber production declined by about 30% to 97,069 m³ but export earnings increased to G\$43.7m in 1987, helped by a currency devaluation and by a rise in production to 173,026 m³.

Agreements to expand the gold mining industry with the assistance of companies from North and South America were announced in 1986. A US\$5m mining operation was begun at Omai by the Canadian company, Golden Star Resources, and the mine was expected to yield around 20,000 ounces of gold per year. The average annual output being declared to the Geology and Mines Commission in the mid 1980s was 10,000 ounces but officials estimated in 1986 that annual output would increase rapidly. In an effort to prevent the smuggling of gold out of the country, the Government announced in 1986 that miners would be paid an increase of 132% on every ounce of raw gold declared. Declared output of gold was 14,040 ounces in 1986, rising to 26,100 ounces in 1987 when exports earned G\$165.9m.

Industry is based on mineral processing, agro industries, and light industry, principally textiles and clothing. The manufacture of pharmaceutical products began in June 1988. Whereas industrial development depends on the expansion of energy sources, energy shortages continued to affect Guyana in 1987 and 1988. In 1986, the results of a petroleum exploration study of Guyana were presented to several foreign oil companies. In 1987 a Trinidadian company signed a four year exploration agreement and a similar agreement was signed with a British company in 1985.

The economy, in a crisis since the mid 1970s was on the point of collapse by 1982, as mismanagement, inefficiency, corruption and a decline in technical skills (as a result of emigration of an

estimated 71,000 people between 1976 and 1981), were added to low world prices. The collapse of popular morale was also widely regarded as a fundamental cause of the country's failure to produce. Guyana's gross domestic product (GDP) declined by 12.4% in real terms in 1982 and by a further 9.6% in 1983. GDP rose by 5% during 1984 mainly as a result of improved production by the mining sector, and by a further 4% in 1985. Growth of only 0.3% was achieved in 1986, and of 0.7% in 1987.

At the end of 1985 the total public external debt was US\$746m, equivalent to 156% of annual GDP, and was expected to rise still further to finance the growing budget deficit which totalled G\$1305.9m in 1986, G\$1424.6m in 1987 and G\$1308.5m in 1988. In 1986, foreign exchange dealings by the Bank of Guyana (Central Bank), were suspended, owing to a shortage of convertible currency. In January 1987, commercial banks were authorised to purchase convertible currency but by September of that year, reserves of foreign exchange had dwindled to US\$2.47m.

The acute shortage of foreign currency provoked an extension of import controls and a thriving illegal trade in the smuggling of foodstuffs and other goods from neighboring countries, and an illegal trade in foreign currencies to facilitate the trade in goods. In 1982, the official inflation rate was 25%, but 100% increases of prices in the parallel market occurred between January and June alone. The restriction of imports was initially successful

in curbing the trade deficit which totalled G\$407m in 1982, but by the end of 1986 it had increased to G\$526m, owing to the decline in bauxite exports and to reductions in output of sugar and rice.

The economy was 80% state controlled, but in May 1982 the Government began a programme of privatization although this was officially denied. In 1983 and 1984 co-operation agreements were signed with several foreign companies. In June 1983, the Government expressed its willingness to engage in non-monetary transactions in order to secure "essential" products. A barter agreement with Trinidad and Tobago, whereby rice had been exchanged for petroleum, had to be suspended in 1985, however, because of Guyana's inability to repay debts of TT\$400m. Following shortages of petroleum accompanied by fuel rationing in 1986, an agreement for the exchange of bauxite for oil was signed with Venezuela thus easing the fuel shortage. Despite these agreements there were renewed fuel shortages during the final months ~~of~~ 1987 and throughout 1988.

The foregoing account of the economy's performance merely explains why the country's balance of payments has remained in deficit since 1979. In that year the balance of payments, that is, the stock of foreign reserves, stood at US\$-61.8, having declined by 332.3% from the previous year. In 1980 and 1981 there were further declines of 71.5% and 101% respectively as the deficit reached US\$-230.9m. The deficit was reduced by 40.2% in 1984 and

by a further 0.4% in 1985, but increased in 1986 by 0.9% to reach US\$-139.9m. In 1987 and 1988 there declines in the deficit by 1.9% and 23.0% respectively so that in 1988 it stood at US\$-105.7m.

The IMF has provided balance of payments support and other facilities since 1979, but agreements have lapsed owing to Guyana's failure to meet IMF conditions. Credits were finally suspended in June 1982. By January 1984, the country's economic crisis had become so severe that the Government was forced to devalue the Guyana dollar by 20%, and a further devaluation of 8.9% occurred in October. In May 1985, the IMF formally declared Guyana ineligible for further assistance until outstanding debts to the Fund had been cleared. Discussions between the Fund and the Government were resumed in 1986 and have taken place each year thereafter. In January 1987, the Guyana dollar was devalued by 56% with the aim of strengthening the Government's policies for economic readjustment and recovery. The devaluation helped to increase export earnings, but it was estimated that inflation rose to 36.3% in 1987, from about 29.6% in 1986. In late 1988 the Government announced details of a new economic programme.

IV. THE ECONOMIC RECOVERY PROGRAMME

In 1988 the Government of Guyana, the IMF, and the World Bank prepared an economic policy adjustment programme to improve the financial status of the public sector thereby making it easier for Guyana to obtain financial assistance from international lending

institutions. This programme was presented in a Policy Framework Paper to the Executive Boards of the IMF and the World Bank. The Government of Guyana also presented it as the Economic Recovery Programme (ERP) to the National Assembly in the March 1989 budget presentation. The ERP was a complex and difficult programme covering the period 1989-1991.

