ECONOMIC ADJUSTMENT PROGRAMMES AND

THE EXPORT SECTOR OF GUYANA 1962-83

Thesis submitted in accordance with the
requirements of the University of Liverpool
for the degree of Doctor of Philosophy

by

BURTON GAJADAR

February 1989

ABSTRACT

Efforts to diversify the colonial economy in Guyana after 1966 were unsuccessful. With the oil shock of 1973, and falling commodity prices after 1975, the economy became unstable. This instability is expressed in large balance of payments deficits, deficit financing, lower export levels and a rise in inflation. Policies to restore economic stability involved the implementation of stabilisation and structural adjustment programmes between 1977-84, with the participation of the IMF and World Bank.

The objective is to investigate factors affecting economic stabilisation of both domestic prices and the balance of payments. Emphasis is placed on the study of aggregate supply, which examines the behaviour of exports and inflation. These two factors are linked to the balance of payments. The assumption is made that exports are influenced by supply variables, such as domestic output, international prices, labour costs and movements in the exchange rate.

The analysis of exports reveals that their response is delayed and inelastic to changes in price and other factors. This is consistent with estimates for primary commodity exports from small low income countries. The partial adjustment/adaptive expectations model provides satisfactory evidence for the behaviour of commodity exports, except in the case of sugar. For sugar an export supply function is estimated. The analysis of inflation reveals that external influences are more dominant than domestic factors in the inflationary process.

The results suggest that the supply response for all commodities is slow in the short run, but may be faster in the long run. This implies that the implementation of appropriate stabilisation policies may be able to improve the deficit in the balance of payments, but that lags may exist in the adjustment process. The constraining factors would be increased labour costs in the export sector and higher import prices for industrial inputs.

ACKNOWLEDGEMENT

Financial support from the Association of Commonwealth Universities, Commonwealth Scholarship Commission and the Government of Guyana, made this research possible.

Sincere thanks to Dr. D.E. Hojman my Supervisor, who displayed a high level of enthusiasm and diligence in the completion and accuracy of this study.

I also acknowledge the support of my colleagues, especial Mr. Simon Blackman, who kindly offered comments. Finally, I must recognise the support and patience of my family who encouraged me during some daunting moments of this work.

LIST OF TABLES

LIST OF CHARTS

TABLE OF CONTENTS

GENERAL INTRODUCTION

Guyana, a former British colony, is the only English speaking country in South America. It is often described as a plural society (Singh, 1972). During three centuries of colonial rule, several different ethnic groups from three continents settled with its indigenous population. In the colonial period the economy was linked to the industrial countries, mainly Britain, USA and Canada. It specialised in the production and export of primary commodities: sugar, rice, bauxite and alumina, while it imported food, capital equipment and manufactured goods.

THE COLONIAL ECONOMY

This specialisation evolved and developed on the principle of comparative advantage. Guyana exported commodities for which it had a greater comparative advantage, and imported those for which it had a lower one, thereby reducing the need to establish manufacturing industries. Consequently, the domestic value added by the four export commodities was low, since its forward linkages were established in the industrial countries. The input/output table of Kundu (1963) shows the low levels of domestic inter-sectorial linkages. Economic growth was linked directly to performance in the export sector, which in turn depended on the performance in industrial countries.

In the first decade after independence, this trade regime was questioned. First, concern was expressed as to whether Guyana was too specialised and dependent on only four primary commodity exports,

vulnerable to the vagaries of international trade. Attention was focused on the possibility of diversification.

The strategy pursued was limited import substitution industrialisation, adopting the Puerto Rican model of 'Industrialisation by Invitation', as advocated by Lewis (1954). Toward this end, the Government published its 1966-71 development plan. There was a fixed exchange rate, and until 1967-1968 a currency convertible with the British Pound. Fiscal policy was important but the domestic monetary institutions were still evolving.

Economic policy was aimed at reducing specialisation on the four export commodities by diversifying into activities which could increase the local value added in the export sector, and into other economic ventures besides the production of sugar, rice, bauxite and alumina. Insufficient financing to meet planned investment targets resulted in the suspension of the plan, which was superseded by the 1972-76 plan.

Shift in Economic Policy

Between 1972 and 1976 the trade policy was revised. The government pursued a more direct role which was reflected in increased intervention and regulation. Such an approach signalled a reform in economic policy, from one of free trade based on the classical economic model, to an inward-oriented development approach based on domestic self reliance to satisfy basic needs.

Meanwhile, external conditions were deteriorating. The balance of payments (BOP), which was already weak, worsened with the 1973 oil shock. Higher prices for sugar in 1974-75 brought temporary relief to the BOP. With the collapse in sugar prices and an expanded government sector, expenditure grew at a faster rate than revenue, leading to fiscal deficits. By 1976, the classical export economy was changing, becoming less responsive. Intervention in trade through quantitative restrictions and regulation of the labour and capital markets made the economy more rigid and more vulnerable to external shocks.

Several alterations to the functioning of the economy could be observed. First, the domestic currency was allowed to appreciate against the currencies of Guyana's main trading partners, followed by the introduction of a system of quantitative restrictions on trade, which replaced tariffs as the main protective instrument. Second, administered prices were established for output in agriculture, followed by centralisation in the distribution of inputs. This discriminated against agriculture in favour of import substitution activities. Third, the nationalisation of the mining companies meant that production decisions were influenced by government policy, instead of international market forces. These three policies led to market distortions, and impacted adversely on the agricultural and mining sectors.

Problems Facing the Economy

Increased government intervention and the growth in public expenditure at a faster speed than revenue, led to budget deficits,

which impacted adversely on the balance of payments. The budget deficit financed aggregate demand, (especially after the fall in export revenues in 1975), social expenditure, and public investment. By 1976, the effects of progressive distortions reduced the response of the economy. This was expressed in the slow rate at which the policies being carried out achieved success. The economy became stagnant, with reduced export levels, high rates of inflation, a fall in GDP, uncompleted import substitution enterprises, and widening budget and balance of payments deficits.

In summary, when government intervention was high, quantitative restrictions and controls were introduced to reduce the BOP deficit. This led eventually to a perpetuation of that deficit, solutions for which are still being sought.

Response to Economic Problems

The response to the economic downturn after 1977 was to attempt to restore economic stability with the direct involvement of the IMF and the World Bank. Their participation in stabilisation and structural adjustment programmes is examined during 1978-1983.

The IMF approach to the problems of high inflation and balance of payments deficit in developing countries is to introduce stabilisation programmes. This involve either a short term demand approach or a medium term supply approach. Under the demand approach, a stabilisation program may be carried out for up to a year to remedy the imbalance between demand and supply factors in the economy. Under the supply approach, a stabilisation program may be carried out for

two to three years, to reduce distortions in the market and to improve supply capabilities.

Economic Stabilisation

Economic stabilisation is an improvement in the balance between demand and supply, which dampens inflationary tendencies, and stabilises the balance of payments (Crockett, 1981). The precise objective would be to find a suitable relationship between resource availabilities and needs. The theoretical approaches to economic stabilisation grew out of the debate between two schools of thought in the 1950s and 1960s. The Monetarist school argues that inflation and balance of payments deficits result from excess demand. If aggregate demand is allowed to exceed aggregate supply, then economic difficulties follow, which lead to disequilibrium in the balance of payments. Solutions to the imbalance lie in reducing the level of aggregate demand by restricting the money supply. Whereas some Monetarists may accept this general proposition, the actual effect that corrective measures may have on stability is unclear. Khan and Knight (1981) have argued that although it is generally accepted that monetary growth will induce domestic prices to rise, and cause a deficit in the balance of payments to widen, it may also increase real incomes. Therefore, the precise nature of the relationship between monetary expansion and other economic variables such as growth, inflation and the balance of payments in less developed countries is subject to considerable debate.

Numerous studies deal with this subject, but the IMF has over the years formulated and evaluated stabilisation programmes based on the

Polak (1957) model. This model establishes the relationship between money, the balance of payments and inflation. In it the supply and demand for money play an important role, but it does not treat the effects of prices on the real sector sufficiently, and therefore the direct impact that an IMF programme may have on the real sector economic variables, such as growth, employment and output is unclear. Khan and Knight (1981) developed a dynamic simultaneous model that assesses the relations between these variables. It stresses the important role of the demand and supply for money and monetary disequilibrium in the determination of prices, output and the balance of payments.

The second approach to the study of inflation and balance of payments disequilibrium is the Structuralist framework. According to it, the problem is provoked by rigidities in the pattern of production and demand, which reduces the impact of monetary policy on inflation and output and on the external sector. The demand approach in the short term would reduce output and investment, and lead to a decline in foreign exchange earnings.

Structuralists suggest that stabilisation programmes should focus on removing supply bottlenecks and structural rigidities. This entails policies which would not reduce demand, but may increase export capacity, leading to an improvement in the balance of payments.

These are the two broad approaches to reduce balance of payments deficits in less developed countries. It may be possible to reconcile (at some stage in the debate) the views of Monetarists and Structuralists. More important, the IMF has recognised the relevance

of both demand and supply policies in reducing inflation and balance of payments deficits.

Problems Examined

In this study an investigation is conducted into those factors which may affect the balance of payments. First, the factors which determine the exports of sugar, rice, bauxite and alumina are examined. Second, we look at the factors responsible for inflation and changes in the exchange rate.

Exports and Inflation

The study of commodity trade flows provides a basis for formulating policy on balance of payments adjustment. Supply functions provide elasticity estimates for price and other variables. These are useful for designing policies that relate to the management of the exchange rate, tariff structures and import substitution strategy.

The economy relies heavily on exports to generate income. An increase in export earnings will induce both consumption and investment expenditure, and lead to an expansion in imports. Imports represent a large portion of expenditure, thus any change in import prices will impact on the rate of inflation. Also, increases in export revenue may be accompanied by an increase in wage claims in the export sector, which can affect both the domestic price level and employment. The increase in wages in the export sector may lead to an increase in the supply price of labour in the entire economy, impacting adversely on the price and level of exports. Exports and inflation are two

important variables affecting the balance of payments, regardless of whether one utilises the Monetarist or the Structuralist approaches to examine BOP disequilibrium.

Justification of this Study

A general framework may be developed from this study to formulate a suitable policy for balance of payments adjustment in small, open economies such as Guyana. Very little quantitative work is available on the structure and functioning of the economy. Policy formulation and strategy depends heavily on qualitative judgements, elementary statistical inferences and reasoned judgement. This study attempts a better understanding of the economy by providing some empirical evidence on the manner in which key variables like exports, inflation and the exchange rate are determined.

The study of these aggregates does not however mean that other macroeconomic variables like aggregate expenditure, production, imports or growth are not important. Or that the relations between the major macroeconomic variables, or the manner of their interaction are irrelevant. On the contrary, all these can contribute towards a better understanding of the balance of payments problem. Because of data limitations for some variables, the entire economic system was not studied.

Organisation of the Study

There are seven chapters. Chapter One is divided into two parts. The first part looks at the historical development of the

socioeconomic, political and constitutional changes. The second part is a macroeconomic overview. It outlines the characteristics and structure of the economy, identifying the importance of sugar, rice, bauxite and alumina. Then the performance of selected economic variables and their impact on economic stability is assessed.

Chapter Two outlines the participation of the IMF and the World Bank in implementing stabilisation and structural adjustment programmes between 1978 and 1983. The export sector is singled out for further investigation, because of its importance in maintaining economic stability.

Chapter Three describes the export sector. It analyses the structure of production and exports.

Chapter Four outlines the distributed lag model used in the analysis of exports. The partial adjustment/adaptive expectations model and its relevance to the analysis of exports is discussed.

In Chapter Five the results of estimating export equations are presented in two parts. Part one investigates the behaviour of agricultural exports, while part two analyses the determinants of mineral exports.

Chapter Six deals with the factors influencing inflation and the exchange rate. Inflation is analysed using a two sector model which divides the economy into tradeable and non tradable sectors. The impacts of the balance of payments and other factors on the exchange rate are assessed.

Chapter Seven is one of conclusions, where the main findings of the study are discussed and critically assessed.

GENERAL INTRODUCTION: REFERENCES

Crockett, A.D. (1981), Stabilization Policies in Developing Countries: Some Policy Considerations, International Monetary Fund Staff Papers, Vol.28.

Khan, S.M. and Knight, M.D. (1981), Stabilization Programmes in Developing Countries: A Formal Framework, International Monetary Fund Staff Papers, Vol.28.

Kundu, A. (1963), Inter-industry Table for the Economy of British Guiana, 1959, and National Accounts 1957-60, Social and Economic Studies, Vol.12, No.1, Supplement.

Lewis, A. (1954), Economic Development with Unlimited Supplies of Labour, Manchester School of Economics and Social Studies, University of Manchester.

Polak, J.J. (1957), Monetary Analysis of Income Formation and Payments Problems, International Monetary Fund Staff Papers, Vol.6, No.1.

Singh, P. (1972), Guyana: Socialism in a Plural Society, Fabian Research Series, No.307, October.

CHAPTER ONE: AN OVERVIEW OF GUYANA'S ECONOMY

INTRODUCTION

The decade of the 1970s, specially after the rise in the influence of OPEC,[1] followed by recession in the industrial OECD countries, ended with very little hope of economic advancement for the 'Newly Emerging' and the 'Newly Industrialised Countries' (NICs). Academic interest in the theoretical issues of development economics gained considerable strength by the dawn of the 1980s. Many developing countries suffered economic stagnation, and economists questioned the accuracy of prescriptions offered by the Dependency School[2] of thought, and its explanations for the economic failure which occurred in Latin American and Caribbean countries in particular.

Interest focused on the problems and prospects of small[3] open or low income countries.[4] Arising out of these debates emerged several publications on Guyana. Interest was aroused and focused mainly on the historical record: (Daly, 1974, 1975; Rodney, 1981; Mandle, 1973); social issues (Spinner Jr., 1984); political issues (Jeffrey and Barber, 1986); and economic conditions (Hope, 1979; Sackey, 1979). Concern about the economy grew as the Government found it increasingly difficult, specially after 1977, to develop successful programmes which could sustain economic growth even in the short term.

The management of the economy and the approaches pursued created much discussion and controversy in the Caribbean and elsewhere. The leading Caribbean economists, Thomas (1974), and Mandle (1982), seem to have coincided initially with the economic policies and development

strategies pursued by the Burnham Government in Guyana and subsequently by the Manley Government of Jamaica. Development programmes by these two Governments were a response to the general policy of transforming the colonial economy after independence was granted in 1966 by Britain. In the case of Guyana, the People's National Congress (PNC) party won the general elections from the People's Progressive Party (PPP), and formed the Government in 1964. Throughout the period 1964-1984 the PNC remained in office (with Burnham unopposed within his party as Leader) and formed each successive government in Guyana.

Identification of the Period of Study

The period of investigation is 1962 to 1983, chosen because of the availability of suitable time series data[5]. This particular period overlaps with earlier economic studies (David, 1969). But his work, rounded off shortly after 1960, was unable to capture and assess fully the implications of economic events in the post 1960 period. His study represents the only extended treatment of economic development between 1953-1964. Our chosen period seems to be justified since except for Thomas (1982), no macroeconomic published work on the economy is available for this time span. Therefore, it is important for social scientists to study and try to understand the attempts made by the Government of Guyana to restructure the economy, even if they failed in some respects. It is this gap in knowledge which this study attempts to fill. This chapter is divided into two parts; the first deals with the general background to political, constitutional and economic developments. The attempts to diversify the economy are expressed in two development plans, and a series of stabilisation and

structural adjustment programmes. The second part presents an overview of the economic characteristics and performance of the economy.

PART 1: A PERIODISATION OF GUYANA'S ECONOMIC HISTORY

Guyana's economic history can be divided into six phases (Hope, 1985). Appendix 1.2 contains selected statistics and a chronology.

The Colonial Period (up to 1953)

Before 1850, the colonial sugar plantation economy based on slave labour dominated the economic structure. The period between 1850 and 1953, saw the achievement of internal self rule. The PPP dominated the political life of the country, by successfully establishing itself as the first local political party, and forming the first government under internal self rule. The sugar, rice and bauxite industries were established, and its study can provide useful historical information, relevant to the analysis of more recent periods.

The cultivation of sugar cane owes its development to the settlement of Europeans, while the rice industry developed during the interwar years as a by-product of the former. Whereas the sugar industry developed as a plantation system, the rice industry evolved as a peasant crop.[6] Rice cultivation started as a part time occupation on abandoned sugar cane lands. It helped to absorb the labour force from the sugar industry during periods of slack demand. But commercial cultivation of rice developed after World War Two; and Guyana became a net exporter of rice to the Caribbean. Bauxite mining began in 1916, initially supplying raw material for the production of aluminium in

North America and Europe. The principal use of aluminium was in the manufacture of aircraft during the First World War. The development of sugar, rice and bauxite is described within its historical context in Appendix 3.2.

The Period 1953-66

The period 1953-66, can be subdivided into two parts: 1953-59 and 1960-66. During the first part there was a split in the PPP, and the PNC was founded out of that split. In the second part, 1960-66, the PNC gained political power from the PPP by forming a coalition Government with the United Force (U.F.) party which subsequently obtained approval from Britain for the political independence in 1966 (Spinner, Jr., 1984).

Economic policy by the PPP government emphasised the development of the agricultural sector, particularly rice, with less emphasis on industrial development. The objective was to increase the level of employment: (David, 1969;[7] Thorne, 1961; Newman, 1960; Hope, 1986).[8] However, the implementation of these policies was disrupted by strikes and civil disturbances (Henfrey, 1972; Jagan, 1972), which were reflected in a poor economic performance.

The Period 1966-71

The period 1966-71[9] witnessed the break up of the coalition Government in 1967, and the PNC winning an election by changing the system of voting to proportional representation in 1968. The PNC consolidated its power and began further constitutional reforms, first

by breaking with the British Monarchy as the Head of State, abolishing the post of Governor General and instituting a Titular Head of State in the person of a President, thereby becoming a republic within the Commonwealth in 1970.[10] The new PNC Government changed economic policy in 1964, adopting the 'Puerto Rican' model of development (Tennassee, 1982). Policy emphasised Lewis's thesis of 'Industrialisation by Invitation' (Lewis, 1950, 1954), which was embodied in the 1966-72 Development Plan. Immediately, the new government set about the task of redefining objectives and development strategy. The policy was aimed at raising real income and the standard of living, reducing the level of unemployment and establishing suitable infrastructure to attract foreign investment. The emphasis was to open the economy to foreign private investment and to attract international corporations. These policies were expressed in fiscal and material incentives offered in the 1966-72 Development Plan to private overseas financing, in the specific forms of tax holidays and capital subsidisation. The Plan allocated resources to diversify agricultural output and to develop small scale industries. Also foreign commercial banks extended their operations in the economy. By 1970 there were five such institutions, Barclays International, Nova Scotia, Chase Manhattan, the Royal Bank of Canada and the Bank of Boroda. But sufficient investment to finance expenditure in the 1966-71 plan failed to materialise, and led to the curtailment of further implementation of the plan.

The failure to attract sufficient foreign investment to finance capital expenditure in the 1966-71 plan, may have influenced a decision in 1970, to review the policy of 'Industrialisation by Invitation'. Eventually the plan was abandoned (Hope, 1986). In 1970-71 the

Government suddenly amended its basic ideological objectives. The policy of private ownership was revised to adopt one of mixed ownership. This meant coexistence of private, public and cooperative ownership. At the same time, the government entered negotiations with the Demerara Bauxite Company (Demba) to secure 51% participation. The discussions failed to produce an agreement acceptable to both parties, and led to the nationalisation of the company in 1971 (Grant, 1973; Graham, 1982). This was the first act signalling a change in economic policy, and was followed by a series of nationalisations in other sectors of the economy in the next period.

The Period 1972-76

In 1972-76 the objective was to promulgate and implement this new policy. Economic management was influenced by the theories of the 'Non-Capitalist' school of thought (Thomas, 1976). These changes are discussed in Thomas (1983) and Mandle (1976). Development strategies and ideas are discussed in Nascimento and Burrowes eds., (1970). Some policies are also outlined in the 1972-76 Development Plan, while others evolved as a matter of expediency. In practice, the nationalisation of foreign assets accelerated. It included the largest concentration of firms owned by Booker McConnel & Company Ltd., a British Firm,[11] and the remainder of the bauxite industry owned by the USA's Reynolds Metal Company (Mandle, 1976). By the end of 1976 the process of nationalisation was completed, with the government vesting approximately 80% of economic activity under its direct control. A moderate policy of reducing the activities of foreign commercial banks was pursued, while local private firms were permitted

to expand without the threat of their assets being nationalised. The new thinking meant four basic policies:

1. The productive sector was brought under the direct control of the state. This was achieved by the large scale nationalisation of foreign enterprises, some of which were at their maturity stage, while others were still in their infancy;

2. The implementation of a programme of 'domestic self-reliance' by adopting 'the basic needs' approach outlined by Standing and Szal (1979). The policy motive was to substitute the private accumulation by a foreign capitalist class with the social goal of equitable distribution of the gains obtained from the productive process. The policy was summarised in the slogan 'making the small man a real man' (Searwar eds., 1970). The aim was that of fulfilling the 'basic needs' to 'feed, clothe and house' the population;

3. The development of a three sector economic structure, which would include private, state and cooperative sectors, and where the latter should become dominant in the long run. However, except for commercial cooperative banks, the cooperative sector remains the smallest of the three (Hope, 1975);

4. The 'paramountcy' of the role of the PNC party over all other political parties, extended to include also the functions of government (Jeffrey and Barber, 1986).

These ideals were articulated in the broad aims and objectives of the 1972-76 development plan. The plan aimed at strengthening the economic foundations of society, which would have allowed the country to be self-sufficient and economically independent, and to achieve an equitable distribution of income (Hope, David and Armstrong, 1976). This plan failed to reach its targets and was eventually substituted by one year roll over plans after 1976.

The economy experienced two shocks which affected the success of the development plan. First, the 1973 oil shock impacted adversely on the balance of payments and terms of trade. Second, unexpected price increases for sugar, (and to a lesser extent bauxite) during 1974 to 1976 allowed the government to expand, and at the same time pursue its policy of redistribution of income. But the commodity price boom was short lived, since the world price of sugar collapsed soon after 1975. The fall in commodity prices occurred prematurely when the government was already committed to a policy of redistribution of income. Faced with a huge public sector and a development programme to finance when revenues were low, the government confronted a major fiscal deficit.

The Period 1977-84

In 1977-84 the economy declined further. Economic difficulties became more evident as exports fell and foreign exchange became scarce. Unable to achieve the targets set in the 1972-76 plan, the government policy was to absorb the plan failure by using roll over one year plans, as articulated in the annual budget proposals in 1977-78. As net international reserves fell below zero, the annual budgets of 1977-78 introduced deflationary measures aimed at reducing consumption

and increasing savings. The objective was to cut public expenditure by eliminating subsidies on food, electricity and services. With an unstable economy and no easy solution, the government pursued stabilisation and structural adjustment programmes with assistance from the International Monetary Fund (IMF) and World Bank Groups. The objective of these programmes was to develop appropriate economic strategies to alleviate the worsening domestic economic conditions, and correct the slide in the balance of payments. The IMF and World Bank formed a part of the management team which monitored economic performance. Between 1978 and 1981 three IMF programmes were implemented, a short term one in 1978, and an Extended Fund Facility in 1979 and 1981. Satisfactory success was achieved at the end of the first programme, but the other two programmes failed to reach any degree of success. In the 1982 programme the World Bank became the dominant participant while the IMF assumed a monitoring role. This is because the unsuccessful implementation of the IMF 1981 programme subsequently led to strained relations between the IMF and the Guyana government. This relationship worsened to the extent that no new agreement was signed with the IMF since 1981. In 1984 Guyana was declared uncreditworthy and was denied further access to resources from the Fund. Despite deteriorating economic conditions the government pursued further constitutional change, by writing a new constitution and perhaps more important, changing the status of the President. His nominal role was enhanced to become an executive one, thereby creating an Executive President who heads the Government, supported by a Prime Minister and cabinet (Lutchman, 1982).