The general objectives of the ERP were to:

- (a) provide a basis for the sustained growth of real incomes and a viable balance of payments position over the medium term;
 - (b) reduce inflation;
 - (c) incorporate the parallel economy into the formal economy; and
 - (d) normalise Guyana's financial relations with external creditors.
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These objectives were to be achieved through the implementation of a specific set of policies which included:

- (a) flexible and more realistic exchange rates after initial devaluation;
- (b) increasing reliance on the price system to allocate resources, and reduction of price controls;
- (c) rationalisation of the public sector finances through

- increases in public savings, reduction of the fiscal deficit, divestment of public sector corporations and tax reform measures;
- (d) monetary measures consistent with a reduction in public sector debt, control of inflation; and a real increase of credit to the private sector;
 - (e) establishment of positive real rates of interest to be set by the market;
 - (f) elimination of external payment arrears;
 - (g) liberalisation of the import licence system; and
 - (h) elimination of restrictions to private sector participation in all areas of economic activity.

In order to monitor the performance of the economy under the ERP the IMF set a number of targets for the economy to achieve for the duration of the programme. These targets included.

- (a) an average rate of real growth of GDP of 5% per annum;
- (b) reduction of the annual rate of inflation to 10% by 1991;
- (c) an annual increase of US\$15m in the net international reserves, that is, an annual improvement of US\$15m in the balance of payments;
- (d) progressive reincorporation of the parallel market into the official economy,
- (e) reduction of the external current account deficit to 26% of exports by 1991;

- (f) reduction of the overall deficit of the non-financial public sector to 20% by 1992.

The period from March to November 1989 was the period of stabilisation during which the Government implemented a number of measures to reduce price distortions, improve the competitiveness of exports and reduce the fiscal and balance of payments deficits. The stabilization programme was intended to test the willingness and ability of the Government to implement structural reforms. This willingness was evident in the measures announced in the 1989 Budget Speech which included a 70% devaluation from G\$10 to G\$33 to US\$1; a full pass through of the increases to retail prices; a 20% increase in wages; an increase in the rate of interest to 40%, and the reduction of all export retention margins except for bauxite, to 10%.

No new financial resources were made available to Guyana under this first phase of the programme. Nor was Guyana eligible for financing from the World Bank or the IMF during this period because of outstanding arrears totalling US\$180m. Indeed, between March and November 1989 Guyana was required to meet current interest payments to the World Bank and the IMF totalling US\$36m.

To offset these debt service payments to the multilateral institutions, lines of credit were made available to the Government to meet urgent import needs. These credits were mainly utilised

for imports of fuel, fertilizer, and inputs into the bauxite industry.

Some of the measures introduced during the rehabilitation phase, of the ERP (1990-1991) represented an intensification of those adopted during the stabilisation programme while others represented additions. To stabilise the money supply which had been increasing sharply since the mid 1970s the Government approved the minimum holding of liquid assets by Banks Bill. The Bill aimed at stabilising excess liquidity in the banking system by restricting the lending policies of commercial banks and the compulsory conversion of commercial banks' excess reserves into medium term debentures. In addition the prime interest rate having been increased from 15% to 40% in 1989 was reduced to 31.5% in 1990 and increased again to 32.5% in 1991.

To further stimulate export growth and reincorporate the parallel market ~~into the~~ official economy steps were taken ~~to~~ unify the exchange rates on the parallel and official foreign exchange markets and maintain a flexible exchange rate system. The official exchange rate moved from G\$33 to G\$45 for US\$1 in 1990. Also in 1990, a Cambio system was introduced to develop a market determined exchange rate system. By the end of 1990 the Cambio exchange rate had moved from G\$55 to G\$100 for US\$1. In 1991 the official exchange rate was devalued by 126.1% from G\$45 to G\$101.75 for US\$1, with provision for periodic reviews and adjustment of

this rate to keep it in line with the Cambio rate. By March 1991 the official rate had reached G\$130 for US\$1. It has since been fluctuating and at present it stands at G\$126.5 to US\$1.

To improve incentives and resources allocation and promote growth, steps were taken to fully liberalise no-foreign exchange import licences, reduce import prohibitions to some categories of food products, issue general import licences automatically and liberalise payments for services and transfers.

Measures taken to increase economic efficiency and enhance the contribution of the private sector to Guyana's economic development included the abolition of existing restrictions to private activity in some areas of domestic and foreign trade, eg. a number of restrictions on the domestic and foreign marketing of rice by the private sector were removed. In addition Central Government transfers to public enterprises engaged in agriculture, manufacturing and domestic and foreign trade were eliminated; the scope of the operations of public enterprises was limited to existing functions and where necessary reduced.

To promote private manufacturing investments, exports, and efficient import substitution steps were taken to remove existing constraints to production and exports, establish a "one-stop" investors centre and simplify administrative procedures, establish credit facilities for export oriented industries, review fiscal

incentives, and issue a foreign investment policy document. These, of course, were in addition to the steps taken to reduce cost and increase production and exports in agriculture forestry, fishery, and mining.

In pursuing monetary and credit policies consistent with the programme's inflation and balance of payments targets the Bank of Guyana was advised to abstain from providing credit to the public sector. And to normalise financial relation with external creditors and maintain a viable external debt position steps were taken to eliminate with external assistance, all external arrears on public and publicly granted debt; refrain from contracting or guaranteeing any non-concessional loan with a maturity less than 10 years; and improve overall external debt management.

The financing plan for the ERP was put together by a donor support group under the chairmanship of the government of Canada. ~~The~~ total external financing requirement of the programme was estimated at US\$1.96b. This included US\$1.26b debt eligible for rescheduling. The needed financial inflows of US\$700m was relatively large and had to be obtained on largely concessionary terms. The financing gap was expected to be met by US\$270m project loans, US\$30m of private sector credits, and US\$400m of balance of payments support.

As indicated above, the ERP involved a full pass through of the exchange rate adjustment to domestic prices and only a 20% increase in wages. These adjustments created severe hardships and the Government sought external assistance to finance a number of projects to cushion the social impact of the adjustment programme on the most vulnerable groups which were identified as the unemployed; the urban and rural poor; small farmers on poor land; unskilled female heads of households; and residents of remote areas.

The March 1989 Budget contained a provision of US\$2m to be spent over a three month period as an income supplement for old age pensioners and recipients of public assistance, and to provide food supplements for pregnant and lactating women and small children (0.5 years) of low income families. These expenditures were offset by external resource inflows under an UNDP/UNICEF Emergency Programme.

V. PERFORMANCE OF THE ECONOMY UNDER THE ERP

As could be expected, a gestation period had to elapse before the impact of the ERP on the economy began to be felt. Consequently the performance of the economy in 1989 and 1990 was, in large measure, just as dismal as the preceding years, and in some cases conditions worsened.

Real GDP growth in 1989 and 1990 declined by an estimated 5% and 3.5% respectively, while in 1991 it showed a 6% growth. The initial decline reflected declining production performance in the three main sub-sectors of the economy: sugar, rice and bauxite. In 1989 sugar production stood at 167,000 tons which represented a 2% decline from the previous year. In 1990 sugar production declined further by 22.2% to 130,000 tons. In that year Guyana was unable to meet its quota with the European Economic Community despite importing sugar for domestic consumption. In October of that year the Government awarded a contract to Booker Tate of the United Kingdom for the management of Guysuco, making the industry somewhat immune to state intervention. As a result of a declining number of strikes, increased wages, increased cultivation, increased prices to farmers, and personnel changes, sugar production in 1991 increased by 21% over 1990 to reach 162,753 tons.

Rice production in 1990 was 93,400 tons which represented a 34% decline on the 1989 level of production. Here again Guyana was unable to satisfy its preferential markets in the Caribbean. In 1991, however, rice output increased by 64% to reach 150,794 tons. This increase was largely due to price incentives, increased cultivation, increased access by farmers to foreign exchange and rehabilitation to infrastructure in the industry.

Bauxite production displayed a different pattern from sugar and rice during the period under review. In 1989 output from this industry was 1,321,082 tons, 1.9% less than the previous year. In 1990 output grew by 7.7% to reach 1,423,058 tons. As a result of a down-turn in international demand and a slight loss in market share to China, production of bauxite in 1991 was 5.4% below the 1990 level.

There were declines of 10.4% and 0.7% in 1989 and 1990 respectively in the timber industry. In 1991, however, output increased by 3.5% to reach 150,597m³. The performance in production of gold was somewhat different. Following a 9% decline in 1989 when output stood at 17.100 ounces, output increased by 128% and 51.3% respectively in 1990 and 1991. The manufacturing sector recorded declining output in 1989 and 1990 and a slight increase in 1991.

Although the government ~~abandoned~~ the publication of the ~~consumer price index~~ in June 1989 preliminary estimates of inflation by the IMF, among others was as high as 101.5% in 1989, 61% in 1990 and between 80-90% in 1991, much more substantial than the 10% target by 1991 set by the IMF.

Measures introduced to stabilise the money supply were largely unsuccessful. In 1989 and 1990 the money supply grew by 47.3% and

39.8% respectively. During 1991 money and quasi money expanded by 68% from G\$9414.3m in 1990 to G\$15,872.0m.

Despite the relatively sharp increases in the interest rate discussed above domestic credit increased by 51.8% in 1989 and by 13.2% in 1990. By 1991, however, domestic credit had declined by 8.8% to reach G\$12.470.6m.

In the trade sector, efforts to stimulate export growth showed some success in 1991 following poor results in the preceding two years. In 1989 exports stood at US\$204.7m having declined by 4.6% from the previous year. In 1990 there was a further decline as exports reached a low of US\$203.9m. In 1991, however, there was a slight recovery as exports increased by 17.0% to reach US\$238.6m. Following a decline of 1.5% in 1989 imports increased by 17.5% and 1% in 1990 and 1991 respectively. Throughout the period under review the economy recorded deficits in the balance of trade.

Throughout the period under review the overall balance of the balance of payments remained in deficit. Having increased by 71% over 1988 the balance in 1989 stood at US\$-181.2m. In 1990 there was a further decline in the balance of payments as the deficit increased to US\$-193.0m. In 1991, however, mainly as a result of more buoyant exports and increased capital inflows from multilateral financial institutions the balance of payments

improved significantly as the deficit declined by 61.8% to reach US\$-72.7m.