In 1984 the economy recorded positive growth, after at least three years of stagnation and decline. A new President took Office in 1985

and immediately set about the task of re-defining economic and development policies and objectives. An agricultural plan was published in 1986.[12]

Summary

- Economic, political, constitutional and social policies and strategies were aimed at attempting to reorganise the colonial economy, with various degrees of success. The principal objective was to reduce the reliance on the traditional export commodities to generate revenues. First, a planned approach was tried - two development plans were implemented - both failed to fulfil their targets. After the failure of these plans, by 1977, the government involved the IMF and the World Bank to formulate stabilisation and structural adjustment programmes to restore stability and growth. Again little success was achieved. The question is why. Are the characteristics of the colonial economy to be blamed? Was the economy too fragile to accommodate changes in its structure without suffering dislocation? Or were the attempts too ambitious for such a small economy? An examination of the structure and characteristics of the economy may provide some answers.

PART II: SOME MICRO AND MACROECONOMIC ASPECTS

The colonial economy was dominated by sugar, bauxite and (to a lesser extent) alumina and rice. The former three were produced directly to satisfy the industrial needs of developed countries, while the latter was produced as a local staple food, which provided employment for the rural population. An examination of the economic

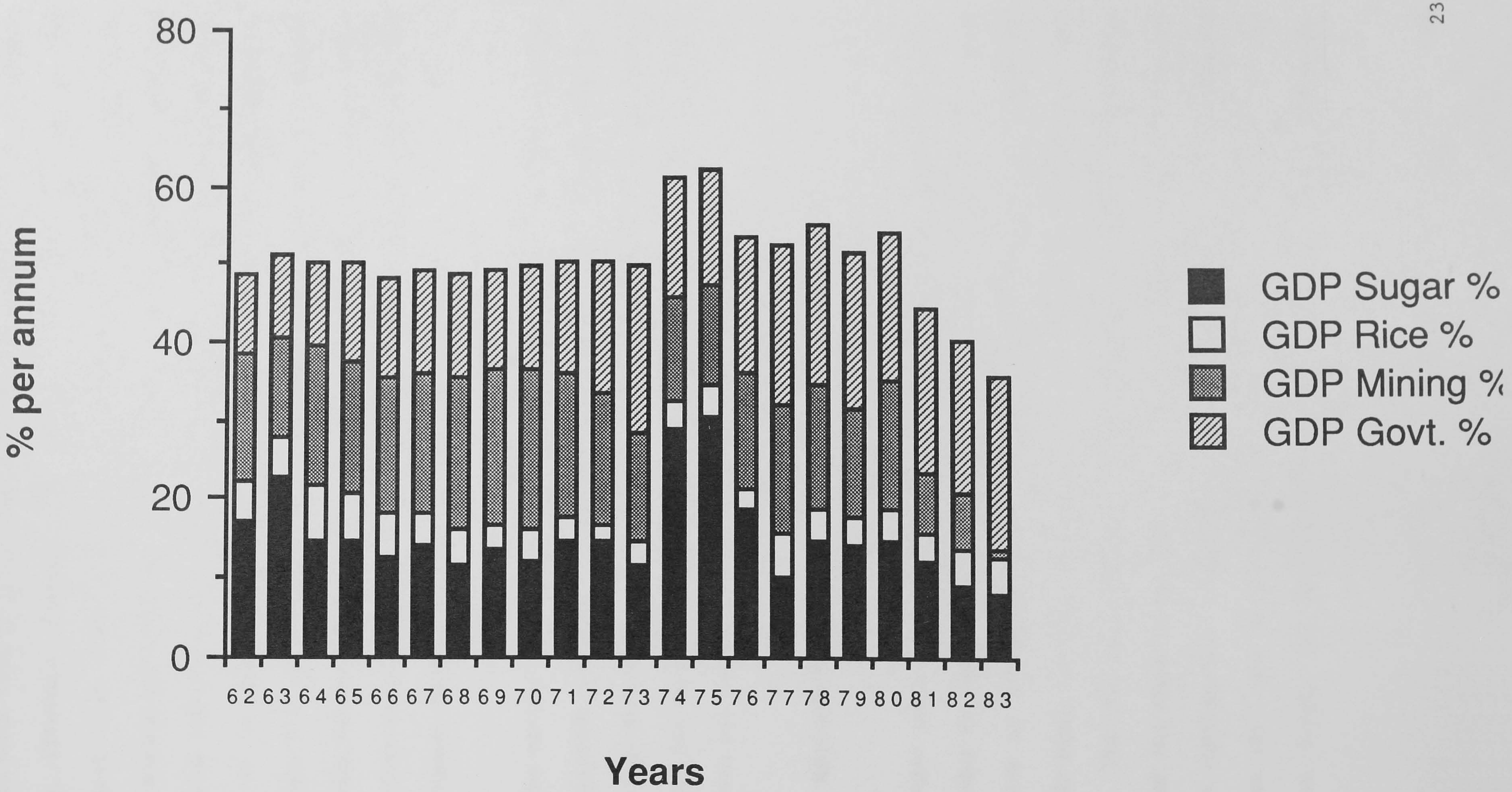
structure illustrates the importance of these four commodities in income generation.

Structure and Characteristics of the Economy

The origin of production and relative contributions to GDP are graphed and presented in Chart 1.1 and Tables 1-2 and 1-3. Table 1-2 explains the sectorial origin of GDP in value, while Table 1-3 shows relative percentage contributions.[13] The data in Table 1-3 identifies the agricultural, mining and quarrying, distribution and government sectors as the more important contributors to GDP.

CHART 1.1

Share of GDP(%)



In this classification the agricultural sector consists of sugar, rice, livestock, fishing and forestry. Their contributions to GDP suggest that sugar and rice are the two most important activities. The mining and quarrying sector embodies bauxite/alumina, gold and diamond industries. A disaggregation of this sector is not available, but it is general knowledge that the bauxite/alumina sub-sector is responsible for over 90% of the GDP. The government sector expanded rapidly between 1972 and 1981, and thereafter contracted considerably. The distribution sector also accounts for a significant share of GDP throughout this period.

The agricultural and mining sectors are pivotal to economic growth, and provide the bulk of foreign exchange earnings. Foreign exchange earnings are important since the economy relies heavily on the foreign sector for income and to pay for imports. The agriculture and mining sectors are analysed in detail below.

The Agricultural Sector

Sugar and rice are the two most important crops. The contribution of sugar to the national economy was below 20% of GDP up to 1973, with a peak of 30% in 1975. In 1962-64, sugar contribution to GDP was fairly high, reaching 23% in 1963. But in 1965-69, it fell to less than 15%. The 1975 high level of contribution was the result of increased prices for sugar both in world and European markets. After 1976, the sugar contribution to GDP remained at levels similar to those existing before 1973. But in the 1980s its contribution to GDP fell to its lowest level; and by 1982-83 was below 10 per cent. These low

declining contributions are reflected in the reduced levels of production reported in Table 1-2.

Despite a lower level of contribution to the national economy, rice played a significant role compared to other activities like livestock and other crops. The peak years for rice production were in the 1960s when investments in irrigation schemes aimed at expanding rice cultivation and output were made. The highest contribution to GDP was recorded in 1964 and 1965, with 6.8% and 6.3% of GDP respectively. The lowest contribution was 2.1% in 1972. Its contribution to GDP remained relatively small. Rice is the staple diet for a large percentage of the population, which makes it an important commodity for analysis.

Other categories of agricultural production include livestock and other agricultural activities. Contributions to GDP were fairly stable. Livestock contribution to GDP remained below 4% for the entire period, whereas other agricultural activities, which includes root crops, legumes, fruits and vegetables contributed between 2.0% to 3.2% of GDP. Fishing and forestry contributions were insignificant.

The Mining Sector

The mining sector is second in importance after agriculture. In this sector bauxite and alumina formed over 90% of economic activity.[14] The peak years of the sector's contribution preceded nationalisation. In 1962-64, contribution to GDP was between 13.1% and 17.8%. Contribution increased from 16.6% in 1965 to 20.4%, in 1970, then declined to about 14% after 1972. The contribution to GDP thereafter was stable, but declined to 7.5%, 7.0% and 1.4% of GDP in 1981, 1982 and 1983. This

decline was due primarily to low levels of production caused by technological and managerial difficulties and by industrial disputes.

Other Sectors

One emerging sector was government whose contribution to GDP expanded in the 1970s and accelerated in the 1980s. Its share increased as a direct result of the nationalisation of foreign assets in the first half of the 1970s, and an expanded central government bureaucracy to monitor this enlarged body of economic resources. Its contribution to GDP increased from 10% in 1960-64, to about 13% in 1965-69. The highest contribution was in 1973 and again in 1983 when its share of GDP rose to 21%.

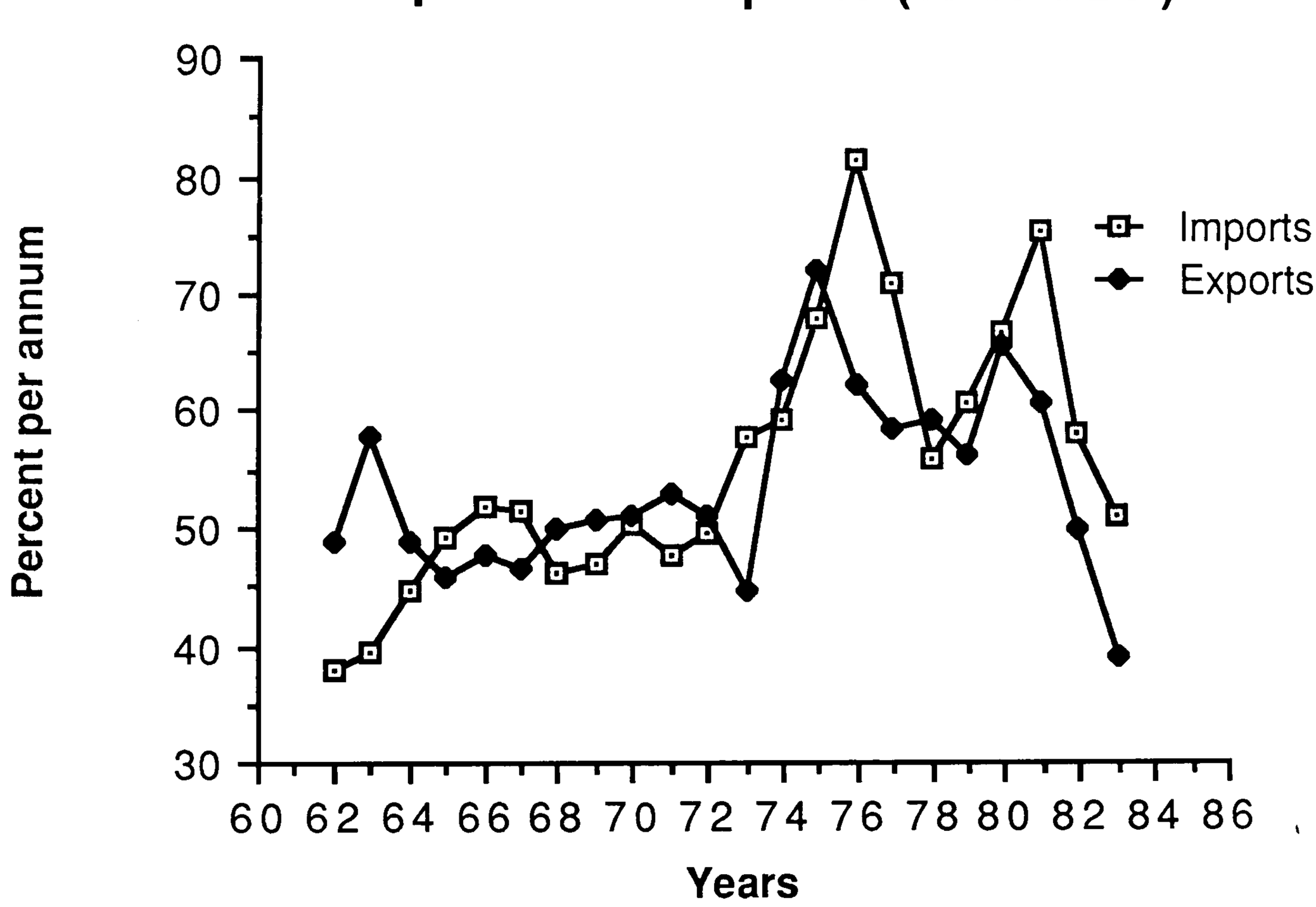
Food and tobacco,[15] (part of manufacturing) averaged between 2% to 4% in the period, but increased to over 10% in 1983-84. The distribution sector's contribution to GDP declined after 1974, with mild recoveries in 1976, 1981 and 1983. Its contribution to GDP in these years was just over 10%.

Other Characteristics of the Economy

The economy is an open one linked to the industrial countries of Europe and North America. The domestic linkages remained insignificant as analysed in Kundu (1963). Analysis of Table 1-1 illustrates the dependence on the external sector.

CHART 1.2

Exports and Imports (% of GDP)



Quantitatively foreign trade accounts for a large proportion of economic activity. Some indices of this dependence are the ratios exports/GDP and imports/GDP. The export and import coefficients are shown in Chart 1.2. Commodity exports contribute substantially to economic activity. Exports as a percentage of GDP are high. In the 1960s this ratio was almost 50%, but in the 1970s it rose above 50% (except for 1973). The ratio's highest level was in 1975, at 72%, illustrating the degree of openness of the economy, and its reliance on exports to generate domestic income. The import coefficient is also high, between 47% to 52% of GDP in 1965-69, but increased in the 1970s, with a peak in 1976 of 82 per cent.

The manufacturing sector remained underdeveloped, because of low levels of both domestic and foreign private investment. The low level of private overseas capital investment was a feature of the early 1970s and eventually led to the abandonment of the 1966-71 and 1972-76 development plans. With an underdeveloped manufacturing sector, the economy relied on agriculture and mining. Despite this reliance there was no significant growth in agriculture except in 1974-75. Stagnation was attributed partly to ecological conditions in the plantations (Richardson, 1972, 1975), which relied heavily on a complex system of water management and the maintenance of the sea defence infrastructure; and partly to inadequate financing. The best agricultural lands were under the plantation system, and developed their own adequate infrastructure. This discouraged the development of alternative peasant farming in the colonial period, except on marginal lands which had poor infrastructure facilities. Only after 1960 settlement schemes with adequate irrigation were established

outside the sugar plantation system. Rice cultivation benefitted mostly from this development.

It was difficult to maintain the infrastructure necessary to permit commercial agriculture (outside sugar) amidst a general decline after 1977. This led to a fall in agricultural output. Efforts to finance infrastructural development were the principal task of the agricultural plan 1986-89, when a significant proportion of the proposed expenditure was allocated to maintain the existing system.

With the closure of the alumina plant in 1984, and the decline of sugar and bauxite in the 1980s, rice is the only other export commodity with the potential to increase export revenues.

A macro overview of the key elements of the economy is conducted below. The objective is to identify difficulties which made the implementation of stabilisation and structural adjustment programmes necessary.

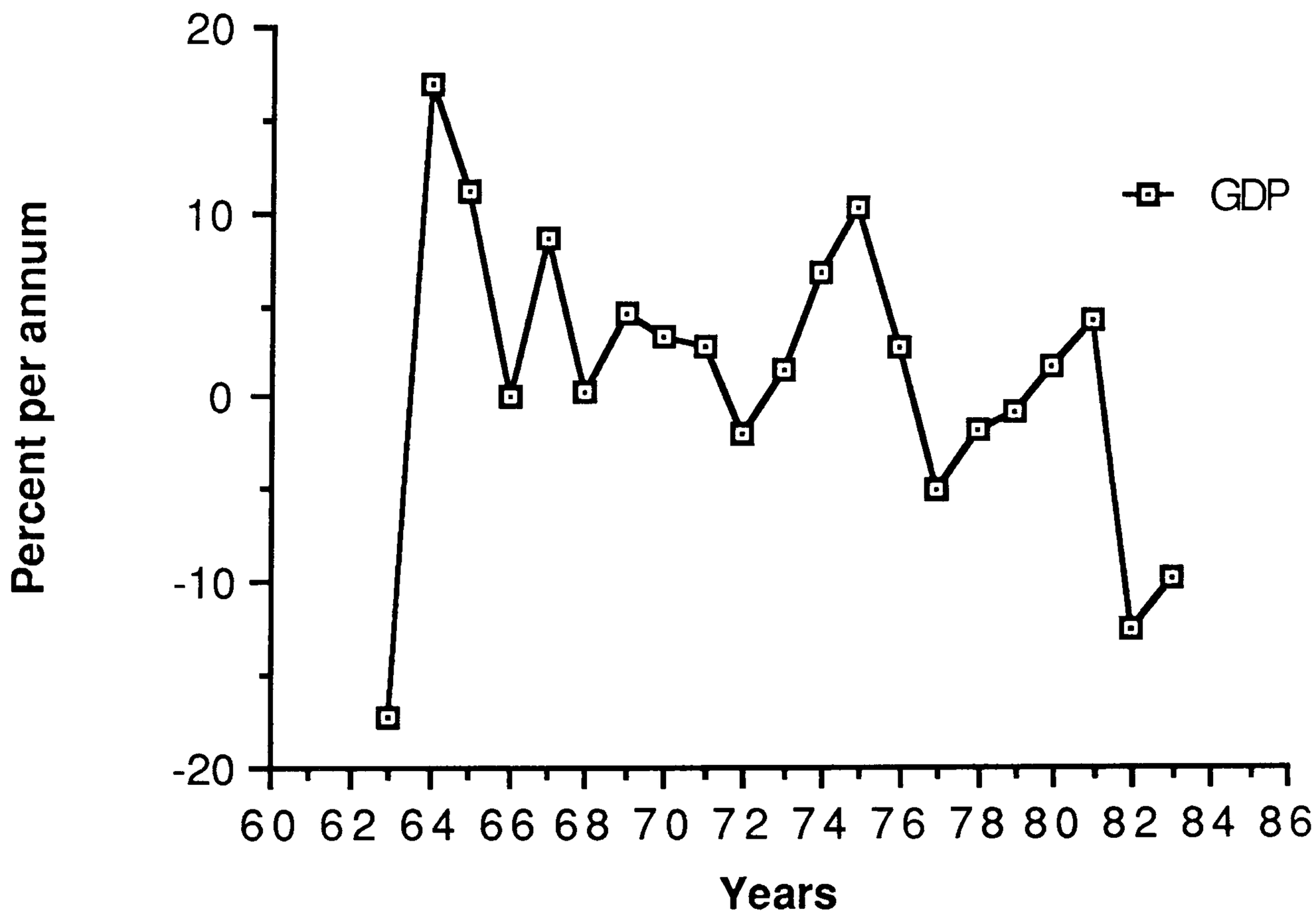
Macroeconomic Performance

Growth

Economic growth is measured by the percentage rate of change in the gross domestic product (GDP). In the 1970s growth was unstable, with only mild recoveries in 1980 and 1981 (Table 1-1 and Chart 1.3).

CHART 1.3

Economic Growth



GDP growth in the 1960s was comparatively fast, except for the years of internal conflict of 1962-63. The racial and ethnic conflicts and industrial disputes in 1960-63 may have inhibited growth, which may account for the fall in GDP during 1963. The economy recovered during 1964-65, with growth rates of 16.9% and 11.1% respectively. In the first part of the 1970s, GDP growth was positive except for 1972. Growth between 1973-76 resulted from increased revenues from the main export commodities: sugar and to a lesser extent bauxite. But rapid deterioration in sugar export prices led to a reduction in the growth. After 1975 GDP fell again. Partial recovery was observed in 1980 and 1981. The growth achieved in 1980-81 was due largely to higher export volume from bauxite, alumina and rice. But in 1982 and 1983 GDP declined by -12.4% and -9.6% respectively. The explanation for this decline in economic growth may be attributed to three policies:

(1) The growth in the money supply;

(2) The increased role of government; and

(3) Deficit financing.

These policies were introduced in response to the fall in sugar prices after 1975, and to OPEC's increased price for crude oil in 1973. The reduction in export revenues was not accompanied by an immediate cut in expenditure. In the short run the money supply grew and the fiscal deficit widened.

Money Supply

The initial expansion in the money supply in 1972, and again in 1977, was aimed at maintaining economic activity and employment that

would guarantee a reasonable rate of growth. The recovery in production and exports eluded the economy, and the policy of expanding the money supply continued, except for 1976 and 1979. Table 1-1 shows that until 1970 the growth in money averaged about 10% per annum, but rose by over 15% per annum, between 1971 and 1974. In 1975 it increased by over 41%. The ratio of money supply over GDP rose by over 30% between 1967 to 1971, and from 45% in 1972 to 53% in 1975, with a noticeable reduction in 1976 of 15% (Table 6-1). In the 1980s the ratio continued to rise reaching 70% by 1983.

Public Expenditure

With the increased role of government, public expenditure grew at a phenomenal rate between 1972 and 1976 (Table 1-1). The rate of growth in expenditure was just 13% in 1972, increasing to 43% in 1976. Current expenditure rose from over 22% in 1979 to 36% in 1980, and then declined. The ratio of current expenditure to current revenue also looks unhealthy. Expenditure was over 90% of current revenue by 1970. Between 1971-73, it exceeded 100% and in 1976-83 the gap between expenditure and revenue widened further (Table 1-1).

Fiscal Deficit

The increase in expenditure over revenue resulted in public sector deficits. In the first part of the 1970s, surpluses from public sector corporations operating in sugar and bauxite were used to reduce the current account deficit of the central government. But reduced demand and prices for Guyana's exports after 1975, and a slump in production in sugar and bauxite, caused revenues to decline in these industries,

to a point where central government revenues had to be used to finance deficits in these unprofitable enterprises to maintain employment levels.

The financing needed to bridge this gap was met from two sources. First, increased domestic borrowing from the domestic banking system. Second, by allowing capital inflows to accumulate (which meant that external debt repayments also grew). This fiscal gap led to an increase of the public debt over 100% of GDP after 1974, and 200% of GDP after 1981 (Table 1-1). The growth in expenditure and money more than output were accompanied by inflation.

Inflation

A measure of inflation is taken as the rate of change in the consumer price index (CPI) presented in Table 1-1. In the 1960s, the CPI increased by less than 4% per annum. But in 1972 it rose to 4.96%, and to double digits in 1974. Between 1975-77, it was reduced again to single figure increases. Thereafter, the annual rate remained in double figures. The CPI increased from 8.21% in 1977 to 17.88% in 1979. In 1980 the rate fell to 14.03%, but only to increase to over 20% during 1981 and 1982. In 1983 it fell to 13.3%.

The increase in the CPI after 1977, may have occurred in response to the removal of subsidies, and price control on many consumer goods. This was followed by the devaluation of the Guyana dollar in 1981. These may have impacted on the level of domestic prices. With devaluation imports became more expensive in the short run. Also world inflation may have been transmitted through imports, and exerted

considerable pressure on the domestic price level. This factor may have contributed to the rapid increase in domestic prices in 1981-82. With inflation, exports became less competitive and resulted in a widening of the gap in the balance of payments. A formal treatment of this problem will be attempted later.