VI. THEORETICAL SPECIFICATION OF THE MODEL

A useful starting point for any analysis of the balance of payments is the establishment of the links between the money supply and the level of foreign exchange reserves. This link might be analysed as follows:

$$\Delta M = \Delta F + \Delta DC \dots\dots\dots (1)$$

where M is the money supply, F is foreign exchange reserves or balance of payments, and DC is domestic credit. Since the balance of payments is the subject of the discussion, equation (1) may be rewritten:

$$\underline{\Delta F} = \Delta M - \underline{\Delta DC} \dots\dots\dots (2)$$

This equation says that the balance of payments is equal to the change in the money supply less the change in domestic credit.

The relationship between the balance of payments, the money supply and domestic credit becomes clearer if these variables are expressed in terms of growth rates. To do this both sides of equation (2) are first divided by M.

$$\Delta F/M = \Delta M/M - \Delta DC/M \dots\dots\dots (3)$$

while $\Delta M/M$ is the growth rate of the money supply which might be defined as \dot{M} , the terms $\Delta F/M$ and $\Delta DC/M$ do not have immediate obvious meanings. However, they become much clearer if $\Delta F/M$ is multiplied and divided by F and $\Delta DC/M$ is multiplied and divided by DC so that

$$(F/M)\Delta F/F = \Delta M/M - (DC/M) \Delta DC/DC \dots\dots\dots (4)$$

F/M represents the fraction of the money supply that is held by the banking system in foreign exchange reserves and may be defined as G . DC/M is the fraction of the money supply held by the banking system in domestic assets and must therefore be defined as $(1-G)$.

$\Delta F/F$ may be defined as \dot{F} , and is the rate of change of the foreign exchange reserves while $\Delta DC/DC$ may be defined as dc and represents the rate of change of domestic credit. Hence equation (4) may be rewritten in a less cumbersome manner as

$$G\dot{F} = \dot{M} - (1-G)dc \dots\dots\dots (5)$$

Now the rate of growth of foreign exchange reserves, \dot{F} , is the balance of payments expressed as a proportion of the existing stock of reserves. The factors that determine \dot{F} are exactly the same as the factors that determine the balance of payments ΔF . Hence

in terms of the balance of payments, equation (5) may be rewritten as

$$\dot{F} = 1/G \dot{M} - (1 - G/G)dc \dots\dots\dots (6)$$

This equation says that the percentage change in the stock of foreign exchange reserves (the balance of payments expressed in percentage terms), is equal to the rate of change of the money supply, weighted by the fraction of the money supply held by the banking system in foreign exchange reserves, minus the rate of change of domestic credit, times the fraction of the money supply held by the banking system in domestic assets, also weighted by the fraction of the money supply held by the banking system in foreign exchange reserves.

To obtain a theory that better explains the balance of payments, it is necessary to examine what determines the rate of growth of the money supply and the rate of growth of domestic credit.

In an open economy with a fixed exchange rate, domestic credit can be controlled by the policy actions of the monetary authorities. If the authorities want to see the growth of domestic credit increased this may be done by buying bonds from individuals thereby increasing the authorities' stock of domestic securities.

Conversely if the authorities want to reduce the growth of domestic credit, this can be done by selling government securities, thereby reducing the authorities' holding of those items.

While the monetary authorities control the growth of domestic credit under fixed exchange rates, they do not control the money supply under such an exchange regime. The act of pegging the foreign exchange rate means that the monetary authorities must always be willing and able to buy and sell foreign exchange, that is, raise or lower its own stock of foreign exchange in order to preserve the fixed value of the domestic currency in terms of foreign currencies. Thus the monetary authorities have no control over the gold and foreign exchange reserves that it holds.

When the monetary authority is unable to determine the supply of money as a result of pegging the foreign exchange rate, the quantity of money in existence is determined by the amount of money demanded. The amount of money demanded is in turn determined by the price level, real income, and the rate of interest. thus the demand for money changes as the price level changes, as real income changes and as the interest rate changes. Symbolically,

$$\dot{M} = \dot{P} + \dot{Q} - \dot{I} \dots\dots\dots (7)$$

where $\dot{P} = \Delta P/P$ and denotes the domestic rate of inflation, $\dot{Q} = \Delta Q/Q$ and denotes the rate of change of real income, and $\dot{I} = \Delta I/I$

and denotes the rate of change of the interest rate. Substituting equation (7) into equation (6) gives

$$\dot{F} = 1/G (\dot{P} + \dot{Q} - \dot{I}) - (1 - G/G)dc \dots\dots\dots (8)$$

or
$$\dot{F} = 1/G \dot{P} + 1/G \dot{Q} - 1/G \dot{I} - (1 - G/G)dc \dots\dots\dots (9)$$

The law of one price states that the rate of change of the price level in one country (where prices are expressed in the currency of that country) is equal to the rate of change of prices in another country (where prices are expressed in units of currency of that other country) plus the rate of depreciation of the first country's currency against that of the second country. In other words, calling \dot{P}_w the rate of inflation in the rest of the world and \dot{e} the rate of depreciation of the domestic currency, then

$$\dot{P} = \dot{P}_w + \dot{e} \dots\dots\dots (10)$$

Now if the rate of exchange is fixed then the rate of change of the exchange rate, \dot{e} , is zero, so that in a fixed exchange rate economy the domestic rate of inflation equals the inflation rate in the rest of the world, that is,

$$\dot{P} = \dot{P}_w \dots\dots\dots (11)$$

With domestic inflation being determined by world inflation, it is clear that in a fixed exchange rate economy the equation

$$\dot{M} = \dot{P}_w + \dot{Q} - \dot{I} \dots\dots\dots (12)$$

determines the rate of growth of the money supply, so that

$$\dot{F} = 1/G \dot{P}_w + 1/G \dot{Q} - 1/G \dot{I} - (1 - G/G)dc \dots\dots\dots (13)$$

is the fundamental proposition concerning the determination of the balance of payments at full employment under fixed exchange rates.

The theory of the determination of the balance of payments in an economy with a flexible exchange rate involves the same three propositions as the economy with a fixed exchange rate regime viz.

- (a) The relationship between the growth of the money supply, the growth of foreign exchange reserves, and the growth of domestic credit which says that

$$\dot{F} = 1/G \dot{M} - (1 - G/G)dc$$

- (b) The relationship between money growth, inflation, and output growth, which says that

$$\dot{M} = \dot{P} + \dot{Q} - \dot{I}$$

(c) The purchasing power parity proposition which says that

$$\dot{P} = \dot{P}_w + \dot{e}$$

Under a flexible exchange rate regime the rate of change of the exchange rate, \dot{e} , is non zero, so that combining the three propositions gives

$$\dot{F} = 1/G \dot{P}_w + 1/G \dot{e} + 1/G \dot{Q} - 1/G \dot{I} - (1 - G/G)dc \dots\dots(14)$$

which is the fundamental proposition concerning the determination of the balance of payments at full employment under flexible exchange rates.

For simplicity we may assume that the relationship between the balance of payments and foreign inflation, depreciation, real income, the interest rate, and domestic credit, is linear and therefore amenable to specification in the form

$Y_t = a + bX_t + U_t$. Hence equation (14) may be rewritten in the form

$$\dot{F} = b_0 + b_1X_1 + b_2X_2 + b_3X_3 - b_4X_4 - b_5X_5 \dots\dots\dots(15)$$

where $X_1 = 1/G \dot{P}_w$; $X_2 = 1/G \dot{e}$; $X_3 = 1/G \dot{Q}$; $X_4 = 1/G \dot{I}$; and $X_5 = \frac{1-G}{G} dc$. b_0 is the constant term and b_1, \dots, b_5 are coefficients of the respective variables.

VII. ESTIMATION METHOD AND ECONOMETRIC TECHNIQUES

A. Estimation Method

Equation (15) has been estimated using two different methods of regression analysis, viz ordinary least squares (OLS), (Appendix Ia), and maximum likelihood (ML), (Appendix Ib).

The method of ordinary least squares is attributed to Carl Friedrich Gauss, a German mathematician. Under the assumptions of zero mean value of the errors (U_i), no autocorrelation between the U 's, homoscedasticity or equal variance of U_i , zero covariance between U_i and X_i , and correct specification of the regression model, the method of least squares has some very attractive statistical properties that have made it one of the most powerful and popular methods of regression analysis. The estimates derived from the least squares principle are expressed solely in terms of the observable sample quantities. They are point estimates, that is, given the sample, each estimation will provide only a single point value of the relevant population parameter.

Once the least squares estimates are obtained from the data set at hand, the sample regression line can be easily fitted. The regression line thus obtained has the following properties:

- (a) it passes through the sample means of Y_i and X_i ,
- (b) the mean value of the estimated Y ($\hat{\bar{Y}}$) is equal to the mean value of the actual Y (\bar{Y}),

- (c) the mean value of the residuals, (\bar{e}_i) , is zero,
- (d) the residuals (e_i) , are uncorrelated with the predicted Y , (\hat{Y}) ,
- (e) the residuals (e_i) , are uncorrelated with the explanatory variables (X_i) .

The method of maximum likelihood (ML) is also a method of point estimation, with some stronger theoretical properties than the method of ordinary least squares, but is slightly more mathematically complex. This method, as the name indicates, consists of estimating the unknown parameters in such a manner that the probability of observing the given Y 's is as high (or maximum) as possible. If the U_i are assumed to be normally distributed the ML and OLS estimators of regression coefficients are identical in a single model whether the model is of the simple or multiple regression type. The ML estimates of the variance is biased in small samples whereas the OLS estimators of the variance is unbiased. However, as the sample size increases both the ML and OLS estimators of the variance tend to be equal.

B. Econometric Techniques

In this section a brief description of the econometric techniques employed to verify the statistical soundness of the estimation process of the model is presented.

First of all the problem of heteroscedasticity is addressed. Heteroscedasticity refers to a situation in which the errors of a model do not have a constant variance. In the presence of heteroscedasticity, OLS estimators are unbiased but inefficient. The estimates of the variance are also biased, thus rendering invalid, the results of tests of significance. There are many tests for detecting the presence of heteroscedasticity, but no universally accepted one. The implicit assumption underlying most of these tests is that the variance of the errors $(U_i) = \sigma^2 = f(Z_i)$, where Z_i is an unknown variable, and the different tests use different proxies for the unknown function $f(Z_i)$.

In this exercise the square of the fitted values, \hat{Y}_i^2 is chosen as a proxy for Z_i and regressed upon U_i^2 (Appendix Ie). Both the $\chi^2_{(1)}$ and F values obtained from this regression (0.0136 and 0.0126 respectively) were significantly lower than the corresponding critical values (13.1 and 4.28), indicating that the model is not seriously affected by heteroscedasticity.

Another view of heteroscedasticity - Engle (1982), that is more appropriate when time series data is used, is that the variance of the disturbance term is influenced not by the explanatory variables but by past disturbances. This is the new class of stochastic processes proposed by Engle known as autoregressive conditional heteroscedasticity (ARCH).