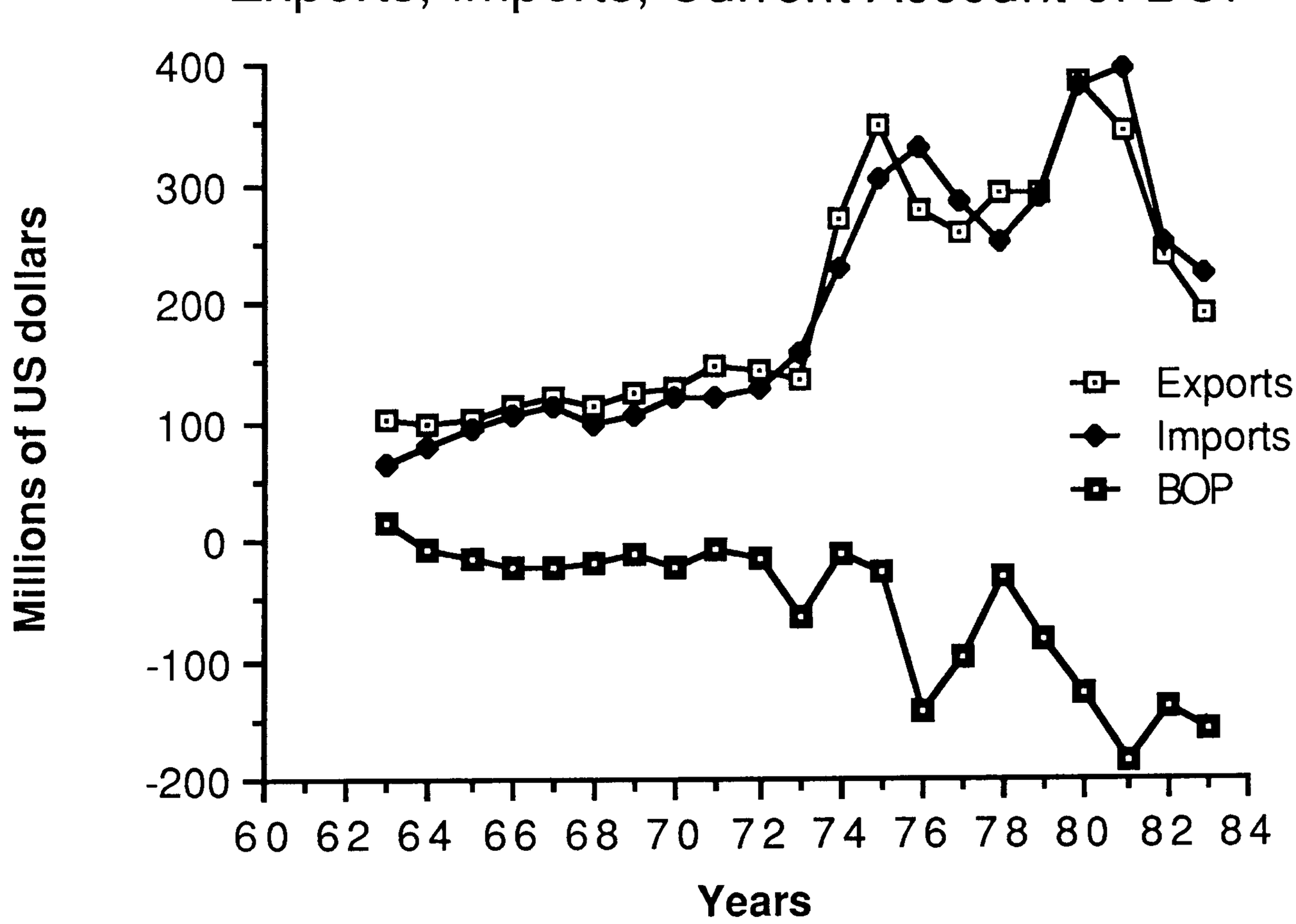
Balance of Payments

A feature of the Guyanese economy, after the first oil shock, was the widening of the gap in the current account of the balance of payments. In the first part of the 1970s, this gap was small and could be financed in the short term. But a phenomenal increase occurred immediately after the fall in export commodity prices in 1975. Table 1-8 presents the statistics, while Chart 1.4 provides a graphical presentation.

The deficit on the current account of the BOP increased from US$ 10.7 million in 1974 to US$ 142.8 million in 1976, with reductions in 1977-79. But the most significant reduction was in 1978 when the deficit was reduced to US$ 29.6 million. This was in direct response to the implementation of the IMF Stand-By Agreement. After 1978 the deficit widened again. It more than doubled in 1979, and accelerated between 1980 to 1983.

CHART 1.4

Exports, Imports, Current Account of BOP



There were minor improvements in the trade balance between 1978 and 1980. However, exports decreased between 1981 and 1983, while imports rose in 1981, but fell in 1982-83. This contributed to some improvement in the current account of the BOP. The deficit widened again in response to an increase in the price of oil in 1980. The import bill for fuels and lubricants rose from G$ 360.6 million in 1979 to G$ 430.7 million or 43% of the import bill in 1980.

The growth of exports in the 1970s was not sustained with unexpected low levels in 1982 and 1983, of US$ 241.4 and US$ 193.3 million respectively. The value of exports in 1983 was at the level of that achieved in 1974. An interesting point is that imports also fell between 1982 and 1983. But the solution to correcting the deficit on the current account depended on a sustained increase in exports.

The overall balance in payments was fragile throughout despite improvements in some years (Chart 1.5). Instability rose after the fall in commodity prices in 1976, with only temporary improvement in 1978, when it was US$ 35.29 millions. It declined to -US$ 40.74 million, -US$ 4.83 million and -US$ 5.79 million in 1979, 1980, and 1981 respectively. The minor improvement in 1982, was reversed with a -US$4.07 million in the following year. With such a fragile BOP position, two options were available. First, the deficit could have been financed either by decumulating domestically held international reserves, or by external borrowing. Second, the deficit could have been corrected through appropriate BOP adjustment policies. In this case, adjustment would require a reduction in expenditure relative to output. A combination of both options was pursued. Initially the policy was to finance the gap in the BOP, thus treating the deficit as a short

term problem. Appropriate BOP adjustment policies were implemented between 1977 and 1978, with the participation of the IMF and the World Bank.

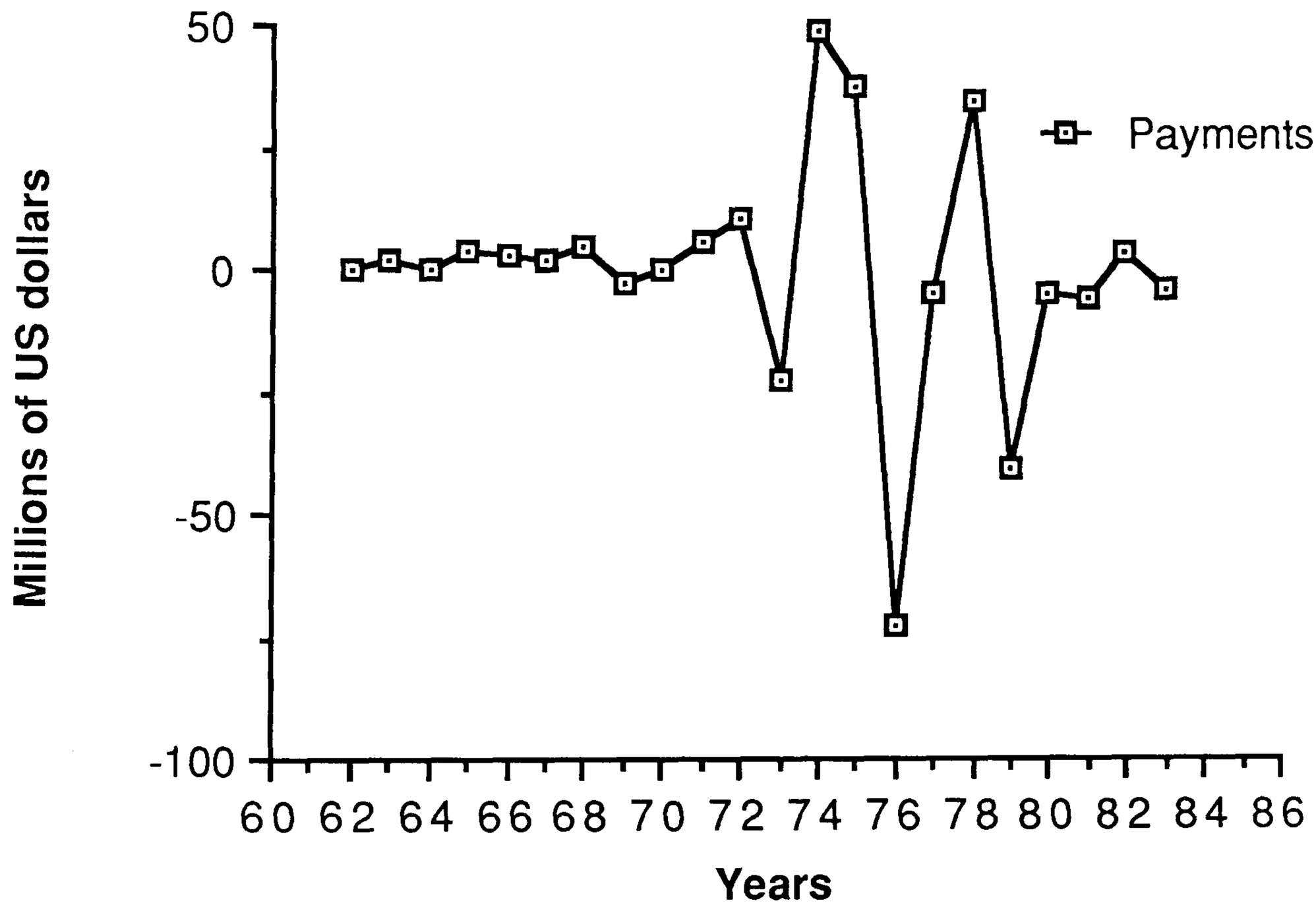
SUMMARY

The unprecedented concentration of resources under state control may have contributed to dissipation and eventual collapse in public finances, and to economic and managerial bottlenecks within the productive sectors. Diversification out of the traditional export base proved unsuccessful with the fall of revenues in 1976. Efforts to sustain expansion in the economy led to the deficit financing. Annual budgets were viewed as extensions of the 1972-76 development plan. But economic adjustment was not achieved. This left an economy similar to the colonial one (Sackey, 1979). The inability to reach economic adjustment was accompanied by a continued deterioration of the economy, from a fiscal deficit to a widening of the gap in the current account of the BOP. The poor performance after 1976, and the inability to improve the BOP, led to the involvement of the IMF and the World Bank. The initial response to the reduction in economic activity and a larger BOP deficit was to treat it as a short term phenomenon, linking its source to the collapse in the price of sugar. But the downturn in economic activity deepened, and occurred at a time when the government had already committed itself to expansion. With no real signs indicating an upturn or sustained improvement in the BOP, the government made its first coherent response to the economic malaise in 1978. It invited the IMF to formulate an appropriate BOP adjustment package. Financing was provided by the IMF to bridge the gap in the

BOP in the short run. The involvement of the IMF is the subject of Chapter Two.

CHART 1.5

Balance of Payments



CHAPTER ONE: NOTES

1. Organisation For Petroleum Exporting Countries.

2. Dos Santos (1970). Dependency theory postulates that the relationship of interdependence between two or more countries, and between those and world trade, assumes the form of dependence when some countries (the dominant ones) can expand and be self-sustaining, while the other countries, (the dependent ones) can only do this as a reflection of that dominant country's development.

3. For a full discussion of the concept of small countries, and their pattern of development, refer to, Demas (1965) and Jainarine (1976).

4. A classification of low-income countries is in Mc Laughlin (1979), Annex A.

5. There is some difficulty in selecting 1960 as the initial year. For one reason, the People's Progressive Party (PPP) formed the government until 1964. The struggle for political independence was at its peak and civil disturbances in opposition to the PPP culminated in conflict, and often fatal clashes between the major ethnic groups, Indians and Africans, in 1963 and 1964. To simplify the analysis one would have preferred to exclude these conflict years.

6. Rice cultivation is adapted from the flood system requiring an extensive system of drainage and irrigation. This system of cultivation is described in Shaw (1984).

7. Refer to Chapters 7 and 8 of David (1969), for a fuller discussion of these issues.

8. Chapter 12 of Hope (1986) presents a review of the performance and failures of planning efforts in Guyana.

9. A departure from the periodisation by HOPE (1985), was necessary to capture and absorb fully the constitutional shift to republican status in February 1970, and to capture the events thereafter.

10. The constitutional changes needed and carried out to establish the Republic are discussed in Lutchman (1974), Seawar eds., (1970). The concept of the Cooperative Republic is discussed in Hope (1975 and 1980), and Singh (1972).

11. This company owned sugar plantations and factories, shipping, insurance, distribution services, pharmaceutical manufacturing, and publishing. These activities were so extensive that the country was often called 'Booker Guiana'.

12. This is the Draft Agricultural Plan, 1986-1989: Ministry of Agriculture, Government of Guyana, Georgetown October 1985. It is usual for these plans to be published in draft form, ever since the 1966-71 plan was published in draft form.

13. There is some difference in how these two tables are computed. Table 1-2 disaggregates sugar cane and paddy production from sugar and rice manufacture. Table 1-3 presents an aggregation of the contributions from these sectors, thereby giving a clearer picture of their relative importance to GDP.

14. It is most difficult to disaggregate the direct contribution of bauxite and alumina from the mining and quarrying sector. However an estimate of 90% is acceptable considering the data in Table 1-2, columns seven and eight.

15. Complete time series on the manufacturing sector are unavailable, which is why it is not treated in any detail in this study.

APPENDIX 1.1 TABLES 1-1 to 1-8

Table 1-1 Selected Macroeconomic Variables (%), 1962-83.

Table 1-2 Sectorial Origin of GDP (MG$), 1962-83.

Table 1-3 Sectorial Origin of GDP (%), 1962-83.

Table 1-4 Selected Mineral Ratios (%), 1962-83.

Table 1-5 Selected Agricultural Ratios (%), 1962-83.

Table 1-6 Selected Mineral Ratios (%), 1962-83.

Table 1-7 Selected Agricultural Ratios (%), 1962-83.

Table 1-8 Selected Balance of Payments Statistics (MUS$), 1962-83.

NOTES FOR TABLES

(1) GDP is gross domestic product.

(2) % is per cent per annum.

(3) MG$ is million of Guyana dollars.

(4) MUS$ is million of US dollars.

TABLE 1-1 SELECTED MACROECONOMIC VARIABLES (%), 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	n.a.	n.a.	n.a.	n.a.	37.81	49.01
1963	-17.28	-9.88	6.78	-6.18	39.37	58.07
1964	16.93	10.96	-6.87	26.41	44.85	48.74
1965	11.09	8.38	2.33	19.36	49.39	46.02
1966	0.00	7.46	11.89	12.98	51.93	47.92
1967	8.69	9.25	5.96	11.54	51.53	46.47
1968	0.26	8.00	15.59	-2.66	46.38	49.89
1969	4.67	8.75	10.35	7.52	46.97	50.64
1970	3.40	6.81	7.60	13.74	50.32	51.01
1971	2.82	5.25	9.75	-0.22	47.63	53.19
1972	-1.98	6.78	2.72	11.32	49.73	51.17
1973	1.71	7.68	-6.04	25.08	57.75	44.65
1974	7.03	48.06	108.33	52.17	59.37	62.83
1975	10.43	24.40	43.12	42.96	68.23	72.28
1976	2.91	-4.38	-17.17	14.41	81.65	62.61
1977	-4.78	-0.97	-7.04	-13.27	71.14	58.77
1978	-1.72	12.71	14.01	-11.56	56.08	59.45
1979	-0.67	4.57	-0.98	13.89	61.07	56.29
1980	1.96	13.73	32.96	24.63	67.00	65.81
1981	4.51	5.90	-1.82	19.71	75.62	61.01
1982	-12.44	-9.46	-25.69	-29.97	58.26	50.07
1983	-9.57	0.62	-21.75	-12.89	51.20	38.93

(Continues on next page).

Notes Table 1-1

n.a. means not available.
(1) Rate of change in GDP, 1980 prices (MG$).
(2) Rate of change in GDP, current prices (MG$).
(3) Rate of change in total exports value (current prices).
(4) Rate of change in imports value (current prices).
(5) Ratio of imports to GDP.
(6) Ratio of exports to GDP.

TABLE 1-1 CONTINUED

Years	(7)	(8)	(9)	(10)	(11)	(12)
1962	n.a	n.a	108.49	35.78	n.a	n.a
1963	1.89	17.13	98.57	42.72	-0.79	8.45
1964	0.31	13.67	105.6	38.29	13.69	13.51
1965	2.77	6.28	106.08	40.88	16.15	46.91
1966	2.10	7.48	98.59	43.96	2.68	-8.10
1967	2.93	11.99	94.62	44.14	4.39	37.29
1968	3.13	12.67	95.71	43.25	11.72	-23.46
1969	1.11	10.45	95.75	46.03	7.48	-1.61
1970	3.55	7.75	93.01	50.13	16.81	-3.28
1971	1.06	16.40	106.23	77.75	8.89	-33.73
1972	4.96	22.26	101.06	83.41	13.29	20.97
1973	7.46	17.31	137.08	98.85	42.92	-6.98
1974	17.59	15.85	79.30	70.44	16.46	47.72
1975	7.68	41.14	67.37	78.51	26.26	7.69
1976	9.14	8.80	122.12	116.23	43.41	0.14
1977	8.21	22.95	117.16	135.72	-9.46	-14.41
1978	15.17	10.62	129.86	137.55	13.95	8.33
1979	17.88	7.11	146.90	157.08	22.26	132.31
1980	14.03	19.25	174.74	168.07	35.94	-23.84
1982	24.70	16.10	145.47	234.72	3.65	-4.35
1982	20.29	27.64	151.04	328.04	1.70	-45.46
1983	13.27	21.07	175.03	401.56	19.15	0.00

(Continues on next page).

Notes Table 1-1
(7) Rate of change in Consumer price index, 1980=100.
(8) Rate of change in money supply, current prices.
(9) Ratio of current expenditure to current revenue.
(10) Ratio of public debt to GDP.
(11) Rate of change in total current expenditures, current value.
(12) Rate of change in private investment, current value.

TABLE 1-1 CONTINUED

Years	(13)	(14)
1962	n.a	n.a
1963	-38.31	-15.18
1964	-20.16	27.32
1965	65.66	16.74
1966	106.09	8.64
1967	-14.20	13.37
1968	41.38	7.46
1969	4.88	9.72
1970	34.88	16.46
1971	14.31	6.41
1972	11.31	19.61
1973	54.47	35.78
1974	35.97	13.21
1975	61.29	37.00
1976	42.00	33.82
1977	-35.21	-9.69
1978	-15.22	-0.67
1979	33.33	17.57
1980	28.46	25.29
1981	25.75	7.79
1982	-23.81	-7.45
1983	4.46	12.18

Notes Table 1-1
(13) Rate of change in public investment, current values.
(14) Rate of change in public consumption, current values.

Sources
Columns 1 to 8, IMF Yearbook 1985 and 1986; Columns 9 to 14, Annual Reports of the Bank of Guyana, 1972 and 1983.

TABLE 1-2 SECTORIAL ORIGIN OF GDP (MG$), 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	35.3	13.1	9.7	9.8	6.2
1963	41.9	9.9	7.3	6.9	5.8
1964	32.3	15.5	8.4	8.4	6.5
1965	35.1	15.9	8.8	8.8	7.2
1966	32.6	17.0	9.3	9.2	8.1
1967	38.2	11.9	10.7	8.5	9.1
1968	37.1	12.7	11.5	9.2	8.8
1969	46.4	10.3	13.5	9.9	9.0
1970	42.8	13.7	13.7	10.2	5.1
1971	54.3	11.2	14.5	11.3	5.4
1972	56.7	9.1	15.2	11.7	5.9
1973	49.7	12.8	17.7	13.3	6.8
1974	184.7	25.4	19.7	18.1	8.6
1975	245.8	35.6	21.8	19.8	9.9
1976	141.6	25.0	25.0	24.4	10.0
1977	77.3	49.0	35.3	26.4	12.8
1978	122.0	41.0	38.6	30.5	13.5
1979	123.0	34.0	42.0	37.0	1.5
1980	149.0	41.0	48.0	41.5	17.0
1981	120.0	43.0	54.0	44.0	20.0
1982	95.0	42.0	37.0	22.0	12.0
1983	83.0	34.0	41.0	15.0	13.0

(Continues on next page).

Notes Table 1-2
n.a means not available.
(1) GDP in constant value.
(2) Sugar cane.
(3) Padi and rice.
(4) Other crops.
(5) Livestock.
(6) Fishing.

Sources
(i) Economic Survey of Guyana: 1966, 1970, 1975-76.
(ii) Quarterly Statistical Digest (Guyana), Dec.,1975, and 1981.
(iii) World Bank Report, Number 5592 - GUA May 1985.

TABLE 1-2 CONTINUED

Years	(6)	(7)	(8)	(9)	(10)
1962	6.4	49.9	n.a	16.9	2.0
1963	4.3	35.8	n.a	20.4	3.2
1964	4.9	35.5	n.a	12.1	4.9
1965	6.7	58.9	n.a	13.0	4.3
1966	7.3	64.5	n.a	12.3	4.5
1967	5.4	66.5	n.a	14.1	4.0
1968	6.5	79.4	n.a	13.0	4.2
1969	7.0	86.0	n.a	16.3	2.7
1970	5.1	95.5	n.a	15.0	3.9
1971	5.0	90.7	n.a	19.1	3.2
1972	5.6	89.7	n.a	19.9	2.1
1973	6.0	80.5	n.a	17.5	2.9
1974	7.6	114.8	n.a	64.9	5.9
1975	8.5	141.0	n.a	86.4	6.2
1976	10.0	145.0	n.a	49.4	4.5
1977	10.0	164.2	154.2	27.1	9.2
1978	11.0	178.5	165.0	43.0	8.5
1979	12.0	169.5	159.0	43.0	6.0
1980	15.5	221.0	210.0	49.0	10.0
1981	19.0	101.0	85.0	40.0	11.0
1982	8.0	85.0	n.a	32.0	10.0
1983	7.0	66.0	n.a	28.0	8.0

(Continues on next page).

Notes Table 1-2
(6) Forestry.
(7) Mining and quarrying
(8) Bauxite and alumina.
(9) Sugar manufacture.
(10) Rice milling.

TABLE 1-2 CONTINUED

Years	(11)	(12)	(13)	(14)	(15)
1962	7.1	9.5	36.6	22.1	20.8
1963	8.3	7.8	33.7	18.2	13.8
1964	11.1	8.9	39.1	19.9	15.1
1965	12.4	12.2	39.7	20.9	17.1
1966	13.1	12.7	43.1	23.5	22.0
1967	14.4	14.1	44.7	24.6	25.3
1968	16.1	16.3	51.3	25.9	30.0
1969	17.4	16.8	52.3	27.3	35.4
1970	18.4	19.7	53.5	27.7	36.8
1971	18.1	20.9	54.5	29.8	38.6
1972	19.5	22.4	58.7	32.8	42.7
1973	20.0	23.9	64.4	36.8	47.0
1974	22.2	27.3	80.8	46.3	52.7
1975	27.5	41.5	94.2	49.9	74.4
1976	33.5	47.5	108.1	55.0	85.0
1977	34.1	52.5	100.0	58.0	76.9
1978	34.0	52.0	104.0	65.0	75.0
1979	37.0	60.0	117.0	72.0	85.0
1980	42.0	61.0	115.0	75.0	95.0
1981	55.0	95.0	145.0	90.0	110.0
1982	n.a.	80.0	68.0	63.0	64.0
1983	n.a.	63.0	55.0	63.0	61.0

(Continues on next page).

Notes Table 1-2
(11) Food, tobacco and drink.
(12) Other manufacturing including power.
(13) Distribution.
(14) Transport and communications.
(15) Engineering and construction.

TABLE 1-2 CONTINUED

Years	(16)	(17)	(18)	(19)
1962	8.5	9.0	13.7	30.5
1963	8.7	8.7	12.3	28.1
1964	8.3	9.0	12.7	32.3
1965	8.4	9.9	13.6	39.9
1966	8.5	11.0	15.0	45.1
1967	9.5	11.6	15.7	50.1
1968	9.8	12.5	16.0	51.9
1969	10.3	13.4	17.0	55.2
1970	10.8	16.3	17.7	64.5
1971	11.3	18.4	19.1	73.1
1972	11.9	19.1	19.7	87.8
1973	12.5	22.0	21.6	121.2
1974	13.7	27.0	23.5	126.6
1975	15.0	34.7	25.6	159.8
1976	16.0	38.0	27.0	180.0
1977	16.4	42.8	26.8	200.5
1978	17.0	44.0	28.0	230.0
1979	17.0	45.0	30.0	234.0
1980	18.0	54.0	34.0	250.0
1981	23.1	64.0	40.0	276.0
1982	16.0	40.0	21.0	191.0
1983	16.0	40.0	21.0	187.0

Notes Table 1-2
(16) Rent of dwellings.
(17) Financial services.
(18) Other services.
(19) Government.

TABLE 1-3 SECTORIAL ORIGIN OF GDP (%), 1962-83

Years	(1)	(2)	(3)	(4)
1962	17.1	5.0	3.2	3.2
1963	22.8	4.8	2.5	2.7
1964	14.8	6.8	2.8	2.8
1965	14.7	6.3	2.6	2.9
1966	12.5	5.7	2.2	2.9
1967	14.0	4.2	2.3	2.9
1968	11.8	4.2	2.3	2.8
1969	13.8	3.0	2.3	3.1
1970	12.4	3.6	2.2	2.9
1971	14.8	2.9	2.3	2.9
1972	14.5	2.1	2.2	2.9
1973	11.7	2.8	2.3	3.1
1974	28.9	3.4	1.7	2.2
1975	30.5	3.8	1.8	2.0
1976	18.6	2.9	2.4	2.4
1977	10.3	5.6	2.6	3.1
1978	14.5	4.4	2.7	3.4
1979	14.1	3.4	3.1	3.6
1980	14.8	3.8	3.1	3.6
1981	11.9	4.0	3.2	4.0
1982	8.9	5.0	4.0	5.2
1983	8.3	4.2	3.3	6.3

(Continues on next page).

Notes Table 1-3
(1) Sugar.
(2) Rice.
(3) Livestock.
(4) Other agriculture.

Sources
Annual Reports of the Bank of Guyana: 1972, 1983 and 1984.

TABLE 1-3 CONTINUED

Years	(5)	(6)	(7)	(8)	(9)	(10)
1962	1.1	2.1	16.4	2.3	3.1	12.0
1963	1.2	1.6	13.1	3.0	2.9	12.4
1964	1.3	1.6	17.8	3.7	3.0	13.0
1965	1.4	1.6	16.6	3.9	3.7	12.1
1966	1.4	1.8	17.2	3.9	3.7	12.3
1967	1.4	1.4	17.7	3.8	3.8	11.9
1968	1.2	1.4	19.6	4.0	4.0	12.7
1969	1.1	1.3	19.6	4.0	3.8	11.9
1970	1.1	1.1	20.4	3.9	4.2	11.5
1971	1.1	1.0	18.3	3.7	4.2	11.0
1972	1.1	1.1	16.9	3.7	4.2	11.1
1973	1.2	1.0	13.9	3.5	4.1	11.2
1974	1.2	0.9	13.5	2.7	3.1	8.9
1975	0.9	0.8	13.0	2.5	3.8	8.7
1976	0.9	0.9	14.2	3.3	4.5	10.6
1977	1.3	0.9	16.2	3.4	5.2	9.8
1978	1.2	0.9	15.7	3.0	4.6	9.2
1979	1.4	1.0	14.0	3.1	5.1	9.9
1980	1.2	1.2	16.5	3.1	4.6	8.6
1981	1.5	1.4	7.5	4.1	7.0	10.7
1982	1.8	2.0	7.0	10.8	n.a.	9.8
1983	2.3	2.5	1.4	10.4	n.a.	10.0

(Continues on next page).

Notes Table 1-3
(5) Fishing.
(6) Forestry.
(7) Mining and quarrying.
(8) Food and tobacco.
(9) Other manufacturing.
(10) Distribution.

TABLE 1-3 CONTINUED

Years	(11)	(12)	(13)	(14)	(15)	(16)
1962	7.3	6.8	2.8	3.0	4.5	10.0
1963	6.7	5.1	3.2	3.2	4.5	10.3
1964	6.6	5.0	2.7	3.0	4.2	10.9
1965	6.6	5.3	2.6	3.0	4.3	12.4
1966	6.8	6.4	2.6	3.3	4.4	12.8
1967	6.6	6.8	2.5	3.1	4.2	13.4
1968	6.4	7.4	2.4	3.1	3.9	12.8
1969	6.2	8.1	2.4	3.1	3.9	12.6
1970	5.9	7.9	2.3	3.5	3.8	13.2
1971	6.0	7.8	2.3	3.7	3.9	14.1
1972	6.2	8.1	2.2	3.6	3.7	16.4
1973	6.4	8.1	2.2	3.8	3.7	21.0
1974	5.1	6.2	1.6	2.9	2.9	14.9
1975	4.6	6.2	1.4	3.2	2.2	14.6
1976	5.4	8.3	1.6	3.7	2.6	17.6
1977	5.7	7.6	1.6	4.2	2.3	19.8
1978	5.7	6.6	1.5	3.8	2.5	20.3
1979	6.1	7.2	1.4	3.8	2.5	19.8
1980	5.6	7.1	1.3	4.0	2.5	18.7
1981	6.7	8.1	1.7	4.7	3.0	20.4
1982	6.8	7.6	2.0	6.4	3.6	19.0
1983	8.2	8.2	2.2	7.3	4.0	21.3

Notes Table 1-3
(11) Transport and communication.
(12) Engineering and construction.
(13) Rent of dwellings.
(14) Financial services.
(15) Other services.
(16) Government.

TABLE 1-4 SELECTED MINERAL RATIOS (%), 1962-83

Years	(1)	(2)	(3)
1962	13.87	19.00	45.34
1963	12.76	14.70	59.14
1964	16.40	18.55	69.21
1965	18.01	22.45	59.89
1966	17.70	23.93	58.52
1967	16.86	26.08	48.93
1968	14.41	29.34	55.95
1969	16.42	31.18	53.55
1970	17.07	33.87	52.44
1971	13.57	32.14	58.29
1972	9.43	33.70	68.73
1973	10.21	37.50	70.46
1974	7.92	25.55	80.06
1975	7.90	23.83	79.72
1976	9.05	31.53	84.98
1977	11.87	38.22	83.70
1978	10.77	33.21	80.62
1979	7.19	36.59	79.93
1980	11.23	37.09	83.05
1981	9.35	34.69	76.89
1982	4.97	36.57	77.72
1983	5.30	40.88	64.77

Notes Table 1-4

(1) Ratio of export value of alumina to total exports.
(2) Ratio of export value of (dried and calcined) bauxite to total exports.
(3) Ratio of calcined bauxite export value to total bauxite exports.

Sources

Economic Survey of Guyana: 1966, 1970 and 1975-76; International Financial Statistics, IMF Yearbook 1985; World Bank Report No.5592 - GUA May 1985.

TABLE 1-5 SELECTED AGRICULTURAL RATIOS (%), 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	36.22	6.50	n.a	n.a	n.a
1963	42.11	6.81	-12.0	24.1	-3.0
1964	33.11	8.80	-14.0	-26.8	-18.5
1965	32.35	7.44	14.0	0.0	19.7
1966	29.67	8.26	4.5	2.6	-6.6
1967	31.49	7.01	5.0	12.5	19.0
1968	30.83	7.91	3.8	13.5	-7.9
1969	32.61	7.75	7.2	16.7	15.1
1970	26.66	7.31	-8.8	-12.0	-9.2
1971	27.92	7.86	14.5	14.9	11.4
1972	29.89	8.89	-15.6	10.0	-14.7
1973	26.28	11.65	-18.1	-17.4	-15.5
1974	47.60	9.09	31.9	277.3	28.3
1975	41.75	9.67	-12.6	25.5	-11.9
1976	36.37	9.94	10.7	-27.8	10.7
1977	28.09	12.81	-30.0	-28.2	-27.4
1978	31.12	9.54	39.0	26.3	34.5
1979	30.89	10.74	-8.9	-1.7	-8.2
1980	31.00	11.90	-10.5	33.4	-9.7
1981	31.08	12.29	10.9	-1.6	11.7
1982	36.41	11.46	-3.4	-12.9	-4.4
1983	38.62	14.40	-16.5	-17.0	-12.4

Notes Table 1-5
(1) Ratio of sugar export value to total exports.
(2) Ratio of domestic sale of sugar volume to sugar production.
(3) Rate of change in sugar exports (ooo'tons).
(4) Rate of change in sugar exports value, current prices.
(5) Rate of change in sugar production (ooo'tons)
Sources Annual Statistical Abstract of Guyana, 1970; Annual Report Guyana Sugar Corporation, 1985; and Thomas (1984).

TABLE 1-6 SELECTED MINERAL RATIOS (%), 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1963	-28.46	-8.22	-49.62	-38.20	6.50	7.80
1964	-1.58	35.26	-20.60	-11.41	31.00	38.00
1965	32.62	3.42	115.50	61.30	5.30	7.20
1966	28.71	4.13	21.21	23.30	-0.04	17.00
1967	12.72	-6.55	19.10	42.20	-6.70	-4.40
1968	7.50	24.63	-2.50	12.50	28.00	49.20
1969	8.84	9.71	17.90	23.60	10.90	12.20
1970	8.79	7.45	9.80	19.70	7.80	14.50
1971	-8.17	2.60	-10.80	-8.70	-1.80	15.70
1972	-21.45	-2.39	-20.20	-19.30	-5.50	27.00
19733	1.70	-8.23	1.40	-1.20	1.90	7.20
1974	-16.37	14.15	-18.20	-13.80	15.50	65.30
1975	-3.92	7.16	0.70	50.90	0.70	30.00
1976	-28.22	-6.30	-39.80	-18.80	-5.30	17.00
1977	-9.30	-2.74	6.90	22.30	-5.20	10.90
1978	16.27	-19.61	12.20	17.70	-16.60	-4.60
1979	3.62	-0.35	2.10	12.90	-6.20	8.20
1980	-5.10	4.23	-1.30	13.90	9.40	40.00
1981	-2.29	-14.70	-10.30	25.20	-17.70	-15.00
1982	-2.44	-23.76	-30.50	-24.50	-25.20	-20.80
1983	-20.56	-19.48	18.60	38.30	-12.60	-27.10

Notes Table 1-6
(1) Rate of change in dried bauxite production, (ooo'tons).
(2) Rate of change in calcined bauxite production, (ooo'tons).
(3) Rate of change in dried bauxite exports, (ooo'tons).
(4) Rate of change in dried bauxite exports value, current prices.
(5) Rate of change in calcined bauxite exports, (ooo'tons).
(6) Rate of change in calcined bauxite exports value, current prices.

Sources
Economic Survey of Guyana: 1966, 1970, 1975-76; World Bank Report No. 5592 - GUA May 1985.

TABLE 1-7 SELECTED AGRICULTURAL RATIOS (%), 1962-83

Years	(1)	(2)	(3)	(4)
1962	16.24	76.67	68.13	13.68
1963	17.59	108.84	75.90	12.24
1964	9.69	65.43	54.39	14.37
1965	6.85	65.98	61.49	14.59
1966	8.28	71.08	57.21	11.37
1967	9.06	89.60	78.80	12.76
1968	7.61	73.15	68.91	11.40
1969	9.93	63.00	56.23	7.80
1970	9.21	56.43	41.67	6.66
1971	10.33	65.42	56.25	7.13
1972	13.18	86.61	74.07	8.25
1973	17.91	68.27	43.45	8.68
1974	17.41	53.92	35.52	8.17
1975	33.75	77.50	51.25	9.88
1976	41.82	110.91	64.55	10.34
1977	21.75	69.98	31.16	10.10
1978	21.43	68.68	57.58	12.74
1979	25.49	85.43	58.61	10.82
1980	22.24	76.32	47.90	8.82
1981	18.40	77.30	47.12	11.29
1982	23.46	61.68	19.16	8.38
1983	28.12	54.40	28.25	11.46

(Continues on next page).

Notes Table 1-7
(1) Ratio of domestic sales of rice to production, volume.
(2) Rice purchased by the Guyana Rice Board as a ratio of production, volume.
(3) Ratio of exports of rice to production, volume.
(4) Ratio of export value of rice to total exports.

Sources
Annual Statistical Abstract of Guyana, 1970; Economic Survey of Guyana, 1975-76; and World Bank Report No. 5592 - GUA May 1985.

TABLE 1-7 CONTINUED

Years	(5)	(6)	(7)
1963	-4.40	-11.75	-20.79
1964	9.30	8.58	51.51
1965	3.80	19.58	5.77
1966	-12.80	-10.06	-3.34
1967	18.90	9.65	-20.39
1968	3.60	-5.80	7.72
1969	-24.50	-33.86	-18.95
1970	-8.10	-4.82	28.43
1971	17.70	13.83	-15.67
1972	18.80	3.26	-21.58
1973	-1.20	-31.42	16.90
1974	96.00	62.80	30.00
1975	73.10	61.42	11.89
1976	-13.20	-13.42	-31.25
1977	-9.20	-7.18	92.27
1978	43.70	59.03	-13.95
1979	-15.80	-20.13	-21.54
1980	8.30	-4.78	16.53
1981	25.70	-3.64	-2.04
1982	-44.80	-55.34	9.82
1983	6.90	21.57	-17.54

Notes Table 1-7
(5) Rate of change in rice exports value, current prices.
(6) Rate of change in rice exports, 000'tons.
(7) Rate of change in rice production, 000'tons.

TABLE 1-8 SELECTED BALANCE OF PAYMENTS STATISTICS (MUS$), 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	n.a	n.a	n.a	n.a	n.a
1963	15.3	100.8	62.9	37.9	1.81
1964	-6.8	98.8	80.1	18.7	-0.35
1965	-15.5	103.3	95.2	8.1	3.57
1966	-22.3	112.2	105.2	7.0	3.22
1967	-21.5	122.0	113.6	8.4	1.95
1968	-17.2	113.0	96.4	16.6	4.70
1969	-12.0	123.8	105.5	18.3	-3.00
1970	-21.8	129.0	119.9	9.1	-0.15
1971	-6.6	145.9	120.4	25.5	5.76
1972	-16.3	143.6	128.9	14.7	10.59
1973	-64.5	135.7	159.4	-23.7	-22.78
1974	-10.7	270.1	230.3	39.8	48.60
1975	-24.6	351.4	305.8	45.6	37.93
1976	-142.8	279.5	330.9	-51.4	-73.22
1977	-97.5	259.3	286.7	-27.4	-4.30
1978	-29.6	295.6	253.5	42.1	35.29
1979	-82.9	292.7	288.8	3.9	-40.74
1980	-128.5	388.9	386.4	2.5	-4.83
1981	-183.5	346.4	399.6	-53.2	-5.79
1982	-141.3	241.4	254.2	-12.7	3.65
1983	-157.5	193.3	225.7	-32.4	-4.07

Notes Table 1-8
(1) Current account of the balance of payments.
(2) Exports value f.o.b.
(3) Imports value f.o.b.
(4) Merchandise trade balance.
(5) Balance of Payments.
Sources
International Financial Statistics, IMF Yearbook 1985.

APPENDIX 1.2: SELECTED STATISTICS AND CHRONOLOGY OF EVENTS

(A) Selected Statistics.

1. Area, (sq. km.)	214,970
2. Population (mid-1983)	779,000
3. Rate of growth of population, percent (1970-83)	1
4. Density of population (per sq. km.)	0.7
5. Population characteristics (1984)	
(a) Crude birth rate (per 1,000)	29.3
(b) Crude death rate (per 1,000)	7.6
(c) Infant mortality (per 1,000 live births)	45.0
(d) Life expectancy (1975-80,Years)	69.1
6. Health and Nutrition (1980)	
(a) Population per physician	7,350.0
(b) Population per hospital bed	200.0
(c) Calorie intake as a percent of requirements	117.0
(d) Per capita protein intake	65.0
7. Social statistics (1980) (all percent).	
(a) Adult literacy rate,	91.3
(b) Primary school enrollment,	87.0
(c) Access to piped water, urban population,	95.4
(d) Access to piped water, rural population,	71.8
(e) Access to electricity, urban population,	90.8
(f) Access to electricity, rural population,	59.8

(B) 1950-84 EVENTS IN CHRONOLOGICAL ORDER.

1950	PPP founded by Dr. Jagan.
1953	First elections under universal adult suffrage.
1953	Constitution suspended after 135 days.
1955	PNC formed from split in PPP led by Burnham.
1957	PPP wins general elections.
1960	Development programme, 1960-64.
1961	PPP wins general elections.
1963	80-day general strike.
1963	Rioting and social disorder.
1963-64	Racial violence between Indians and Africans.
1963-64	Opposition Parties denounce PPP as Communist.
1964	Elections under system of proportional representation.
1964	PPP 24 seats, PNC 22 seats and UF 7 seats.
1964	PNC and UF form colation Government.
1964	Burnham becomes leader of government.
1964	Agreement with Venezuela on border dispute.
1966	Independence, British Guiana becomes Guyana.
1966	Burnham first Prime Minister.
1966-67	Development Plan, 1966-72.
1968	General elections, PNC wins majority.
1968	The United Force (UF) dropped from coalition.
1970	Monarchical system changed to republican system.
1970	President replaced Governor General.
1970	Establishment of the Cooperative Republic.
1970	Protocol of Port of Spain signed.
1970	Border dispute frozen for 12 years.

1971	Nationalisation of Demerara Bauxite Company.
1972-73	Development Plan, 1972-76.
1973	General elections.
1972-76	Further nationalisations of foreign enterprises.
1972-76	Financial institutions escape nationalisation.
1973-75	OPEC oil shock.
1974-75	Boom for sugar and bauxite prices.
1975	Declaration of Socialism as economic/political system.
1972-76	Expansion of state sector.
1975	Policy of 'Paramountcy of the Party' announced.
1977-81	Economic crisis.
1978	Referendum to change the Constitution.
1977-81	Introduction of Roll Over One Year plans.
1978-82	The IMF and World Bank stabilisation schemes.
1979	Formation of a new political party, WPA.
1980	New Constitution promulgated.
1980	New Constitution creates Executive President.
1981-83	Continuation of IMF and World Bank programmes.
1984	Partial recovery of the economy.

CHAPTER ONE: REFERENCES

Daly, V.T. (1974), The Making of Guyana, Macmillan Educational Ltd., London.

Daly, V.T. (1975), A Short History of The Guyanese People, Macmillan Educational Ltd., London.

David, W.L. (1969), The Economic Development of Guyana: 1953-1964, Clarendon Press, Oxford.

Demas, W. (1965), The Economics of Development in Small Countries with Special Reference to The Caribbean, McGill University Press, Montreal.

Dos Santos, T. (1970), The Structure of Dependence, American Economic Review, Vol.60, No.2.

Graham, R. (1982), The Aluminium Industry and The Third World, Zed Press, London.

Grant, C.H. (1973), Political Sequel to Alcan Nationalisation in Guyana: The International Aspects, Social and Economic Studies, Vol.22, No's.1-4.

Henfrey, C.V. (1972), 'Foreign Influence in Guyana: The Struggle for Independence'in Kadt, E.D. Patterns of Foreign Influence in the Caribbean. Oxford University Press.

Hope, K.R. (1975), National Co-operative Commercial Banking and Development Strategy in Guyana, The American Journal of Economics and Sociology, Vol.34, No.3, July.

Hope, K.R. (1975), Co-operative Socialism and the Co-operative Movement in Guyana, Review of International Co-operation, Vol.68, No.2.

Hope, K.R. David, W. and Armstrong, A. (1976), Guyana's Second Development Plan 1972-76: A Macro-Economic Assessment, World Development, Vol.4, No.2.

Hope, K.R. (1979), Development Policy in Guyana: Planning Finance and Administration, Westview Press Boulder, Colorado.

Hope, K.R. (1980), The Socio-Economic Impact of Co-operative Socialism in Guyana, Man and Development, Vol.2, September.

Hope, K.R. (1985), Guyana: Politics and Development in an Emerging Socialist State, Mosaic Press, New York and London.

Hope, K.R. (1986), Economic Development in The Caribbean, Praeger, New York and London.

Jagan, C. (1972), The West on Trial: The Fight for Guyana's Freedom, Seven Seas Publishers, Berlin GDR.

Jainarine, I. (1976), Trade and Underdevelopment: A Study of the Small Caribbean Countries and Large Multinational Corporations, Institute of Development Studies, University of Guyana, Turkeyen.

Jeffrey, H.B. and Barber, C. (1986), Guyana, Politics, Economics, and Society. Beyond the Burnham Era, Frances Pinter (Publishers), London and Lynne Reinner Publishers Inc., Boulder Colarado.

Kundu, A. (1963), Inter-industry Table For The Economy Of British Guiana, 1959 and National Accounts 1957-60, Social and Economic Studies, Vol.12, No.1, Supplement.

Lewis, W.A. (1950), The Industrialization of The British West Indies, Caribbean Economic Review, Vol.2, No.1.

Lewis, W.A. (1954), Economic Development with Unlimited Supplies of Labour, Manchester School of Economics and Social Studies, University of Manchester.

Lutchman, H.A. (1974), From Colonialism to Co-operative Republic: Aspects of Political Development in Guyana, Institute of Caribbean Studies, University of Puerto Rico.

Lutchman, H.A. (1982), The Presidency in the Constitution of the Co - operative Republic of Guyana, Transition, Issue 6.

Mandle, J.R. (1973), The Plantation Economy, Population and Economic Change in Guyana, 1838-1960, Temple University Press, Philadelphia.

Mandle, J.R. (1976b), Continuity and Change in Guyanese Underdevelopment, Monthly Review, September.

Mandle, J.R. (1982), The Post-Colonial Mode of Production in Guyana, in Mandle, J.R. Patterns of Caribbean Development: An Interpretive Essay on Economic Change. Gordon and Breach Science Publishers, New York and London.

McLaughlin, M.M. (1979), The United States and World Development, Agenda,1979, Praeger Publishers, New York.

Nascimento, C.A. and Burrowes, R.A. eds., (1970), A Destiny to Mould, Longman Caribbean Limited, Trinidad, Jamaica and London.

Newman, P. (1960), The Economic Future of British Guiana, Social and Economic Studies, Vol.9, No.3.

Richardson, B.C. (1972), The Agricultural Dilemma of the Post-Plantation Caribbean, Inter-American Economic Affairs, Vol.xxv1, Summer.

Richardson, C. (1975), Plantation Infrastructure and Labour Mobility in Guyana and Trinidad, in Safa, H.I. and Dutoit, B.M. eds., Migration and Development, Implications for Ethnical Identity and Political Conflict, Mouton Publishers, The Hague, and Paris.

Rodney, W. (1981), A History of The Guyanese Working People, 1881-1905, The John Hopkins University Press, Balitmore and London.

Sackey, J.A. (1979), Dependence, Underdevelopment and Socialist-Oriented Transformation in Guyana. Inter-American Economic Affairs, Vol.xxx111, No.1.

Searwar, L. eds., (1970), Co-operative Republic: Guyana 1970, Ministry of Information, Georgetown Guyana.

Singh, P. (1972), Guyana: Socialism in a Plural Society, Fabian Research Series, No.307, October.

Spinner, T.J. Jr., (1984), A Political and Social History of Guyana, 1945-1983, Westview Press, Boulder and London.