In this exercise the data set is tested for ARCH (Appendix Ia). Again the computed $\chi^2_{(1)}$ value (0.4726) is less than the critical $\chi^2_{(1)}$ value (11.5), at the 1% level of significance so that it might be concluded that the model is not affected by ARCH.

The question of serial correlations has also been addressed. This is a conditions where the error terms of the regression model are not independent but influence each other. Serial correlation can be the result of omitted variables. Also successive values of the true U_t might be autocorrelated, which results in serially dependent values of the error term. The consequences of the presence of serial correlation are that the least squares estimators are unbiased but inefficient and sometimes likely to be seriously understated so that R^2 as well as t and f statistics tend to be exaggerated.

Tests for the detection of serial correlation proceed on the assumption that the known residuals are estimators of the disturbance term, U_t , in the model. The most widely known test for serial correlation is the Durbin-Watson d test (1950). Other tests include the Durbin h statistic test (1970) and the Lagrange Multiplier (LM) test - Breusch & Pagan (1979).

The residuals from the estimation of the model (equ 15) were tested for first and second, order serial correlation using the

Durbin-Watson d test, and the Lagrange Multiplier test (Appendix Ie). As a rule of thumb a DW statistic of 2 or close to 2 indicates that serial correlation does not seriously affect a model. Thus, the DW statistic of 1.9684 obtained from the estimation of the model under review, indicates that the model is relatively free of serial correlation. In addition the computed LM statistic $X_{(2)}^2 = 1.3528$ is significantly less than the critical value, 11.5, so that on this basis also it might be concluded that the model is relatively free of serial correlation.

The classical regression model also assumes that there is no exact relationship between any two of the explanatory variables. Such a relationship gives rise to the problem of multicollinearity. Except in its extreme form, this condition does not violate any of the assumptions of the classical model so that OLS estimates will still possess their BLUE properties.

One consequence of multicollinearity is that very small changes in the variances produce significant changes in the parameter estimates, that is, parameter estimates are very sensitive to the addition or deletion of observations. Generally if the estimated coefficients have low standard errors (as was the case in this exercise), any multicollinearity that is present, need not be cause for concern. Complete multicollinearity or an exact linear relationship was not observed between any of the variables in the model.

Nevertheless, to be twice assured of the absence of multicollinearity the sensitivity of the parameter estimates to changes in the number of observations was checked by varying the sample size (Appendix I_e). Klien's (1962) rule whereby multicollinearity would be regarded as a problem if R_y^2 (the squared multiple correlation of Y and the explanatory variables) is less than R_i^2 (the squared multiple correlation coefficient between X_i and the other explanatory variables) was also utilised. The application of these diagnostic procedures revealed that the problem of multicollinearity, though seemingly present, is not a cause for concern in the model.

For a model to be practical it must first of all be stable over time, that is, it must remain unchanged over the period of study. This is indeed a tall order since economic trends are constantly changing either gradually or suddenly. In terms of the balance of payments changes may occur in world inflation, the domestic exchange rate, real income, the domestic interest rate, and domestic credit. As discussed above, there were a number of changes in these variables as they relate to the Guyanese economy during the period under review.

The usual procedure for ascertaining stability in any model is to introduce a times trend at a point where the shift is suspected to have occurred. The data set is then split in two, regressed separately and the results compared. The test proposed by Chow

between

1960 is then used to determine whether changes in the parameter estimates are significant. Because the relatively small data set used does not allow each individual change in the variables to be taken into account the data set is split at 1975 which is just about midway through the study period. Application of the Chow test following splitting of the data in this way indicates that the model is reasonable stable.

Another test performed on the model is the goodness of fit test. Essentially this test involves the regression of the actual value of the dependent variable on the predicted values of the same variables. When the predicted values closely track the actual value the correlation coefficient will be close to unity. Generally speaking the predictive power of the model, using OLS is quite satisfactory. The r^2 value 0.3936 indicates that the result seems to justify the choice of model and technique of estimation.

VIII. ESTIMATION RESULTS

In this section an interpretation of the results obtained from the estimation of the model is presented. A summary of these results is as follows:

 ORDINARY LEAST SQUARES ESTIMATION

Dependent variable is Balance of Payments.

26 observations used for estimation from 1963 to 1988.

Regressor	Coefficient	Standard Error	T-Ratio
Constant	27.6156	52.6064	.5249
World Inflation	4.3788	1.4977	2.9237
Depreciation	1.4034	1.2761	1.0997
Real Income	-10.2710	13.81186	-0.7434
Interest Rate	-0.8074	1.5103	-0.5346
Domestic Credit	0.2086	0.2080	1.0030

R.Squared	.3936	F - statistic F(5,20)	2.5962
R - Bar.Squared	.2420	Mean of Dependent Variable	-37.5192
DW Statistic	1.9684		

First of all the results suggest that if there were no changes in the dependent variables in the model then the balance of payments of Guyana would improve at a rate of approximately 28% per annum. Since an improvement in the balance of payments is the objective of most national Governments and a stated objective of the ERP undertaken by the Government of Guyana, then at first

glance it would appear as if it is in the Government's interest to keep the explanatory variables constant. However, consideration of the value of the T-ratio (.5249) informs us that the coefficient of the constant is statistically insignificant and thus, should not receive serious attention.

The coefficient for world inflation has emerged with the expected positive sign. It also is the largest of all the coefficients and with a T-ratio of 2.9237 is the most statistically significant. It suggests that a 1% rise in world inflation would result in a 4.4% improvement in the balance of payments. This is a reasonable proposition since an increase in world prices can be expected to result in an increase in domestic exports and a decline in imports with a concomitant generation of current account surpluses or reduction of current account deficits.

For a country like Guyana, however, benefitting from an increase in world prices, is not a straightforward matter of increasing output and exports and reducing imports as suggested above. This is because Guyana is essentially a producer and exporter of primary commodities which are typically characterised by price and income inelasticity and export quotas on the one hand, and a relatively high import content on the other. Under these circumstances in addition to seeking to increase production and exports and reduce imports. Government policy should seek to diversify production, so that the country will not be as dependent

on a limited range of exports; widen and deepen the country's technological processes so that the country will be less dependent on the export of primary commodities; and increase the domestic content of both final and intermediate goods so that the country will be less dependent on imports.

While the domestic pricing strategies adopted under the ERP were intended to improve product incentives and resource allocation which in turn would lead to increased production, and while the exchange rate policy was intended to stimulate export growth, those measures to increase the participation of the private sector and to stimulate direct foreign investment could be expected over time to result not only in the diversification of production but also in the widening and deepening of technological processes.

However, liberalisation of the import licence system and the removal of exchange controls could and have served to stimulate imports thus reducing the local consumption of domestic output. In the absence of specific measures to promote increased local consumption of domestic output improvement in the balance of payments as a result of increased output and exports will be restricted as a result of increased imports.

Depreciation or devaluation has come to be regarded as one of the standard measures employed by the IMF and the World Bank in stabilisation and structural adjustment programmes. These agencies

adopt the classical argument that, devaluation of a country's currency results in its exports becoming cheaper and more competitive on the world market thus stimulating increased demand. At the same time imports become more expensive and less is demanded. By selling more and buying less on the world market the country's balance of payments position is improved.

This line of argument seems to be supported by the model at hand. Not only has the depreciation coefficient emerged with the expected positive sign but it displays a fair degree of statistical significance. According to this coefficient a 1% devaluation of the Guyana dollar results in a 1.4% improvement in the balance of payments. Hence the efforts to create a single exchange rate by devaluing the official rate to match the Cambio or market rate, seem quite justified.

The real income coefficient has emerged with a negative sign and its statistical significance is somewhat questionable. It suggests that a 1% increase in real income results in a 10.2% decline in the balance of payments. Now an increase in real income generally results in an increase in consumption and an increase in savings/investment. As noted above Guyana is essentially a producer of primary products, principally for the export market and a significant part of the country's consumption needs and inputs for production are met by imports. Thus the negative real income

coefficient merely reflects the country's relatively high propensity to import.

With respect to policy implications the real income coefficient suggests that the balance of payments could be improved by restricting increases in real income. In this regard, the ERP measures aimed at limiting creases in incomes, in an effort to increase employment, protect external competitiveness, and help reduce inflation also seem to be justified.

Unlike real income, the interest rate coefficient has emerged with a negative sign as expected, which suggests that an increase in the interest rate results in a deterioration in the balance of payments. In fact the model suggests that a 1% increase in the interest rate results in a 0.8% deterioration in the balance of payments. While increasing the interest rate is a useful approach for controlling excess liquidity by encouraging savings, an increased interest rate makes investment capital more expensive there by reducing the demand for it. A decline in investment, in turn, results on the one hand in a decline in employment, incomes, and consumption, which, according to the above discussion on real income, is desirable for improving Guyana's balance of payments. On the other hand a decline in investment could result in a decline in production and exports and a deterioration in the balance of payments. It seems therefore, that the extent of the variation of

the interest rate about some critical level is very significant for the balance of payments so that the rate should be allowed to adjust itself (by the market mechanism) to suit changing conditions. In this regard the ERP policy to establish conditions that would allow for positive real interest rates appears to be a sound one.

Finally the domestic credit coefficient has emerged with a positive sign instead of the expected negative one which suggests that an increase in domestic credit results in an improvement in the balance of payments. More specifically the model suggests that a 1% increase in domestic credit results in 0.2% improvement in the balance of payments.

With respect to policy the implication is that the balance of payment of Guyana could be improved by increasing domestic credits. The ERP adumbrates policies aimed at promoting private investments by establishing credit facilities for export oriented industries on one hand, and limiting credit to the public sector on the other. To the extent that these policies do not result in an overall decline in the amount of domestic credit available and/or utilised in the economy then their prospects for improving the balance of payments seem to be quite good.

IX. SUMMARY AND CONCLUSIONS

In this exercise an effort was made to identify the factors that determine the balance of payments and the extent to which they do so. An effort was also made to assess the appropriateness and explain the impact of the measures introduced as part of the ERP, to improve the balance of payments in Guyana. To facilitate this assessment, an econometric model of the determination of the balance of payments was specified and estimated and the results thus obtained was used as a basis for assessing the appropriateness of the ERP measures and for explaining their impact.

It was noted from a perusal of the literature that balance of payment disequilibrium exists when a country has a current account deficit not matched by long term capital inflows or regular unilateral transfers. While cyclical balance of payments disequilibrium may generally be eliminated by exchange depreciation, price and income changes and direct controls, depending on the prevailing type of exchange rate system, structural disequilibrium is generally more difficult to cope with and less susceptible to quick solution. This is evidenced by the fact that while for some time now LDCs have been undertaking structural transformation of their economies against overwhelming odds, empirical evidence indicates that those countries which undertook structural adjustment have generally not performed better than those that did not undertake similar programmes.