Standing, G. and Szal, R. (1979), Poverty and Basic Needs, International Labour Office, Geneva.

Tennassee, P.N. (1982), Guyana: A Nation in Ruins, The Puerto Rican Model Failed, Guyanese Research and Representation Services, Toronto.

Thomas, C.Y. (1974), Dependence and Transformation: the Economics of the Transition to Socialism, Monthly Review Press, New York and London.

Thomas, C.Y. (1976), Bread and Justice: The Struggle for Socialism in Guyana. Monthly Review, September.

Thomas, C.Y. (1982), Guyana: The IMF-World Bank Group and the General Crisis, Social and Economic Studies, Vol.31, No.4.

Thomas, C.Y. (1983), State Capitalism in Guyana: An Assessment of Burnham's Co-operative Republic, in Ambursley, F. and Cohen, R. eds., Crisis in The Caribbean, Heineman Educational Books Ltd., Kingston and London.

Thorne, A.P. (1961), British Guiana's Development Programe, Social and Economic Studies, Vol.10, No.1.

CHAPTER TWO: ECONOMIC ADJUSTMENT PROGRAMMES

INTRODUCTION

At independence in 1966, economic growth was fairly stable, but the production base of the economy was narrow, with only four primary commodity exports, and initially government policy was aimed at diversification of the colonial economy. The proposed programme objectives and strategies are outlined in two development plans, 1966-71 and 1972-76. Implementation of both plans was suspended, mainly because of inadequate capital resources to meet expenditures as set out in the plans. The failure of these two plans to diversify the economy significantly was accompanied by a fall in export revenues after 1975. These two factors led to a fiscal crisis, and balance of payments (BOP) difficulties and economic instability, specially after 1976.

The attempts to expand the productive base of the economy led to a reduction in economic activity, and resulted in BOP disequilibrium. The economic difficulties arising from the BOP deficit were addressed in the annual budget of 1977. In that budget, deflationary measures were introduced to reduce consumption and increase savings. Public expenditure was reduced. This was achieved by removing subsidies on a wide range of items of food, services and energy. Despite the implementation of these policies, the economy deteriorated further. Unable to restore economic growth on its own, the government sought the participation of the International Monetary Fund (IMF) and the World Bank[1] to devise corrective policies to meet the worsening economic decline. The direct involvement of the IMF and Bank Groups

in designing stabilisation and structural adjustment programmes is the subject of this chapter. The objective is to describe the programmes developed by these two institutions in collaboration with the government of Guyana. The programmes devised by both institutions are analysed, but those of the IMF are emphasised, because they are more controversial in nature.

THE IMF AND WORLD BANK 1978-83

IMF and Bank Programmes

The IMF and the World Bank have become increasingly involved in economic management of less developed countries, specially after the oil shock of the 1970s. According to Bacha and Feinberg (1986), Latin America and the Caribbean have received a larger proportion of loans from the Bank than any other geographical region.[2]

World Bank's Involvement

The Bank's involvement is usually at the invitation of the member country. The main instrument is normally in the form of Structural Adjustment Lending (SAL).[3] This type of programme is available to countries which are experiencing a deficit in their BOP, and need to finance such a gap. But the country receives the loan on the condition that it formulates and agrees to implement a structural adjustment programme aimed at correcting the BOP difficulties, which is acceptable to the Bank. The Bank/IDA have been very active in Guyana over the last decade. Their involvement in 1978, 1981 and 1982 are the most significant. In 1978, the Bank/IDA supported an IMF Stand-By

Agreement by providing a loan/credit programme. Again in 1981 the Bank/IDA supported an IMF Extended Fund Facility, (EFF) by providing a structural adjustment loan/credit. This SAL programme in 1981 was revised and strengthened in mid 1982 to support the government's Action Programme.[4] Although the programmes of the Bank/IDA are important, they were complementary to those of the IMF.

IMF Involvement

The IMF's involvement is generally in response to a subscribing member's request to provide that country with temporary financial assistance to correct BOP difficulties. There are basically four arrangements from which member countries can obtain financial support from the Fund:

(a) The Tranche Facility;

(b) The Extended Fund Facility;

(c) The Compensatory Financing Facility; and

(d) The Buffer Stock Financing Facility.

A member may request to purchase from the Fund in the Tranche Facility. But except for purchases in the Gold Tranche,[5] requests for purchases in other facilities require 'adequate safeguards' to be implemented in the economy. Stand-By Arrangements, normally in the higher Tranche are the most frequently used programmes. This facility is designed to correct short term or temporary BOP problems (Reichman and Stillson, 1978).

Guyana negotiated several Stand-By Arrangements with the Fund between 1966-1977.[6] Although these were negotiated, few were implemented, because there was no need before 1977 to make use of the

Fund's resources.[7] The direct participation of the Fund in the economy in 1978-83 resulted in the implementation of a Stand-By Arrangement in 1978. This was followed by a 3-year Extended Fund Facility in 1979, which was later revised and extended in 1981. The development and application of these programmes are now discussed.

Nature of IMF Assistance

The four facilities offered by the Fund can be analysed from two broad perspectives. The first emphasises demand management. This is short term in nature and involves the implementation of stabilisation programmes. The second type of programme emphasises supply management. This is a longer term package and is aimed at structural adjustment.

Under the demand approach, the Fund may administer a stabilisation programme under the Tranche Facility by implementing a Stand-By Agreement lasting for about one year, as it did in Guyana in 1978. Under the supply approach, the Fund may implement a Structural Adjustment Programme under its Extended Fund Facility, and may provide assistance for up to three years as was done in Guyana in 1979. This Facility is a fairly recent development. It was established in 1974 to provide financial assistance in the medium term and to help countries to overcome BOP maladjustment. Frequently the Fund may seek to execute a programme with emphasis on demand management principles, rather than one with supply or growth emphasis. This is because the Fund's Staff are more qualified to deal with short term BOP disequilibrium, than longer term structural adjustment. Furthermore, the demand approach is much more objective, and it is easier to monitor

performance criteria under this approach than under the supply approach (Tanzi, 1987).

In the last decade, the Fund began to look at structural factors, or supply-side elements, which inhibit growth. In short, the narrow demand approach has been widened to include supply-side variables in the design of IMF programmes. Analyses of the application of Fund programmes are widely available. The global ones include Kelly (1982), Reichman and Stillson (1978), Donovan (1981 and 1982) and Reichmann (1978). Those which study Caribbean country experiences include Bulloch (1986), Brown (1981), Thomas (1982) and Sackey (1982). Thomas (1982) is the only available article on the Guyana case. Although it provides good background information on the economy prior to the involvement of the IMF and the Bank, its analysis of the direct participation of these two Groups is based on a political economy approach. The analysis is inconclusive, specially as it relates to the performance of the economy under the adjustment programmes.

Demand Approach

Until 1974 the emphasis of the Fund's programmes was on demand management. The theoretical background of this method grew from both the absorption and monetary approaches to correcting BOP maladjustments. The former approach argues that an excess of imports over exports occurs because of strong domestic absorption in excess of domestic income, or that the growth in domestic investment exceeds domestic savings. This may lead to a deterioration in the BOP position, and would require the pursuit of typical demand policies. The monetary approach looks at the 'overall balance' in the BOP. It suggests that

a BOP disequilibrium results from the gap between the demand for and the supply of the stock of money.

Therefore increasing budget deficits, financed by the Central Bank, can lead to excess domestic absorption in the economy, and results in increases in money creation. A deficit budget may lead to an expansion in domestic activity. This may require appropriate demand policies to correct, or restore the balance in the economy. Therefore the adjustment policies are usually expressed in measures designed to reduce the fiscal deficit on the current account, and a contraction in the rate of expansion of the monetary variables. The role of fiscal deficits and their contribution to external imbalances is reviewed in Kelly (1982).[8]

Supply Approach

The development of the supply approach grew out of the general controversy around whether demand policies in stabilisation programmes inhibit growth in less developed countries (Tanzi, 1987).[9] The implementation of demand policies would bring severe pressures to bear on the living conditions of the ordinary working classes, and thus contribute to opposition to the implementation of such policies (Thomas, 1982).

The IMF itself has reviewed over the years its concept of demand management, and recognised the need to broaden their approach to include supply variables in their analysis. The supply approach focuses on structural factors which inhibit the growth process, and the manner in which factors of production are organised. The

theoretical arguments suggest that economic growth requires that the factors of production grow at an acceptable rate, and that these factors are allocated efficiently.[10] In this context, a supply approach will emphasise institutional reorganisation, removal of quantitative restrictions on trade, foreign exchange and interest rate management, and economic growth. Factors which can affect growth are related to expansion in the export sector.

But the IMF has objectives and conditions under which its programmes are implemented. These need discussion, since it may provide answers as to why Fund programmes are sometimes aborted, or unsuccessfully implemented by member countries.

Objectives of IMF Programmes

The overall objectives of a typical IMF economic programme are to introduce a stabilisation strategy with the aim of correcting balance of payments deficits in the short run, to promote sustainable rates of growth, and to ensure price stability within a stable economic environment. While there is general agreement on the broad objectives, there is some disagreement as to the prime objective of the Fund's programmes. A narrow view is that the Fund will normally emphasise the maintenance of a stable balance of payments position, while placing less emphasis on the other objectives of price stability and economic growth.

The argument of Donovan (1982) is that although the Fund may be successful in improving the BOP position,[11] such policies may run against other established objectives of less developed countries.[12]

For example, policies aimed at reducing demand pressures may retard growth in the short run, and reduce the consumption and standard of living of the population. For this reason the objectives of the Fund's programmes are somewhat unclear at the onset of the implementation of stabilisation programmes. There is no doubt that in the long run the primary objective must be to increase the rate of growth in the economy. This is a reasonable goal since stabilisation and growth are not contradictory policies. The oil shock of the 1970s, accompanied by a fall in prices of primary commodities, and the debt crisis which followed, pushed many countries to pursue stabilisation policies to improve their external imbalances, reduce their rate of inflation and promote growth (Tanzi, 1987). Arising out of the general economic debate, the consensus is that the objectives of the Fund lie within both short and long term perspectives. From a short term position, the aim is to pursue demand management policies to correct imbalances in the external sector. The purpose of the long term programme is an improvement in the BOP, together with minimum disruption of economic growth, or without decreasing economic welfare. But the objective of any IMF programme is narrowed to reflect the individual country's problems at the time when the programme is designed. These can be viewed within the terms and conditions which are agreed upon between the Fund and the member country.

IMF Conditionality

As mentioned before, the participation of the IMF in a member country is at the invitation of that country. The programme is developed within a framework agreed by the two parties. The general condition is that the member country agrees to follow the guidelines

as set out in the programme, and to achieve the programme targets. Only on those conditions is the member able to draw from the Fund's resources. The Fund's financial resources are made available under the following conditions:

(i) That the resources of the Fund are to be utilised to correct maladjustments in the balance of payments;

(ii) That the country agrees to implement "adequate safeguards" to ensure success is achieved at the end of the programme; and

(iii) That the resources of the Fund are provided only on a temporary basis.[13]

Under the Stand-By and Extended Fund Facility Arrangements the policy measures are spelt out more precisely, as will be seen when the Guyana case is discussed. Under these two Arrangements, the Fund expects the member countries to attain over the medium term a 'viable payments' position in the context of reasonable price and exchange stability. Also, to achieve an adequate rate of growth and to introduce a liberal system of multi-lateral payments (Bullock, 1986). Under these conditions the Fund expects the country to be able to overcome not only the short term BOP crisis, but also to be able to sustain a level of growth sufficient to support reasonable levels of consumption and standards of living.

The involvement of the Fund in administering a programme is limited to the level of assistance requested by the member country. The two parties may outline a range of general and specific measures. For example, fiscal ceilings may be set, and can include measures such as changes in taxes or the introduction of new taxes, cuts in public expenditure, the removal of subsidies and the formulation of pricing

policies for public utilities. More often than not, the individual country is left to devise and select specific policy measures which would guarantee that the ceilings in the programme are met. The member country can however request that the Fund provide technical assistance through its staff. In specifying its conditions, the Fund is also aware of the political sensitivities and repercussions that stringent economic measures can entail. It is for this purpose that the IMF insists that a member country should reach agreement with the Fund on the general conditions under which funding may be obtained. Once such agreement is obtained, the Fund expects the programme to be implemented, and that ceilings agreed upon be observed.

In short, the Fund seeks to outline the conditions under which financing may be obtained by a member country. But it takes a minor role in formulating specific policy measures necessary to achieve the targets set out in the programme, unless requested to do so by the borrowing country. The dynamics of these programmes become clearer if a country example is examined. Within the general framework outlined, the participation of the Fund and the Bank in Guyana's recovery programmes is described.

GUYANA'S ECONOMIC PROGRAMMES

Direct involvement of the IMF/Bank Groups in the Guyana economy took place in 1977-84. The invitation to participate was given to these institutions after the government failed to bring about significant change in the structure of the economy. The economy developed balance of payments difficulties which adversely affected growth. There are two distinct phases under which these institutions participated. The

first is a short term stabilisation programme, and the second is a medium term structural adjustment programme.

Short Term Programme

The first direct application to the Fund was in 1978, when the Guyana Government implemented a short term stabilisation programme, supported by an IMF Stand-By Agreement, and a World Bank/IDA Loan/Credit Programme.[14] The duration of the programme was one year, from mid 1978 to mid 1979.

The emphasis of this package was in a demand approach to economic management. In essence the policy objectives were expressed in the desire to reduce the levels of government expenditure, and to increase the level of savings. The agreement included several measures and targets to be met by the end of the period. In general they related to a reduction in the import bill, an increase in taxation and the curbing of public expenditure. The specific measures were aimed at the following:[15]

(a) Restricting net credit to the banking sector. The limits were defined clearly in terms of ceilings to be observed;

(b) To reduce the arrears on external payments for goods and services;

(c) To introduce policies aimed at reducing and keeping the public sector external debt within reasonable limits in the short and medium term;

(d) To achieve a rate of growth of not less than five percent in real terms over the previous year; and

(e) To introduce wage and price restraint policies.

Besides the objective of reducing the BOP deficit, the IMF/Bank Groups were also concerned with the problem of repayment of the external debt. This is expressed in (b) and (c) above. The extent of the public debt has already been mentioned in Chapter One, and the relevant data is presented in Table 1-1 column ten, which shows public debt as a percentage of GDP. The high ratio of debt to GDP was not the only difficulty. The immediate problem was the extent of arrears of debt service charges. The arrears expressed as a percentage of export earnings grew from 4% in 1970 to about 24% in 1978.[16]

The second concern of the IMF/Bank Group was the wage and price policy. Because the government was the largest employer, any wage spiral could have an inflationary impact. Consequently the imposition of wage restraint was recommended. In terms of prices, the recommendation was aimed at reducing distortions in price formation. These policies were expressed in the removal of price controls on a wide range of consumer goods.

Under this agreement, the IMF added a clause which stipulated that failure to observe the performance criteria as set out in the programme would result in a denial of the right to further purchase under the Stand-By Arrangement. This condition was in keeping with the general principles of the Fund's lending policy. It seeks to guarantee that the resources are utilised for the correct policy measures.

Although the main objective under this agreement was a short term one, the Fund/Bank Group also recognised the need to address institutional and structural problems. In recognition of this concern, a longer term programme was negotiated at the end of this Stand-By

Agreement. In August 1979, a three year Extended Fund Facility was agreed between the Fund and the Guyana government.

Long Term Programme

In the period 1979-83 there were two separate Extended Fund Facilities negotiated with the Fund, one in August 1979, and the other in mid 1981. The two facilities were further broadened and merged into a third programme called the Action Programme in May 1982.

Extended Fund Facility 1979

This facility was an extension of the 1978 Stand-By Arrangement. However its objectives were much more extensive and concerned with a wider range of targets to be met. Although the principal task was to bring about economic stability, it focused on the institutional and structural factors as well. Seven major policy measures were agreed upon between the Fund and the government. In addition to the policy instruments of the 1978 Agreement, this new agreement focused more on market forces, debt management and contraction in the size of the public sector. The first category of measures included further elimination of subsidies, price controls, adjustment in energy prices and wage restraint.[17]

The duration of this package was very short. Within a year of its implementation it was aborted. The factors influencing the decision to shorten the life span of this facility were threefold. First, physical production of the main export commodities declined. This was partly due to labour unrest in the sugar and bauxite industries during

1978 and 1979, and partly to the loss of markets for calcined bauxite. Second, the continued deterioration in physical production was accompanied by higher prices for petroleum products in 1979, and unfavourable terms of trade facing domestic exports. Third, the domestic financial imbalance became larger, and public expenditure continued to exceed the ceilings set out in the programme.

Besides these three points, a non-economic factor was that the government was caught up with implementing further constitutional reforms (Lutchman, 1982) and an impending general election. Austerity measures such as those in this package can be unpopular, and no government would want to have them introduced immediately before a general election. The time span between the implementation of this package and the general election in 1980 may have been too short a period to allow the economy to recover. Consequently the government may have opted to delay the implementation of the IMF programme to preserve its popularity with the electorate. If this decision was taken, then the political objectives to remain in government must have been much more important than the economic objectives. The fact is that policymakers evaded the strict economic ceilings as agreed upon in the EFF and set about to formulate a new economic programme in 1980.

The policy objectives and targets were much more broader and less precise than those of the EFF, and as such they were more difficult to quantify in economic terms. From a policy point of view this new programme was a definite departure from the demand approach as pursued earlier.

Extended Fund Facility 1980-81

The formulation of this new programme in 1980 was the responsibility of the government. It aimed at correcting both the short and long term problems of economic stagnation and of structural adjustment. The principal short term objectives were to reduce the level of unemployment and improve the balance of payments. These objectives were to be achieved by an expansion of the export generating and import substituting activities. Several micro and macroeconomic adjustments were proposed, the most important being:[18]

1. An improvement in the rate of utilisation of excess capacity in the export sector. Most industries were operating below their full capacity, because of shortages of imported raw material and skilled manpower;

2. The development of a production-oriented investment scheme in both the private and public sectors; and

3. To encourage and increase domestic savings.

The aim of the long term package emphasised structural adjustment in the economy more explicitly than the Extended Fund Facility of 1979. Its core targets were aimed at:

1. Increased production of the main traditional export commodities in the agricultural sector, in mining, fishing and forestry, with a simultaneous growth in manufacturing activities, and a policy of no further expansion in the public sector;

2. Diversification of economic activities by encouraging the private sector to develop new enterprises which would increase intermediate raw material processing in the forestry and food crop sectors;

3. The development of alternative sources of energy to reduce the pressure on the BOP by reducing the import bill for fossil fuels. The main alternative energy source was hydropower; and

4. Expanding the production base by developing further processing capabilities and vertical integration within existing industries such as bauxite and rice. In the case of bauxite the aim was to develop the capability to produce aluminium. However both the hydropower and the smelting of bauxite into aluminium facilities never materialised.

This new programme was approved by the IMF and World Bank, and benefited from a new three year Extended Fund Facility of SDRs 100 million in 1980, and supplemented by another disbursement of SDRs 150 million in mid 1981. The World Bank also supported this package by offering a structural adjustment loan of US$ 22 million. Both institutions set out precisely the terms and conditions of their agreements which had to be adhered to by the Guyana government. This new facility was also for three years, and its objectives were similar to those of the previous one implemented in 1979. On this occasion the IMF and Bank recognised the need for the implementation of a longer term package which emphasised supply management. Although the specific short term objectives were evident, the longer term structural factors which may inhibit growth were explicitly outlined. The role of the

World Bank was also important. It provided financial assistance to overcome production problems in the key production sectors.[19] In this package, the principal supply variable was expansion of exports, both the traditional sugar, bauxite and rice, and also fisheries and forestry products. Besides the export promotion aspect the package also focused on suitable import substitution activities which could effectively replace imports. The constraints identified included:

(i) Excessive overregulation in the economy;

(ii) Inappropriate pricing policies in the utility enterprises of transportation, electricity and telecommunications; and

(iii) A lack of monetary incentives to managerial and technical staff.

The following specific targets under the EFF included:

(i) An annual rate of growth of about seven per cent;

(ii) Ceilings on the gross international reserves of the banking system, and on net credit to the public sector by all commercial banks;

(iii) To publish an investment code which would outline the relationship between the public and private sectors. This code would establish the role of the private sector and guarantee its place in the future; and

(iv) To improve agricultural yields and labour productivity.

Under the Structural Adjustment Loan, the specific policies identified were:

(i) Energy resource development and conservation;

(ii) The expansion of exports in sugar, rice, fisheries, timber, bauxite/alumina and manufactures;

(iii) Improvement in organisational and managerial efficiency; and

(iv) The implementation of an appropriate price policy for consumer goods and food.

Further this programme detailed specific tasks which needed to be completed and the financial resources necessary for such completion.[20]

Arising out of the conditions of the EFF and SAL programmes was the consensus that the demand approach was probably not sufficient on its own to bring about economic stability. It required also the removal of the obstacles to export growth. The reliance on export promotion was critical to any improvement in overall growth.

Action Programme 1982

Despite the consensus by all parties that a supply approach was needed to bring about stability and growth, there was some disagreement as to the remedial measures needed to correct the problems. This disagreement emerged from the government side. It was expressed in the formulation of yet another programme by the government in May 1982. The policies of this new Action Programme were a further extension of those already described under the SAL of 1981. However it seems that the development of this new programme was influenced more by the World Bank than by the IMF, since the latter stuck to the original EFF negotiated and implemented in 1981. The IMF expected the economy to achieve all the targets set out under that programme.

The Action Programme was more precise in defining policy instruments. The measures were mainly structural in nature. It emphasised the continued implementation of measures as agreed upon in the Bank's SAL of 1981. The main features were:

(a) To involve a foreign mining company in the bauxite industry;[21]

(b) To reduce the state's direct involvement in the rice industry. This included:

(i) a reduction in the functions of the Guyana Rice Board;

(ii) to develop a more efficient marketing system in rice;

(iii) to implement a price policy in rice which would increase producer prices;

(c) To review institutional support in the agricultural sector. This included:

(i) policies aimed at attracting and retaining technical personnel in agriculture; and

(ii) to review land tenure and holding policies as they affected agricultural lands.

(d) To promote an expansion in exports, and to establish a favourable framework within which private investors could participate. The specific instruments were:

(i) expansion in manufacturing activities, geared for exports;

(ii) the implementation of import tax concessions for raw material needed by manufacturers who participated in exports;

(iii) to give priority allocation of foreign exchange to manufacturers engaged in exports; and

(iv) the establishment of a joint private/public export council, with the appointment of a committee to act as liaison between private entrepreneurs and government.

(e) To rationalise the functions and scope of the public sector. The specific measures were:

(i) the limitation of the public sector companies in manufacturing to their present size;

(ii) the development of management capabilities in the public sector, through technology, marketing, partnership arrangements, and equity participation by both foreign and domestic private sectors.

These measures were aimed at dismantling the state sector and to open the economy in a manner which would attract and encourage private enterprise development.

While the government was occupied with formulating and implementing these new measures, the economy continued to decline even further. Consequently in mid 1982 the three year EFF was terminated, because of the failure to meet the targets as set out in the programme. It is not surprising that the EFF was aborted again. It seemed that much more emphasis was placed on formulating and revising formulations on the nature, structure and measures than on implementing and monitoring the stabilisation package. The time span needed to allow the economy to respond was too short, taking into account the numerous policies which were suggested. The poor performance of the economy throughout 1982 and 1983 led to the disruption of the harmonious relationship which existed between the IMF and the government in the 1970s. Both parties looked on each other with suspicion, and this materialised in a hostile relationship in the ensuing years. The government became increasingly defensive and eventually terminated discussions with the Fund. This is evident from the fact that since 1981, Guyana has not concluded another agreement with the Fund. Nevertheless the IMF urged the government to pursue on its own measures along the guidelines as set

out in the 1981 EFF. The World Bank however remained active in Guyana, adopting a more conciliatory role. With the assistance of the Bank some of the policies of the SAL programme were implemented, and these may have resulted in an improvement in economic growth in 1984.

SUMMARY

The discussion of the economic programmes in the 1978-83 period outlined the participation of the IMF and Bank in formulating policy measures. Within a six year period, a number of policy objectives were suggested and implemented. The IMF was involved in three arrangements. Of these only the first agreement in 1978 was fully implemented. The others were terminated in the course of their implementation. The Bank recommended structural adjustment programmes. The policy measures were formulated in collaboration with the government. The initial SAL of 1978 was extended in 1981. This new programme was later reformulated in May 1982. Amidst all these efforts the economy declined further. The fact that several stabilisation and structural adjustment programmes were attempted, raises two points.

(a) That in just over a decade after independence the economy was comparatively new and was still emerging from its colonial structure. Perhaps the programmes attempted were too ambitious for such a small economy.

(b) Second, the attempts to restructure the economy engaged too many resources too rapidly without allowing enough time for the economy to adjust itself.

To quantify these points is a difficult task. A helpful approach in that direction is to examine the performance of selected macroeconomic variables. In this case an examination of the export sector will

provide a clearer indication of the structure of production and exports, which may reveal problems associated with the decline in output. Chapter Three describes the export sector.

CHAPTER TWO: NOTES

1. International Bank for Reconstruction and Development (IBRD). This institution has as its affiliates the International Development Association (IDA), and the International Finance Corporation (IFC).

2. The Bank provided over US$ 32 billions, or a quarter of all their loans to Latin America and the Caribbean since its inception. In the case of Guyana, the cumulative total lent by the Bank/IDA amounted to US$ 118.5 millions, or less than one per cent of the total lent to the entire region.

3. The Bank/IDA also has a Loan/Credit Programme which is a short-term package to correct shorter term malfunctioning of the economy.

4. The Bank/IDA involvement in Guyana was on a regular basis. But their participation in 1978-85 was the most significant in terms of financial assistance. Information on other smaller programmes before 1978 is currently unavailable. This study examines the Bank/IDA assistance to the end of 1983.

5. The Gold Tranche indicates the Fund's holdings of a member's currency. This usually does not exceed 100% of that member's quota, but excludes compensatory financing, which is not subjected to specific performance targets.

6. The involvement of the Fund in Guyana before 1977-78 was kept a secret, because of the general opposition to the use of the Fund's resources. This opposition came both from the main opposition party, the PPP, and from the academic community at the University of Guyana. Information on the Fund's participation before 1978 is therefore unavailable. However according to Sackey (1982), the Guyana government had used the resources of the Fund prior to 1978 on two occasions. The first was when it negotiated the drawings on the first Credit Tranche, and the second, when it used the Compensatory Financing Facility.

7. This was because of two reasons. First, the foreign exchange situation only became critical in 1977, when external reserves dropped to less than US$ 23 millions. Secondly, in the first part of the 1970s Guyana received adequate external capital inflows in the form of foreign aid and loans. Aid was received mainly from Britain and the USA, immediately after the granting of independence. The sources of external borrowing were the international financial markets and the commercial banks.

8. A review of the role of fiscal policy and its merits in correcting BOP maladjustments under the Fund's supported programmes is also found in Tanzi (1986).

9. This paper presents a comprehensive analysis of the development of the controversy.

10. The theoretical arguments for this approach are found in Galbis (1966), and Fry (1978). Arising out of this approach is the

argument that price distortions and institutional restrictions should be removed. Wages, subsidies, marketing boards, quantitative restrictions in trade and other factors which inhibit the market forces from operating freely should be eliminated. The important price variables include the exchange and interest rates.

11. The deterioration in the balance of payments may be caused by a fall in prices of export commodities. This will be expressed normally in a fiscal deficit. There are two options open to the government. The first is to finance this deficit in the short term, or to reduce domestic expenditure in order to reflect the level of income available in the economy. In Guyana the first option was pursued.

12. In most post colonial societies, the immediate tasks of the independent government are to reduce the rate of unemployment, and increase the standard of living of the population. This normally requires an expansion in government expenditure.

13. A detailed discussion of the 'safeguards' and conditions under which IMF financing is available to member countries is in Johnson (1977).

14. The amount of financing which the government of Guyana received from the Fund is estimated at the equivalent of 6.2 million SDRs, by Thomas (1982). The amount lent by the Bank is unavailable.

15. The measures were obtained mainly from Sackey (1982).

16. Despite the fact that Guyana adopted a policy of debt repayment, in practice the debt service payments were credited to a special account in local currency at the Bank of Guyana. Actual payment in foreign exchange was infrequent. This caused a build up in unpaid debt service payments.

17. A summary of the obligations of the government under the 1979 EFF is outlined in Thomas (1982). They include:

(a) The progressive elimination of subsidies;

(b) The elimination of all forms of price control and administrative price fixing;

(c) An adjustment upwards of energy prices to bring them in line with oil price increases internationally.

(d) An increase in interest rates to encourage savings.

(e) The reduction of commercial arrears with foreign suppliers.

(f) No significant or widespread increase in wages in the public sector, and

(g) Increased taxation and a definite exercise of restraint in the growth of the public sector.

18. The policy measures of this new programme were widely published in the local press. This was in contrast to the secrecy made of the IMF programmes. A summary of the programme is found in World Bank Report, (1985), Guyana: A Framework for Economy Recovery, Report No. 5592 Gua. Chapter Two.

19. The participation of the World Bank and its affiliates brought US$ 22 million. The IBRD provided US$ 14 million to finance essential imports, and to establish an export development fund. Essential

imports include equipment and spare parts for the electricity, forestry and fishing and bauxite industries. The remainder of the loan was provided by the IDA for purposes similar to those outlined above.

20. Appendix One to Three of the World Bank Report, Number 5592 - Gua of 1985.

21. The involvement of a foreign mining company in the local bauxite industry became necessary to improve technological capability. The USA's Green Construction Company was contracted to undertake stripping and mining operations for the local bauxite companies. Among the major requirements of the contract were:

(a) Removal of overburden in the East Montgomery mine;

(b) Assume responsibility for the management, administration and supervision of this mine;

(c) Primary and secondary stripping of the overburden;

(d) Repair, service and maintenance of all equipment used in the mining operations; and

(e) Establish a supervisory training programme in the techniques and psychology of supervision. The company's involvement continues up to the present.

CHAPTER TWO: REFERENCES

Bacha, E.L. and Feinberg, R.E. (1986), The World Bank and Structural Adjustment in Latin America, World Development, Vol.14, No.3.

Brown, A. (1981), Economic Policy and the IMF in Jamaica, Social and Economic Studies, Vol.31, No.4.

Bullock, C. (1986), IMF Conditionality and Jamaica's Economic Policy in the 1980s, Social and Economic Studies, Vol.35, No.4.

Donovan, D.J. (1981), Real Responses Associated with Exchange Rate Action in Selected Upper Credit Tranche Stabilisation Programs, International Monetary Fund Staff Papers, Vol.28.

Donovan, D.J. (1982), Macroeconomic Performance and Adjustment Under Fund-Supported Programs. The Experience of the Seventies, International Monetary Fund Staff Papers, Vol.29.

Fry, M. (1978), Money and Capital in Financial Dependency in Economic Development, Journal of Money Credit and Banking, Vol.10, No.4.

Galbis, V. (1966), Financial Intermediation and Economic Growth in Less Developed Countries, Economic Development and Cultural Change, Vol.14, No.2.

Johnson, D.E.G. (1977), Use of Fund Resources and Stand-By Arrangements, Finance and Development, Vol.14, No.1.

Kelly, M.R. (1982), Fiscal Adjustment and Fund-Supported Programs, 1971-80, International Monetary Fund Staff Papers, Vol.29.

Lutchman, H.A. (1982), The Presidency in the Constitution of the Co-operative Republic of Guyana, Transition, Issue No.6.

Reichmann, T.M. (1978), The Fund's Conditional Assistance and the Problems of Adjustment, 1973-75, Finance and Development, Vol.15.

Reichmann, T.M. and Stillson, R.T. (1978), Experience with Programs of Balance of Payments Adjustment, Stand-by Arrangements in the Higher Tranches, 1963-72, International Monetary Fund Staff Papers, Vol.25.

Sackey, J. (1982), The IMF and the BOP Crisis in the Caribbean, Transition, Issue 6.

Tanzi, V. (1986), Fiscal Policy Responses to Exogenous Shocks in Developing Countries, American Economic Review, Papers and Proceedings, Vol.76, May.

Tanzi, V. (1987), Fiscal Policy, Growth, and Design of Stabilization Programs, in Martirena-Matel, A.M. eds., External Debt, Savings, and Growth in Latin America, International Monetary Fund, Washington, D.C.

Thomas, C.Y. (1982), Guyana: The IMF - World Bank Group and the General Crisis, Social and Economic Studies, Vol.31, No.4.

CHAPTER THREE: A DESCRIPTION OF THE EXPORT SECTOR

INTRODUCTION

The adjustment programmes carried out between 1978-84 failed to bring about a sustained reduction in the current account of the BOP, and the gap grew larger in the 1980s. Adjustment policies included export promotion as one of the strategies. In this and two later chapters exports are discussed. In an open economy, dependent on primary products to generate income, the export sector is critical to an improvement in the balance of payments. This Chapter presents a general description of the export sector.

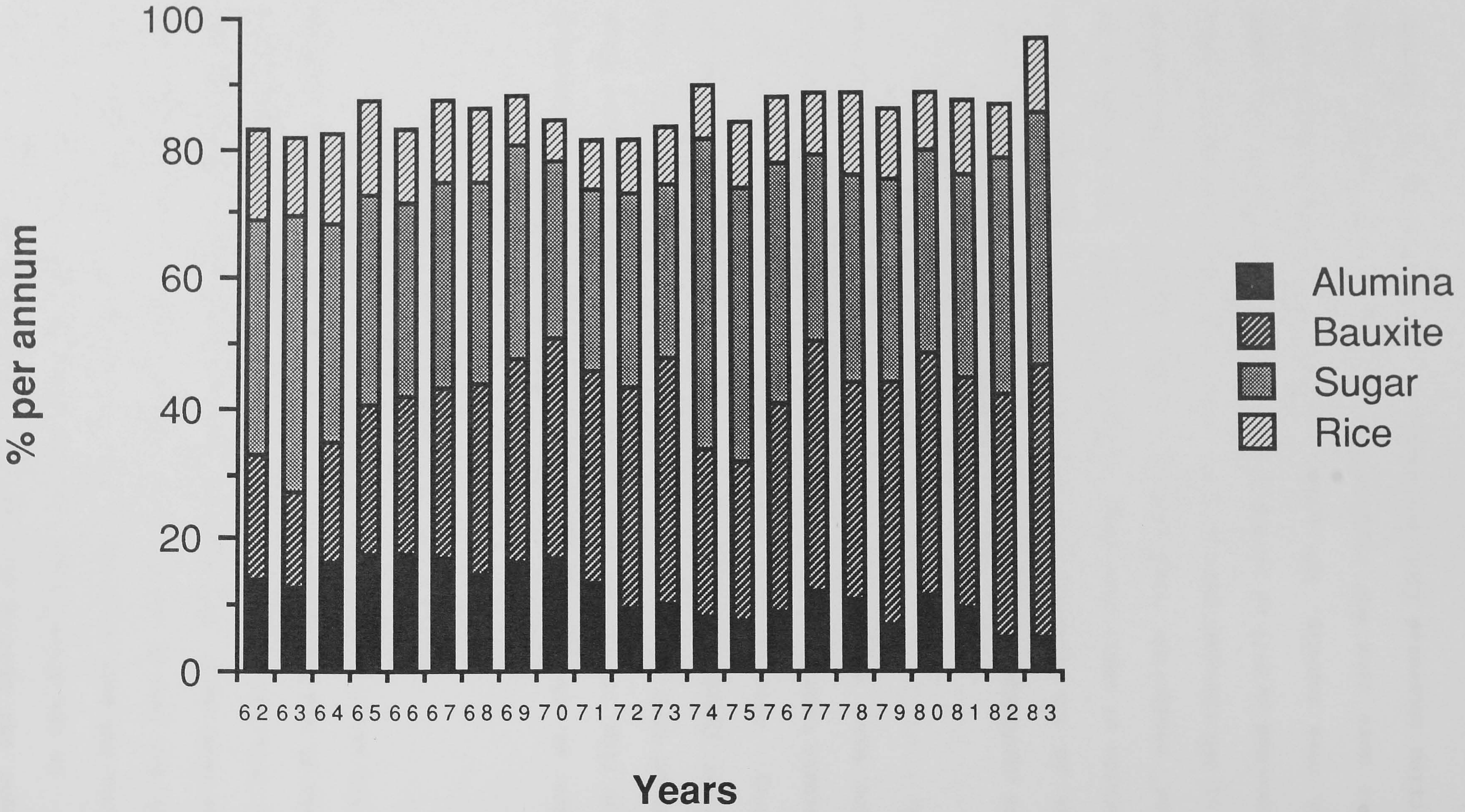
The export sector consists of four main commodities: sugar, rice, bauxite and alumina. These industries were developed in the colonial period and provide the largest share of national income. Their development is important to analysis of the contemporary period. Appendix 3.2 presents a brief overview of their development within the historical context.

EXPORT BEHAVIOUR

Exports grew between 1963 and 1975, except for 1964 and 1973, when they fell by -6.8% and -6.04% respectively. In 1974 and 1975 export values increased substantially, by 108.33% and 43.12%. However between 1976-83, exports fell again, except for 1978 and 1980, when there was positive growth (Table 1-1).

CHART 3.1

Share of Total Exports(%)



Sugar and bauxite were the two largest commodity exports (Chart 3.1). In the 1960s, sugar exports accounted for over 30% of total exports, but were overtaken by bauxite in the first half of the 1970s. Except for 1974-76 the ratio of bauxite exports to total exports was higher than sugar. The alumina share in total exports was above 12% until 1971. For the remainder of the period, its share fluctuated between 5% and 12%. Rice showed a similar trend as alumina (Tables 1-4, 1-5 and 1-7).

SUGAR

Sugar was the largest agricultural crop. The annual area harvested ranged from 100,000 to 140,000 acres. Of this total farmers share increased from 10% in 1971 to around 15% by 1982 (Table 3-1). The study of Thomas (1984) presents a comprehensive description of the industry. Data on total cane harvested is presented in Table 3-1. The annual tonnage of cane harvested ranges between 3.0 million to 4.2 million tons. Farmers cane represented less than a quarter of the total.

The performance of the industry was disappointing, after 1970. Yields in the industry declined considerably.[1] However farmers' production of sugar increased, but remained small when compared to estates' production. Sugar production was unstable, with the highest peak of 369 thousand tons in 1971, while the lowest production level was recorded in 1977 of 242 thousand tons. In the mid 1970s when sugar prices rose rapidly, the industry was able to increase production, because more cane was harvested and milled. For example, sugar production increased from 266 thousand tons in 1973 to 341 thousand

tons in 1974, and fell again to 300 thousand tons in 1975. In 1977, sugar production was at its lowest level because of prolonged industrial disputes.

The industry was linked more to the international, than to the local market, because the latter was comparatively small. The domestic market was below 15% of total production in any year (Table 3-1). The growth in domestic sugar demand was marginal in the 1980s. Local demand was divided between final consumption by households, and by a small confectionery and soft drink industry. Sugar exports in volume represented over 85% of current production. The lowest level of exports of 210 thousand tons was in 1977, with a peak of 340 thousand tons in 1971. In the 1980s sugar exports declined to levels similar to those achieved in the 1960s. Chart 3.2 shows the relationship between production and exports.

The main destination for Guyana's sugar is the European Economic Community (EEC), which accounts for over 50% of total exports, while the U.S. market is second largest (see Chart 3.3).[2] Exports to the EEC are covered by a contractual arrangement made under the Lomé Convention. Under this agreement the entry of sugar from the Commonwealth (consisting of the African Caribbean and Pacific, ACP) countries is given preferential entry and receives a negotiated price agreed on between the ACP and EEC countries. Each group is given a group quota and within each group each country is given an individual quota. This point will be developed later in the chapter.

CHART 3.2

Sugar Production and Exports

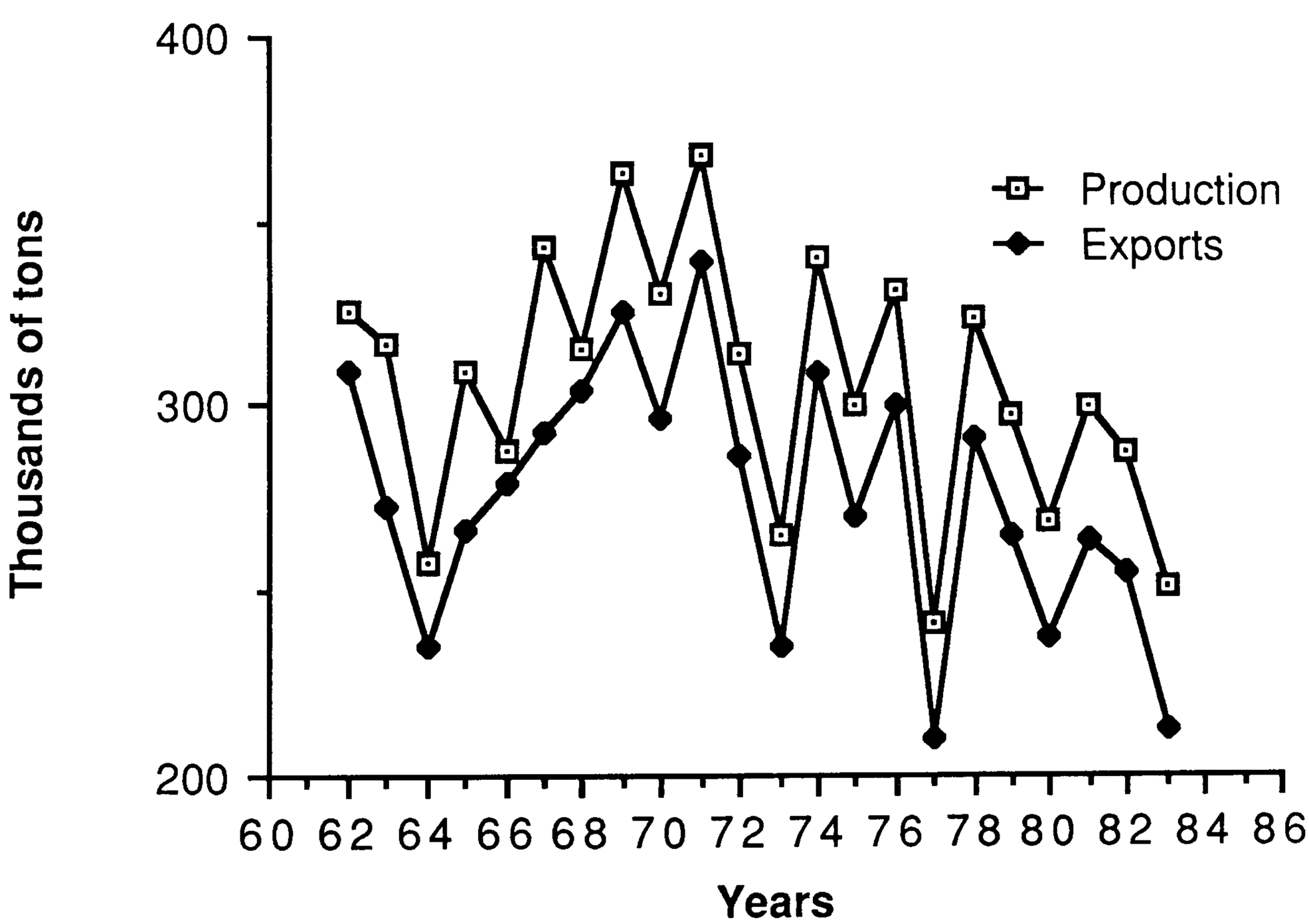
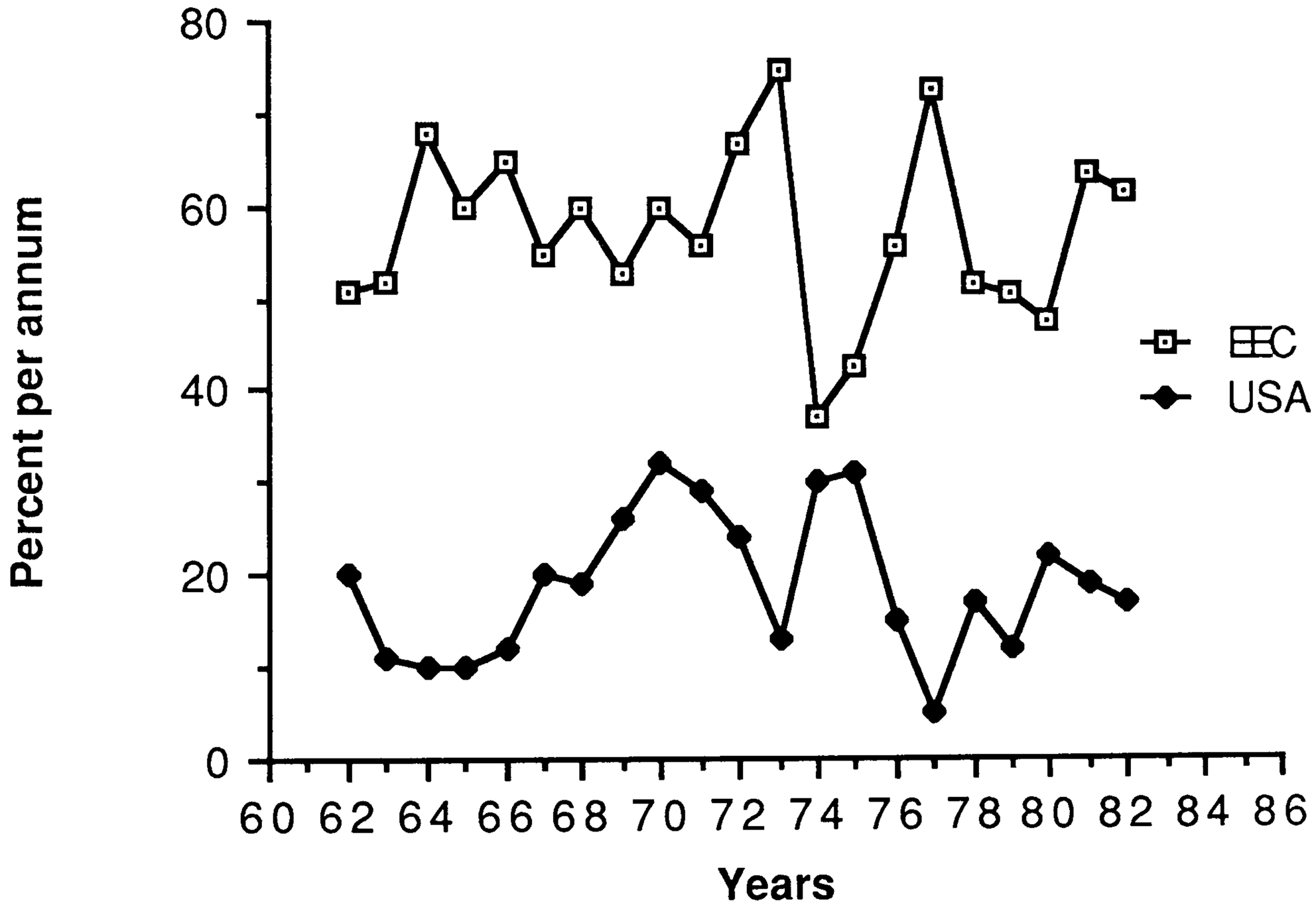


CHART 3.3

Sugar Exports to EEC and USA



Sugar receipts were high between 1974-1975 and 1980-1981. For the rest of the period sugar revenues fluctuated. This pattern was related to the levels of production and to the average export price per ton of sugar received both on world and EEC markets. Comparing the prices in both markets, the EEC price was more stable than the world market price. Sugar exports as a percentage of total exports were high, with the highest peak in 1974. Except for 1970-73 and 1977, sugar exports were over 30% of total exports. The local value added from sugar was small. By-products such as rum and molasses yielded low levels of revenue. Sugar cane is a plantation crop. A discussion of its production characteristics will provide useful information when supply functions are specified later.