The Guyanese economy grew fairly consistently up to 1976. From that year however, the economy had consistently declined. By 1988 the deterioration of the economy had become so marked and its effects on national life so telling that the Government was obliged to undertake a structural adjustment programme popularly called the ERP.

This programme covered the period 1989-1991 and one of its main objectives was the improvement of the country's overall balance of payments which had been in deficit since 1979. The measures introduced as part of the ERP were both far reaching and intense. Far reaching in the sense that they involved a transformation of the economic system from a public sector dominated to a private sector dominated one. Intense in the sense that their implementation entailed such hardships for the people that special measures had to be introduced to cushion their impact.

During the first two years of the ERP the economy generally continued to be in decline but by the end of the third year the impact of the ERP measures had begun to be felt and the economy grew in real terms for the first time in several years. This growth was accompanied by significant decline in the balance of payment deficit.

The specification and estimation of the balance of payments model indicated that the success of the ERP could be attributed to

the fact that with few exceptions the EAP measures introduced appear to be appropriate. It could only be in the country's interest, therefore, to maintain the appropriate measures and make the necessary adjustments to the less appropriate ones in the shortest possible time.

Ordinary Least Squares Estimation

 Dependent variable is GAL
 26 observations used for estimation

Regressor	Parameter	Standard Error	T-Ratio
CON	21.100	21.6064	.5249
X1	1.4777	1.4977	2.9237
X2	1.2761	1.2761	1.0997
X3	13.3166	13.3166	-.7434
X4	1.5103	1.5103	-.5346
X5	1.2080	1.2080	1.0030

R-Squared	.3986	F-Statistic (5, 20)	2.5962
R-Bar-Squared	.2820	S.E. of Regression	228.4029
Residual Sum of Squares	10433.5	Mean of Dependent Variable	-37.5192
S.D. of Dependent Variable	262.3000	Maximum of Log-likelihood	-174.6906
DW-Statistic	1.9641		

Diagnostic Tests

Test Statistics	Chi-Square	DF	P-Value	F Version
A: Serial Correlation	CHI-SQ(1) =	1	.0047167	F(1, 19) = .0034475
B: Functional Form	CHI-SQ(1) =	1	2.5611	F(1, 19) = 2.0761
C: Normality	CHI-SQ(1) =	1	12.5807	Not applicable
D: Heteroscedasticity	CHI-SQ(1) =	1	.0136	F(1, 24) = .0126

*
*
* E: Predictive Failure - $\text{Df} = 20$, $F(2, 20) = .0762$
*

- A: Lagrange multiplier test of correlation
- B: Ramsey's RESET test of fitted values
- C: Based on a test of residuals
- D: Based on the regression of squared residuals on squared fitted values
- E: A test of adequacy of prediction (Chow's second test)

Exact AR(1) Inverse Interpolation Method Converged after 4 iterations

Dependent variable is BAL

26 observations used for estimation from 1963 to 1988

Regressor	Coefficient	Standard Error	T-Ratio
CON	27.3896	53.0564	.5162
X1	4.3367	1.5437	2.8092
X2	1.3511	1.3062	1.0344
X3	-9.8118	14.1923	-.6913
X4	-.7937	1.5567	-.5079
X5	.2011	.2136	.9416

R-Squared	.3938	F-statistic F(6, 19)	2.0569
R-Bar-Squared	.2023	S.E. of Regression	234.2998
Residual Sum of Squares	1043032	mean of Dependent Variable	-37.5192
S.D. of Dependent Variable	262.3386	Maximum of Log-likelihood	-174.6868
DW-statistic	1.9551		

Parameters of the Autoregressive Error Specification

U= -.0247+U(-1)+V

(-.1259)

T-ratio(s) based on asymptotic standard errors in brackets

Log-likelihood ratio test of AR(1) relative to OLS CH1-SQ(1)= .0075220

APPENDIX Ic.

Results of Econometric Tests

I. Test for Heteroscedasticity:

$X_{(1)}^2$ Value	$X_{(1)}^2$ Critical	$F_{(1,24)}$ Value	$F_{(1,24)}$ Critical
0.136	13.3	0.126	4.28

Based on the regression of squared residuals on squared fitted values.

II. Test for ARCH:

$X_{(1)}^2$ Value	$X_{(1)}^2$ Critical
0.4726	11.5

III. Test for Serial Correlation:

Regressor	Coefficient	Standard Error	T-ratio
U_{t-1}	.0179	0.2660	0.0672
U_{t-2}	-0.2705	0.2726	-0.9922

$X_{(2)}^2$ Value	$X_{(2)}^2$ Critical	$F_{(2,18)}$ Value	$F_{(2,18)}$ Critical
1.3528	11.5	0.4940	6.01

IV. Diagnostic Procedures for Multicollinearity

Regressor	<u>Coefficient</u>	Coefficient	R_i^2	<u>R_y^2</u>
World Inflation	4.8292	4.7578	.3791	0.3936
Depreciation	1.3878	3.1205	.0284	
Real Income	-13.1287	-12.5026	.8061	
Interest Rate	-0.9781	-1.1420	.8061	
Domestic Credit	0.2477	0.2619	.9317	

V. Test for Stability

$X_{(2)}^2$ Value	$X_{(2)}^2$ Critical	$F_{(2,20)}$ Value	$F_{(2,20)}$ Critical
0.1524	11.5	0.0762	5.98

Based on Chow (1960) test of stability of the regression coefficients.

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