Characteristics of Sugar

Commodity exports may be better explained if some characteristics of its production are examined. Here sugar is discussed. The sugar cane plant requires planting, husbandry and harvesting. The cane is then milled and the juice extracted, which is refined to produce sugar. This is an intermediate crop, between an annual and a perennial. Maturity of the cane occurs between 18 and 24 months. But after its first harvest, it is not necessary to replant the crop annually, since succeeding crops at 10 to 12 month intervals can be harvested. These succeeding crops are called ratoons, which grow from the original cane roots after the cane has been cut. The life of the ratoons can be extended to over five years, and can still produce good harvests, depending on the fertility of the soil. The period between planting and maturity will affect price which is based on expectations of up

to 18 months before the first harvest. But planting decisions are affected by expectations of future returns from more than one crop.[3]

One interesting feature of sugar production is the difference between the cellulose and sucrose content of the cane. Low sucrose content leads to higher yields of molasses over sugar, and can be caused by a delay between harvesting and extraction of the juice. A characteristic of the sugar cane plant is that the sucrose content of the juice diminishes rapidly after its harvest. Efficiency or productivity in such an industry depends not only on land efficiency, but also on the sucrose content in each ton of cane harvested. The sucrose content can be protected if the cane is milled near to where it is cultivated. This reduces any delay between harvesting and milling which can exist because of transportation difficulties. Therefore the level of sucrose content is a function not only of the replanting and/or the life cycle of the ratoon, but also on the efficiency of harvesting sugar cane and extracting the juice soon after its harvest. These three peculiar features, combine to place sugar cane in a special group of crop, an intermediate one which lies somewhere between an annual and a perennial.

The Price of Sugar

The domestic sugar price was artificially depressed until 1984, because local consumption was low relative to exports; thus any price increase in the local selling price of sugar would not have increased profits of the sugar companies significantly. An analysis of the price of sugar and its impact on exports for Guyana (as of any Commonwealth country except India and Australia), [4] is a complex issue. The

importance attached to explaining this variable must not be understated, since it is critical in understanding the interactions associated with sugar exports from Guyana, or from the Commonwealth Caribbean. An examination of the agreements under which prices were established is discussed. Appendix 3.2 provides an outline of the characteristics of this price system.

Two agreements influenced the determination of the price of sugar exports. First, there was the Commonwealth Sugar Agreement (CSA) made between Britain and her former sugar producing colonies for the supply of sugar. This agreement was superseded by the sugar protocol of the Lomé Agreements, after Britain joined the EEC. Under the former agreement, the price of sugar was negotiated triennially between Britain and the Commonwealth countries, and was defined as the 'price', which was to be reasonably ~~numerating~~ remunerating to efficient producers. This price when agreed on, represented a guaranteed price to be paid by Britain for sugar originating from the colonies. The basis for setting the prices was related to a formula used to establish the annual price of British beet sugar producers (Harris and Hagelberg, 1975).

Second, the Lomé Agreements contained a sugar protocol where the African, Caribbean and Pacific (ACP) countries negotiated with the EEC a guaranteed price for their sugar exported to the Community. The basis used to negotiate the agreed price depended on the price which the EEC farmers were receiving from the Community for their beet sugar. The price for ACP sugar was therefore indexed to the prices paid to European beet sugar producers. Although these prices were negotiated and agreed on, in economic terms it represented a guaranteed minimum price only. This permitted buyers and sellers to re-negotiate a

different price, which could be higher than the guaranteed minimum price agreed on under the Lome agreements (Mahler, 1981).

In 1975 Britain paid double the guaranteed price agreed on between the EEC and ACP groups to obtain adequate ACP sugar. The price facing Guyana's sugar exports was a minimum price in the latter part of the period, and a guaranteed set price for the former part of this period. A qualitative difference exists under these two agreements. Under the CSA, the guaranteed price was a fixed (fob) stowed price. But under Lomé, the price was (cif) ex European ports. The difference here was that under the CSA, the cost of freight and insurance were paid by the consumers, while under the Lomé agreement the (ACP) producers paid these costs. But the price variable was also related to the quantity exported. The quantity of sugar exported to the EEC and the U.S.A, (the largest markets) was determined by quotas. The latter market has imported less sugar from Guyana and Latin America in the last decade, in response to increased domestic sugar production and also in response to the development of alternative artificial sweeteners.[5] An examination of how these quotas were set is discussed, but only the EEC market arrangement and its impact on the quantity exported is examined here.

Sugar Quotas

Under both agreements, the entry of 1.4 million tons of sugar was allowed from all ACP countries regardless of the state of the sugar market in the EEC countries. Under the Lomé agreement the Commonwealth Caribbean, (as a group) were faced with a reduction of their quotas by 40% of their original quota as obtained under the CSA. This occurred

primarily because some of the countries did not fulfil their allocated quotas under the CSA agreement. During 1974-76 when the price of sugar on the world market exceeded the price paid under the CSA, many countries including Guyana decided to default on deliveries to the U.K. market and diverted exports to the world market to benefit from higher prices prevailing there. For instance, under the CSA, Guyana had 26.4% of the total quota allocated within the Commonwealth Caribbean group, but suffered an individual reduction of 22,554 tons under the Lomé Agreement. Despite this reduction, Guyana's share in the Caribbean group increased from 26.4% under the CSA to 38.5% under Lomé, because Guyana fulfilled the shortfalls from other Caribbean producers.[6] The inability of other (English speaking) Caribbean countries who were unable to fulfil their quotas was due to the deliberate policy of reducing sugar production. For Guyana, diversification out of sugar into other crops, was unsuccessful, partly because of political and industrial reasons, and partly because of the lack of sufficient resources to finance the diversification programme.

Under Lomé, stringent rules were applied to defaulting producers, which were not in existence under the CSA. Under the CSA, Britain was committed to purchase the tonnage shipped, whether or not the amount fell below their quota agreement. Under Lomé the future quota of any ACP country in default will be reduced by the amount of the undeliverable quantity, and may be reallocated among other member states. The inability of the Caribbean as a group to fulfil their quota under the CSA, resulted in reallocations to other ACP countries like Mauritius, Fiji and Swaziland, who were more reliable producers.

If agricultural crops are facing a quota, it may be difficult to estimate accurately the degree of export response to price. Johnson (1982) developed a model from which he estimated the supply response of sugar output to price in the presence of a maximum quota for Brazilian farmers. The objective was to stabilise the domestic market for sugar, and to set a fair price to producers. Consequently, the price for sugar cane and its by-products were fixed and individual farmers were allocated quotas for production. Against these conditions, Johnson formulated a model to estimate the supply response when there existed imperfect market conditions. However, for Guyana and other Commonwealth Caribbean countries there were no domestic supply quotas. Private farmers or sugar plantations were allowed to produce as much as they were capable of producing. The problem was one of supply instability. Besides industrial disputes, and low domestic prices for sugar cane, other factors such as obsolete machinery in the factories and increased labour costs contributed to unstable sugar production. Should sugar production increase, the question arises whether there will be a market for the excess production? The answer to this question is yes. The local market can be expanded, and alternative export markets may be found. Although the sugar industry declined in Caribbean countries, it expanded in some Asian countries like Thailand, where production and exports have increased in the last two decades (Dowling and Jessadachatr, 1979).

Guyana has a guaranteed market for about 70% of its sugar exports. Although quotas are fixed by the EEC, they are minimum quotas, and can be expanded by negotiation between interested parties. Also, the total quantity which can be exported is not controlled entirely by quotas.

The 30% of the export market not controlled by quotas may be expanded if supply conditions improve domestically.

Labour Costs

Sugar is the largest employer of labour in the economy. The large labour force has been a feature of the industry throughout its entire history. Several attempts to reduce employment and labour cost failed. Two factors were responsible for the rise of labour cost. First, in the colonial period, technological improvements carried out, benefitted only improved productivity in sugar manufacture. These improvements were made in the factories and in the transportation of cane and sugar. But the technological advances were not effected in the field. The reliance on scarce rural manual labour, (because of the rural urban migration) caused the price of labour to rise at peak harvesting times.

Second, wages in the bauxite industry rose faster than wages in the sugar industry, because productivity was higher in bauxite than in sugar due to technological advancement. Wage increases in bauxite grew faster than in any other sector (Sackey, 1981). This disparity in wages influenced and encouraged long periods of industrial disputes in the sugar industry for comparable remuneration. Industrial unrest in sugar had as long a history as the industry itself. There was always strong trade union militancy. Support for this union, Guyana Agricultural and General Workers Union (GAWU) came from its affiliation to the main opposition party the PPP. The PPP grew out of the struggles from within the sugar industry in the colonial period, and gained strength after independence when its policy coincided with

national policy to increase local participation in foreign enterprises. The multi-national companies or the colonial government never recognised this union as the bargaining agent representing the sugar workers, despite over 90% of the workers ~~were~~ being members of the GAWU. This led to prolonged industrial disputes in the pre and post independent period. However, after the sugar industry was nationalised, the government recognised the GAWU as the bargaining agent for sugar employees. This recognition did not lead to reduced militancy, but served to increase it, which concomitantly led to wage increases not only in the sugar industry, but throughout the economy. Wage increases came in programs of minimum wage agreements, negotiated between the government and the labour movement. The sugar workers benefitted from the minimum wage increases but which increased the cost of production, thus impacting adversely on exports.

RICE

Two crops are planted annually, a spring and an autumn crop coinciding with the wet and dry cycles of the weather on the coastal belt. Although water is an essential ingredient for the successful growth of the crop, high yields also depend on adequate sunshine and dry weather immediately before and during harvest. Besides the reliance on natural rainfall, there is also an extensive network of drainage and irrigation to promote successful sowing and growth.[7]

Statistical time series for this crop were somewhat difficult to compile. Data was available on the total acreage harvested, except for the years 1971-73, but a disaggregated figure for the autumn and

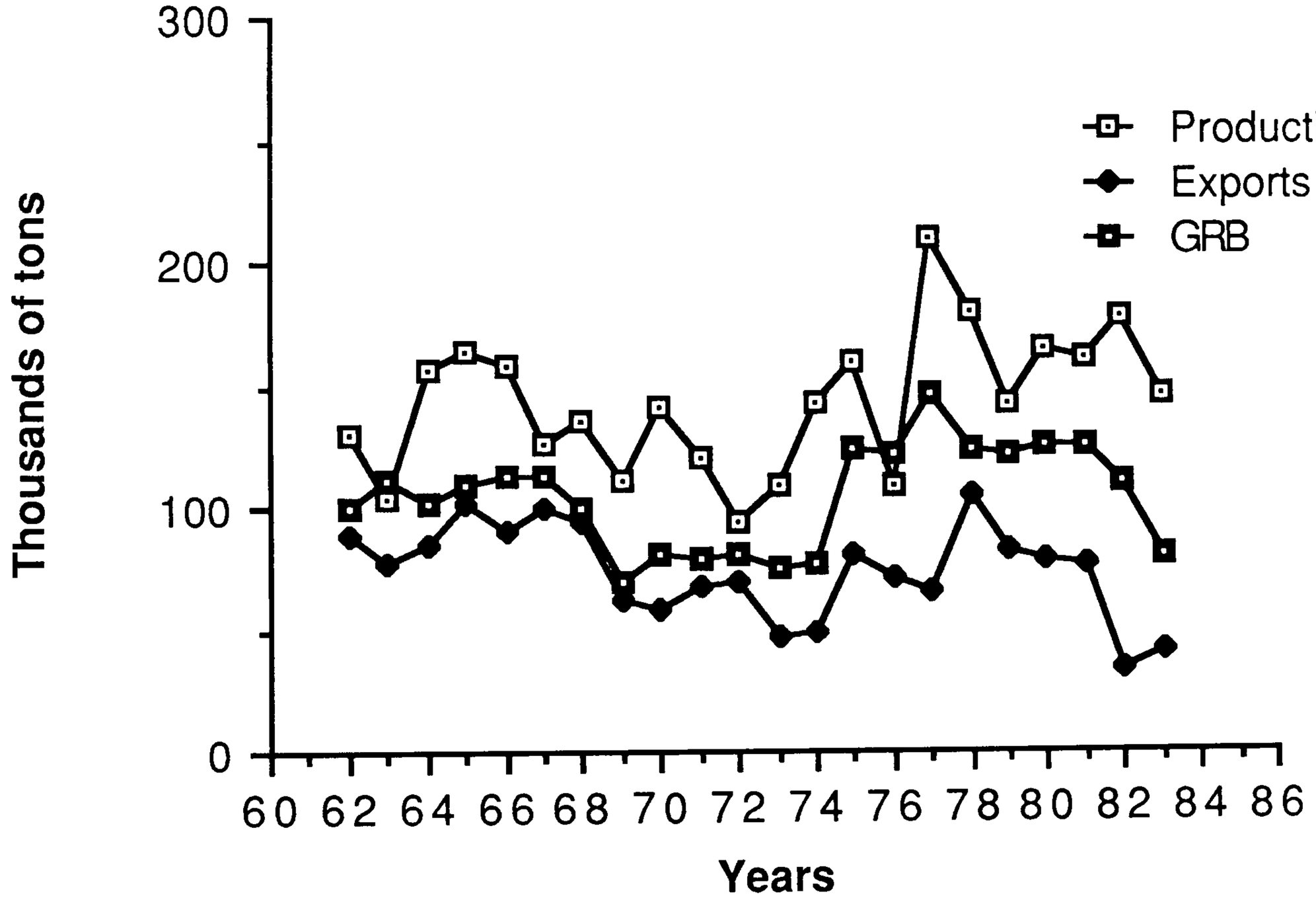
spring crops was incomplete. Inadequate data limited our analysis severely.

The annual area harvested varied between 187,000 and 357,000 acres, with a peak of 357,000 acres in 1977, and the lowest acreage of 187,000 in 1983 (Table 3-2). The processing of paddy into rice is done by both private and public owned mills. Rice production varied between 94,100 and 211,500 tons. Purchases of rice by the Rice Marketing Board, later renamed the Guyana Rice Board (GRB) was high for most of the period. Except for three years, 1970, 1974 and 1983, purchases were over 60% of production (Chart 3.4). In two years, purchases seemed to exceed production, but this was explained by the level of inventory kept by the farmer in times of low prices.

Farmers were permitted to retain a certain quantity of rice for consumption, and in some periods were allowed to retain a quantity for local sale. Farmers and rice millers usually stockpiled rice in periods when the price offered by the GRB was low. The average value per ton of rice sold to the GRB was depressed until 1974. This low price influenced farmers to hoard rice. After 1974, a more realistic price policy was pursued. There are several grades for rice to fulfil export standards. Usually farmers disagreed with the grades they received from the GRB, and therefore hoarded a proportion of their harvest which they either sold in the local markets or bartered for other commodities in neighbouring countries.

CHART 3.4

Rice Production, Sales and Exports



Local sales as a percentage of production in the 1960s remained low, but increased after 1975. Explanations for increased rice consumption were two fold. First, rice was a staple for most of the population. Second, after 1974 households were faced with a restricted choice of rice substitutes, such as wheat flour. Wheat imports were restricted, and this increased the local demand for rice and root pulses.[8] This was not a case where consumers showed a marked preference for rice over wheat consumption, rather it was a case where low levels of foreign exchange availability influenced the imposition of quantitative restrictions on the importation of wheat in the absence of PL480. The demand for rice was mostly for final consumption, since industrial processing is minimal, except for the by-products from the process of milling paddy into rice.

The largest market for Guyana's rice was the Commonwealth Caribbean. The major importers were Jamaica and Trinidad and Tobago. Table 3-2 shows the relationship between production and exports in both quantity and value. Exports as a percentage of production increased between 1975-76, but declined afterwards. Rice exports both in value and quantity fluctuated considerably, despite the increase in the unit price of per ton of rice exported and sold locally (Tables 3-2 and 3-5). This disparity between the export price and the price paid to the farmer may have influenced farmers to reduce production, or to sell only a portion of their crop to the GRB. However once the farmer sold his rice to the Board it was the responsibility of the Board to market the commodity abroad.

Despite these difficulties, rice is a major commodity export. Table 1-7 shows that rice exports as a percentage of total exports was small.

But rice exports compared to other exports was much lower in the post 1970 period. This is a disappointing trend since the industry received large amounts of external funding mainly from the Inter American Development Bank.

In short, the agricultural sector declined toward the end of the period, but remained the largest contributor to national income, because all other industries declined in a similar manner. The other sector to be examined is the mining sector, which comprise the bauxite-alumina industry.

BAUXITE AND ALUMINA

The Caribbean bauxite industry consists of Jamaica, Suriname, Guyana, Dominican Republic and Haiti. The industry in Guyana was nationalised in the first half of the 1970s, while Jamaica imposed an export levy in 1974, and subsequently entered partnerships with some of the multi-national companies. The firms in the other three countries remained under the direct control of their parent companies. In the latter part of the 1970s, Caribbean bauxite declined as multi-national companies diverted their operations into other countries such as Brazil and Australia. The decline of the industry in Guyana was faster than in other Caribbean countries. However interest in Guyanese bauxite remains high for the following reasons:

(1) Guyana produces a high grade calcined bauxite, for which it supplied a significant proportion of world demand until 1978;

(2) That geographically, the location of the industry is close to the North American market, and easy access is achieved through the Caribbean sea;

(3) That the payment for the nationalised assets is made from future profits from the operations of the industry. Therefore it is within the interest of the past and present owners to ensure that the industry achieves a level of production which guarantees profitability; and

(4) That the export earnings from the industry are critical to the growth of the domestic economy.

There are three main categories of exports: calcined bauxite, dried bauxite and alumina. These three constitute over 95% of total exports.

Calcined Bauxite

Calcined bauxite is produced by a process whereby the ore passes through specially designed calcined kilns at very high temperatures. The very nature of calcining bauxite (as of any ore) requires high energy intensive processes which increase the purity of its silica content. This method utilises vast quantities of fuel, which represents the highest cost in its production. The finished product is strong but highly heat resistant. It is used in the manufacture of blast furnaces, and in combination with other metals to produce high quality metals such as steel. Outside these uses calcined bauxite is also used in the manufacture of aluminium.

Dried Bauxite

Dried and other types of bauxite utilise conventional methods of production, which require less energy than calcined bauxite. But the process of drying the ore requires significant quantities of fuel. The final product is used mainly in the manufacture of aluminium. In some instances it is also used in water purification, but the latter is only significant when there are floods caused by excessive rainfall in some states of the USA.

Alumina

Alumina is an intermediate product between bauxite and aluminium. Its production requires also a high energy intensive method and consumes significant quantities of fuel. Its industrial use is in the direct manufacture of aluminium, and in combination with other metals used to manufacture steel. Imports of fuel are essential in the production of bauxite and alumina, and increases in its price can affect supply adversely.[9]

Description of Bauxite and Alumina

Alumina is analysed separately from bauxite because it requires a distinct process of manufacture. The aggregation of dried and calcined bauxite is acceptable since the production of the latter is small in relation to the former, and because both products have almost the same end use.

The industry has declined considerably in the last two decades - after the entire industry was nationalised (Chart 3.5). This decline was evident in the low production and export levels recorded for the

commodity in the 1980s. One possible reason for this decline was the growing inability of the producing firms to remain competitive against other bauxite producing countries like Australia and Brazil.

There was no industrial activity which utilised dried, calcined or alumina domestically, and so all production except for inventories was exported. Inventories were normally kept low, except when there were marketing or shipping difficulties.

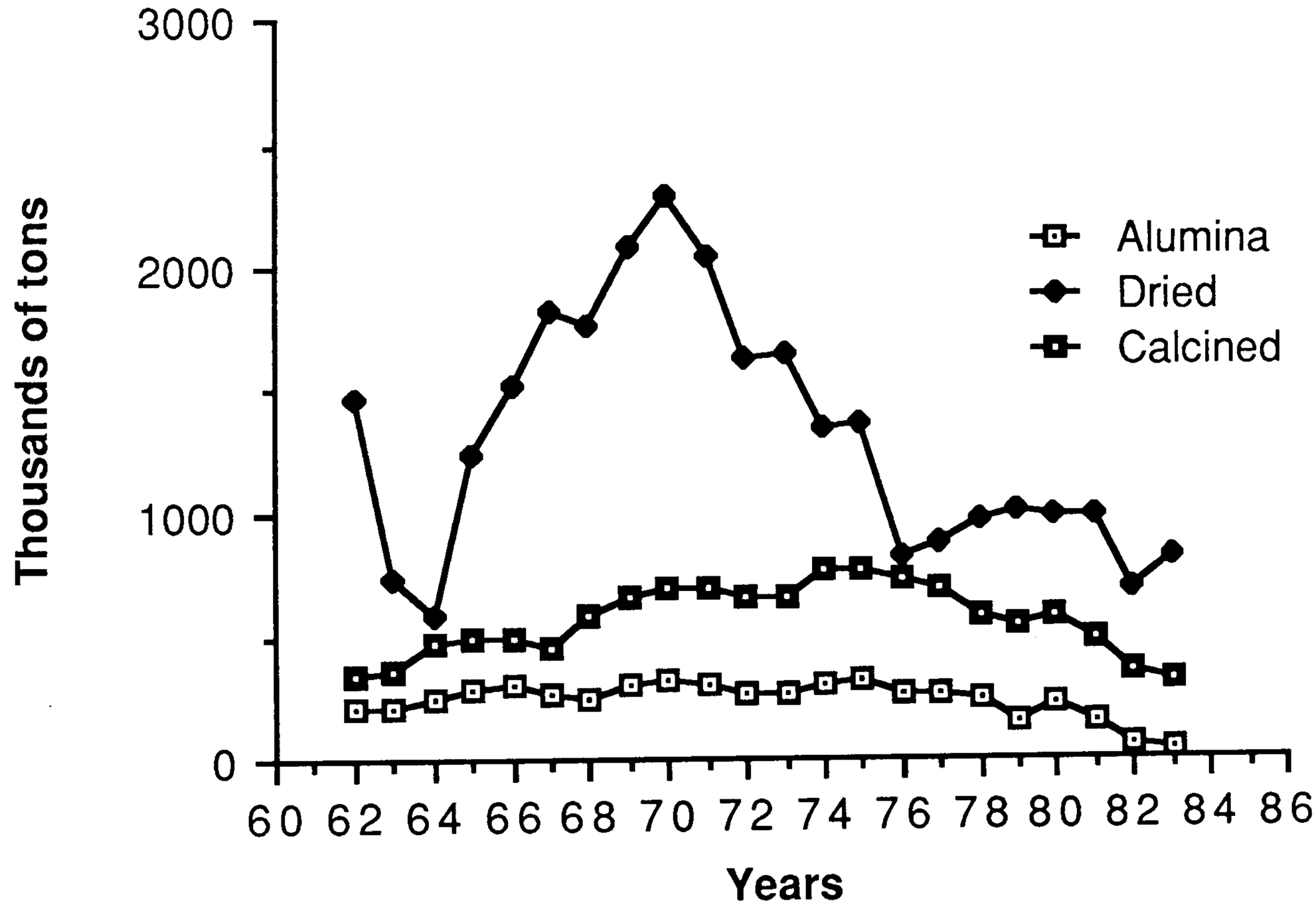
The statistical series of bauxite and alumina are presented in Tables 3-3 and 2-3-2. Production of dried and calcined bauxite varied between 1.07 million tons to 2.98 million tons. The peak in production preceded nationalisation in 1971, then declined afterwards. Production remained above two million tons up to 1975, then fell to around 1.5 million tons in 1980. Production declined further between 1981-83 (Table 3-3-1). Besides minor rises in production in 1978 and 1979, growth was small in the post nationalisation period. The stable growth experienced in the 1960s was reversed completely in the 1970s and worsened in the first half of the 1980s. Calcined bauxite production followed a similar pattern, but its decline worsened in the 1980s (Table 3-3-2). In 1983 production was at the lowest level since 1960. The decline in calcined bauxite was due to strong competition from China. The low cost of Chinese bauxite compared to Guyanese bauxite encouraged a revolution in the processing technologies used by the end users. Besides, the industry witnessed its worst industrial unrest toward the close of the 1970s, disrupting production and exports, resulting in Guyana becoming an unreliable supplier. This paved the way for the Chinese who entered the export market, with an inferior product, but at a remarkably low price.

Alumina production followed the same pattern as bauxite, and led to the closure of the alumina plant in 1984. One reason for the closure of this plant was because of its uneconomical size compared to the state of current technology in the international bauxite aluminium industry. This contributed to high costs of production, and made the product uncompetitive. Production and exports data are presented in Table 3-3. The peak in production was in 1974 with 320,000 tons, while the highest export level was 320,000 tons in 1975.

Although calcined bauxite exports were lower than dried bauxite exports in quantity, the former was higher in value for most years except in 1962 and 1967 (Table 3-3-2). Since 1971, the price paid for calcined bauxite has been higher than dried bauxite on the world market. Alumina prices were also much higher than dried bauxite prices, reflected in higher export revenue earnings (Tables 3-3 and 3-3-2). Despite the decline of this industry, its contribution to export earnings remained comparatively high. The ratio of exports of dried and calcined bauxite as a percentage of total exports remained above 20% between 1965 and 1968. Thereafter it grew to over 30% except for 1974 and 1975. Alumina exports as a percentage of total exports remained above 10% until 1971, and then declined (Table 1-4).

CHART 3.5

Bauxite and Alumina Exports



SUMMARY

The analysis of the main foreign exchange earners suggested a pattern of decline. These commodities provided the bulk of foreign exchange mainly because of the inability of manufacturing to grow. They provided over 75% of all export earnings. Sugar exports represented the largest contributor to export earnings throughout the 1960s, but was overtaken by bauxite exports, except for the years 1974-1976. Rice was still in its infancy, but already showed signs of decline, while alumina production has ceased. The decline in commodity exports was a major constraint to the success of the stabilisation and structural adjustment programmes. Lower export earnings resulted in the widening of the current account of the BOP after 1979. The possible reasons for this decline are examined in Chapter Five, using the framework of analysis outlined in the next chapter.

CHAPTER THREE: NOTES

1. Refer to Thomas (1984), Tables 40 and 43.

2. Refer to Thomas (1984), Table 8.

3. A description of the agricultural practices required for sugar cane cultivation can be found in, Askari and Cummings (1976), Johnson (1983), and Gafar (1987).

4. India and Australia have independent arrangements for exporting sugar to the EEC, which falls outside the arrangements which the ACP countries have although they are all members of the Commonwealth. Australia was excluded from participating in Lome because it was considered a developed country.

5. The US sugar quota, published by Latin American Weekly Report, March 1988, (WR-88-09) shows a three year decline in quantity for all Latin American and Caribbean Countries. These reductions in quota for 1988 represent the lowest level on record for over a century. In the case of Guyana, the quota for 1988 is 8,400 short tons, which is higher than any other Commonwealth Caribbean country, although Guyana was not a signatory of the Caribbean Basin Initiative (CBI) programme.

6. These percentages were calculated from Table One in, Harris and Gagelberg (1975). They show the rapid decline not only in Guyana,

but also in Jamaica, Trinidad and Barbados, the largest of the Commonwealth Caribbean countries.

7. Rice cultivation in Guyana is adapted from the flood system as practised in the north and northern states of India, rather than hill cultivation as practised by some states in Nigeria. Successful cultivation depends on an extensive system of drainage and irrigation. In the post World War II period large drainage and irrigation projects were established to support this system of rice cultivation (Shaw, 1984).

8. The importation of wheat from the US was administered by PL 480 agreement, between the USA and Guyana. Under this agreement wheat imports were supplied on a long term basis at low prices, and with long periods of repayment. But the US government suspended this agreement by the end of the 1970s, and it was only restarted in 1986. The suspension of this agreement was followed by import restrictions being placed on wheat imports because of the unavailability of foreign exchange. PL480 stands for Public Law number 480, which permits the US to sell to low income countries food stocks at considerably low prices.

9. Guyana is an oil importing country with all its needs supplied through imports. The first column of Table 3-6 shows that oil imports account for a significant proportion of intermediate imports. Since 1972, oil as a percentage of total intermediate imports remained above 30%, and continued to rise to over 50% in the 1980s. The larger portion of these increases was industrial fuel used in the bauxite and alumina industry, and in the

generation of electricity. The same pattern of growth is found when one examines oil imports as a percentage of total imports. The figure rose from less than 10% in 1972 to over 20% in 1977, and reached a record level of 40% in 1983. This expenditure on energy supplies limits the entry of other intermediate imports which are necessary for the manufacturing sector.

APPENDIX 3.1: TABLES 3-1 to 3-6

Table 3-1 Selected Sugar Data (Quantity and Value), 1962-83.

Table 3-2 Selected Rice Data (Quantity and Value), 1962-83.

Table 3-3 Selected Mineral Data (Quantity and Value), 1962-83.

Table 3-3-1 Selected Bauxite/Alumina Ratios (%), 1962-83.

Table 3-3-2 Selected Mineral Data (Quantity and Value), 1962-83.

Table 3-4 Selected Sugar Exports Data, 1962-83.

Table 3-5 Selected Rice Exports Data, 1962-83.

Table 3-6 Selected Oil Ratios, 1962-83.

NOTES TO TABLES

(1) US$ is US dollars.

TABLE 3-1 SELECTED SUGAR DATA (QUANTITY AND VALUE), 1962-83

Years	(1)	(2)	(3)	(4)
1962	326.0	21.2	310.0	59.3
1963	317.0	21.6	273.0	73.6
1964	258.0	22.7	235.0	53.9
1965	309.0	23.0	267.0	53.9
1966	288.0	23.8	279.0	55.3
1967	344.0	24.1	293.0	62.2
1968	316.0	25.0	304.0	70.6
1969	364.0	28.2	326.0	82.4
1970	331.0	24.2	297.0	72.5
1971	369.0	29.0	340.0	83.3
1972	315.0	28.0	287.0	91.6
1973	266.0	31.0	235.0	75.7
1974	341.0	31.0	310.0	285.6
1975	300.0	29.0	271.0	358.5
1976	332.0	33.0	300.0	258.7
1977	242.0	31.0	210.0	185.7
1978	325.0	31.0	292.0	234.6
1979	298.0	32.0	266.0	230.6
1980	269.0	32.0	238.0	307.6
1981	301.0	37.0	264.0	302.8
1982	288.0	33.0	255.0	263.6
1983	252.0	36.3	213.0	218.8

(Continues on next page).

Notes Table 3-1
(1) Production of sugar, 000'tons.
(2) Domestic sales of sugar, tons.
(3) Exports of sugar, 000'tons.
(4) Exports of sugar (MG$).

Sources
Annual Statistical Abstract of Guyana, 1970; Annual Report of the Guyana Sugar Corporation, 1985; and Thomas (1984).

TABLE 3-1 CONTINUED

Years	(5)	(6)	(7)
1962	2.6	100.3	3444.0
1963	2.9	97.0	3437.0
1964	3.2	95.2	3003.0
1965	3.1	107.1	3403.0
1966	3.0	103.8	3335.0
1967	3.4	115.3	3770.0
1968	3.1	107.5	3502.0
1969	3.9	126.0	4112.0
1970	3.4	107.2	3695.0
1971	4.1	136.6	3566.0
1972	4.0	130.4	3566.0
1973	4.6	112.0	3252.0
1974	4.4	138.0	4161.0
1975	4.2	105.6	3463.0
1976	5.0	135.9	4040.0
1977	6.0	109.7	3108.0
1978	7.5	143.7	4218.0
1979	8.1	133.5	3872.0
1980	8.5	123.0	3740.0
1981	11.2	138.9	4126.0
1982	12.3	131.3	3345.0
1983	10.7	119.4	3571.0

Notes Table 3-1
(5) Domestic value sugar sales (MG$).
(6) Total acres harvested, 000's acres.
(7) Total cane harvested, 000'tons.

TABLE 3-2 SELECTED RICE DATA (QUANTITY AND VALUE), 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	129.9	88.5	22.4	21.1	246.0
1963	102.9	78.1	21.4	18.1	201.1
1964	155.9	84.8	23.4	15.1	311.4
1965	164.9	101.4	24.3	11.3	337.2
1966	159.4	91.2	21.2	13.2	308.4
1967	126.9	100.0	25.2	11.5	253.5
1968	136.7	94.2	26.1	10.4	313.1
1969	110.8	62.3	19.7	11.0	279.3
1970	142.3	59.3	18.1	13.1	294.3
1971	120.0	67.5	21.3	12.4	n.a.
1972	94.1	69.7	25.3	12.4	n.a.
1973	110.1	47.8	25.0	19.7	n.a.
1974	143.0	50.0	49.0	24.9	286.0
1975	160.0	82.0	84.8	54.0	288.0
1976	110.0	71.0	73.6	46.0	207.0
1977	211.5	65.9	66.8	46.0	357.0
1978	182.0	104.8	96.0	39.0	299.5
1979	142.8	83.7	80.8	36.4	218.5
1980	166.4	79.7	87.5	37.0	237.0
1981	163.0	76.8	110.0	30.0	220.0
1982	179.0	34.3	60.7	42.0	239.5
1983	147.6	41.7	64.9	41.5	187.1

(Continues on next page).

Notes Table 3-2

(1) Total production of rice, 000'tons.
(2) Exports of rice, 000'tons.
(3) Exports value of rice (MG$).
(4) Domestic sales of rice, 000'tons
(5) Total area harvested rice, 000'acres.

TABLE 3-2 CONTINUED

Years	(6)	(7)	(8)	(9)
1962	4.6	99.6	21.1	212.0
1963	4.9	112.0	26.7	238.0
1964	4.3	102.0	24.7	242.0
1965	2.7	108.8	24.3	223.0
1966	2.9	113.3	24.3	215.0
1967	2.7	113.7	23.0	202.0
1968	2.6	100.0	21.2	212.0
1969	2.8	69.8	15.1	216.0
1970	3.2	80.3	16.7	208.0
1971	3.0	78.5	16.9	215.0
1972	3.1	81.5	17.5	215.0
1973	5.1	75.1	19.4	259.0
1974	7.0	77.1	27.3	354.0
1975	15.0	124.0	53.3	429.0
1976	12.7	122.0	52.4	429.0
1977	12.9	148.0	66.5	449.0
1978	16.9	125.0	63.4	507.0
1979	19.0	122.0	59.3	486.0
1980	20.6	127.0	69.0	543.0
1981	21.3	126.0	80.0	634.0
1982	41.7	110.4	88.6	803.0
1983	39.1	80.3	62.6	779.0

Notes Table 3-2

(6) Domestic value sale of rice (MG$).
(7) Purchase of rice by the Guyana Rice Board, 000'tons.
(8) Purchase value of rice by the GRB (MG$).
(9) Average value per ton of rice sold to the GRB (Guyana dollar per ton).

Sources
Annual Statistical Abstract of Guyana, 1970; Economic Survey of Guyana, 1975-76; and World Bank Report No. 5592-GUA 1985.

TABLE 3-3 SELECTED MINERAL DATA (QUANTITY AND VALUE), 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	1705.0	1801.0	33.1	227.0	215.0	22.7
1963	1296.0	1096.0	25.7	219.0	216.0	22.3
1964	1403.0	1055.0	30.2	295.0	245.0	26.7
1965	1724.0	1757.0	37.4	297.0	275.0	30.0
1966	2100.0	2023.0	44.6	287.0	297.0	33.0
1967	2270.0	2283.0	51.5	273.0	269.0	33.3
1968	2521.0	2365.0	67.2	265.0	244.0	33.0
1969	2749.0	2748.0	78.8	298.0	297.0	41.5
1970	2982.0	3005.0	92.1	312.0	324.0	46.4
1971	2813.0	2742.0	95.9	305.0	302.0	40.5
1972	2345.0	2290.0	103.3	261.0	257.0	28.9
1973	2316.0	2326.0	108.0	265.0	259.0	29.4
1974	2131.0	2127.0	153.3	320.0	310.0	47.5
1975	2128.0	2142.0	204.6	314.0	320.0	67.8
1976	1698.0	1556.0	224.3	266.0	265.0	64.4
1977	1588.0	1575.0	252.7	237.0	263.0	78.5
1978	1592.0	1568.0	250.3	236.0	248.0	81.2
1979	1627.0	1553.0	273.0	160.0	145.0	53.7
1980	1597.0	1591.0	368.1	212.0	226.0	111.4
1981	1487.0	1483.0	338.0	167.0	149.0	91.1
1982	1343.0	1057.0	264.8	93.0	64.0	36.0
1983	1071.0	1140.0	231.6	20.0	29.0	30.0

Notes Table 3-3
(1) Bauxite production (dried plus calcined), 000'tons.
(2) Bauxite exports (dried plus calcined), 000'tons.
(3) Bauxite exports value (dried plus calcined), MG$.
(4) Alumina production, 000'tons.
(5) Alumina exports, 000'tons.
(6) Alumina exports value (MG$).

Sources
Economic Survey of Guyana, 1966, 1970, 1975-76; and World Bank Report No. 5592-GUA 1985.

TABLE 3-3-1 SELECTED BAUXITE/ALUMINA RATIOS (%), 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1963	-24.0	-3.5	-39.1	-17.4	0.50	-1.8
1964	8.3	34.7	-3.7	18.0	13.4	20.0
1965	22.9	0.68	66.5	24.0	12.2	12.4
1966	21.8	-3.4	15.1	19.3	8.0	10.0
1967	8.1	-4.9	13.0	15.5	-9.4	0.9
1968	11.1	-2.9	3.6	30.5	-9.3	-0.9
1969	9.1	12.5	16.2	17.3	22.0	26.0
1970	8.5	4.7	9.4	17.0	-9.1	12.0
1971	-5.7	-2.2	-8.8	4.1	-6.8	-13.0
1972	-16.6	-14.4	-16.5	7.1	-15.0	-29.0
1973	-1.2	1.5	1.6	4.6	0.8	1.7
1974	-8.0	20.7	-8.6	42.0	20.0	62.0
1975	-0.1	-1.8	0.7	33.5	3.2	43.0
1976	-20.2	-15.3	-27.4	9.6	-17.2	-5.0
1977	-6.5	2.6	1.2	13.0	-0.8	22.0
1978	0.3	-13.6	-0.4	-0.9	-5.7	3.4
1979	2.2	-32.2	-0.9	9.1	-42.0	-34.0
1980	-1.8	32.5	2.4	35.0	56.0	107.4
1981	-6.9	-21.2	-6.8	-8.3	-34.1	-18.2
1982	-9.7	-44.3	-29.0	-22.0	-57.0	-60.4
1983	-20.3	-78.5	7.9	-13.0	-55.0	-17.0

Notes Table 3-3-1
n.a. means not available.

(1) Rate of change bauxite production, (dried plus calcined), 000'tons.
(2) Rate of change alumina production, 000'tons.
(3) Rate of change bauxite exports, (dried plus calcined), 000'tons.
(4) Rate of change bauxite exports, current value, (dried plus calcined).
(5) Rate of change alumina exports, 000'tons.
(6) Rate of change alumina exports, current value.

Source
Table 3-3.

TABLE 3-3-2 SELECTED MINERAL DATA (QUANTITY AND VALUE), 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	1328.0	377.0	1465.0	17.0	336.0	14.1
1963	950.0	346.0	738.0	10.5	358.0	15.2
1964	935.0	468.0	586.0	9.3	469.0	20.9
1965	1240.0	484.0	1236.0	15.0	494.0	22.4
1966	1596.0	504.0	1531.0	18.5	492.0	26.1
1967	1799.0	471.0	1824.0	26.3	459.0	25.2
1968	1934.0	587.0	1778.0	29.6	587.0	37.6
1969	2105.0	644.0	2097.0	36.6	651.0	42.2
1970	2290.0	692.0	2303.0	43.8	702.0	48.3
1971	2103.0	710.0	2053.0	40.0	689.0	55.9
1972	1652.0	693.0	1639.0	32.3	651.0	71.0
1973	1680.0	636.0	1662.0	31.9	664.0	76.1
1974	1405.0	726.0	1360.0	27.5	767.0	125.8
1975	1350.0	778.0	1370.0	41.5	772.0	163.1
1976	969.0	729.0	825.0	33.7	731.0	190.6
1977	879.0	709.0	882.0	41.2	693.0	211.5
1978	1022.0	570.0	990.0	48.5	578.0	201.8
1979	1059.0	568.0	1011.0	54.8	542.0	218.3
1980	1005.0	592.0	998.0	62.4	593.0	305.7
1981	982.0	505.0	995.0	78.1	488.0	259.9
1982	958.0	385.0	692.0	59.0	365.0	205.8
1983	761.0	310.0	821.0	81.6	319.0	150.0

Notes Table 3-3-2

(1) Dried bauxite production, 000'tons.
(2) Calcined bauxite production, 000'tons.
(3) Dried bauxite exports, 000'tons.
(4) Dried bauxite exports value (MG$).
(5) Calcined bauxite exports, 000'tons.
(6) Calcined bauxite exports value (MG$).

Sources

Economic Survey of Guyana, 1966, 1970, 1975-76; and World Bank Report No.5592-Gua 1985.

TABLE 3-4 SELECTED SUGAR EXPORTS DATA, 1962-83

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	16.0	25.5	0.6	51.0	20.0	23.0
1963	23.0	26.0	0.9	52.0	11.0	29.0
1964	20.0	26.0	0.8	68.0	10.0	12.0
1965	14.0	26.4	0.5	60.0	10.0	23.0
1966	15.0	26.9	0.6	65.0	12.0	16.0
1967	16.0	26.5	0.6	55.0	20.0	18.0
1968	18.0	23.0	0.8	60.0	19.0	14.0
1969	20.0	23.0	0.9	53.0	26.0	13.0
1970	22.0	23.0	0.9	60.0	32.0	1.0
1971	22.0	23.4	0.9	56.0	29.0	7.0
1972	27.0	30.7	0.9	67.0	24.0	0.0
1973	27.0	30.2	0.9	75.0	13.0	0.0
1974	76.0	48.2	1.6	37.0	30.0	24.0
1975	117.0	69.9	1.7	43.0	31.0	17.0
1976	70.0	60.6	1.2	56.0	15.0	20.0
1977	72.0	63.4	1.1	73.0	5.0	9.0
1978	67.0	72.1	0.9	52.0	17.0	21.0
1979	70.0	87.4	0.8	51.0	12.0	27.0
1980	100.0	100.0	1.0	48.0	22.0	19.0
1981	93.0	85.7	1.1	64.0	19.0	5.0
1982	84.0	82.0	1.0	62.0	17.0	9.0
1983	97.0	79.5	1.2	n.a.	n.a.	n.a.

Notes Table 3-4

(1) Index of unit price of sugar exports, 1980 = 100.
(2) Index of EEC import price of sugar, 1980 = 100.
(3) Ratio of columns 1 and 2.
(4) Sugar exports volume to the EEC (%).
(5) Sugar exports volume to the USA (%).
(6) Sugar exports volume to other markets (%).

Sources

(1) Columns 1-2 International Financial Statistics, IMF Yearbook, 1985.
(2) Columns 4-6 Thomas, C.Y, (1984), Page 44.

TABLE 3-5 SELECTED RICE EXPORTS DATA, 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	23.0	41.8	0.550	210.6	0.054
1963	26.0	41.3	0.630	208.3	0.053
1964	26.0	38.2	0.681	192.6	0.053
1965	22.0	36.9	0.596	185.9	0.051
1966	22.0	36.9	0.596	185.9	0.050
1967	23.0	37.8	0.609	190.4	0.050
1968	25.0	38.7	0.646	194.9	0.055
1969	24.0	37.8	0.635	190.4	0.055
1970	28.0	38.2	0.733	192.6	0.053
1971	28.0	38.7	0.724	194.9	0.052
1972	32.0	43.6	0.734	219.5	0.052
1973	46.0	80.0	0.575	403.2	0.049
1974	86.0	112.0	0.768	564.5	0.044
1975	93.0	84.4	1.102	425.6	0.043
1976	93.0	62.2	1.495	313.6	0.043
1977	91.0	67.1	1.356	338.2	0.039
1978	83.0	80.4	1.032	405.4	0.034
1979	88.0	76.9	1.144	387.5	0.029
1980	100.0	100.0	1.000	504.0	0.026
1981	131.0	114.0	1.149	574.0	0.023
1982	162.0	73.9	2.192	372.6	0.020
1983	144.0	76.3	1.887	384.5	0.018

Notes Table 3-5
(1) Index of unit price of rice exports, 1980 = 100.
(2) Index of USA import price of rice, 1980 = 100.
(3) Ratio of Columns 1 and 2.
(4) Price of rice, US$ per long ton.
(5) Price level deflated exchange rate, Guyana dollars per US dollar.

Sources
International Financial Statistics, IMF Yearbook 1985.

TABLE 3-6 SELECTED OIL RATIOS, 1962-83

Years	(1)	(2)	(3)
1962	n.a.	n.a.	292.49
1963	n.a.	n.a.	293.01
1964	n.a.	n.a.	308.96
1965	n.a.	n.a.	317.23
1966	n.a.	n.a.	317.23
1967	29.0	8.3	317.23
1968	31.2	9.7	324.74
1969	26.3	8.1	345.61
1970	29.1	8.6	360.75
1971	27.3	8.8	288.69
1972	27.9	9.4	253.00
1973	33.5	12.9	171.01
1974	33.3	18.3	75.89
1975	32.6	16.7	81.02
1976	30.5	14.8	80.17
1977	39.0	20.0	93.57
1978	40.3	23.9	108.39
1979	45.0	28.4	97.11
1980	52.9	35.7	63.34
1981	50.6	35.7	40.06
1982	56.2	39.8	31.46
1983	56.7	39.3	52.11

Notes Table 3-6
n.a. means not available.
(1) Ratio of imports of oil and lubricants to total intermediate imports.
(2) Ratio of imports of oil and lubricants to total imports.
(3) Ratio of aluminium price to oil price.

Sources
(1) Columns 1-2 Bank of Guyana Annual Reports 1973 & 1983.
(2) Column 3 International Financial Statistics, IMF Yearbook 1985.

APPENDIX 3.2: THE PRICE OF SUGAR

Sugar exports from ACP countries were allowed entry in Europe under the CSA, and the sugar protocol of the Lomé agreements. The CSA contained three main objectives:

(1) To establish a long term agreement between suppliers and consumers;

(2) To encourage the development of sugar production in the colonies; and

(3) To establish a guaranteed market for cane sugar because of the rise of beet sugar in Europe.

The formation of the CSA was supported by the British government because of historical and economic reasons. Historically, colonial sugar was Britain's most important commodity import for a century, from 1703 to 1814 (Thomas, 1979). But this pattern changed when Britain abandoned the system of protection and introduced free trade. Under this system the Sugar Equalisation Act was introduced which in 1854 rescinded preference for colonial sugar in the U.K. and opened the British market to beet sugar from European countries such as Belgium, Germany and France. The development of beet sugar production in these countries grew rapidly, and by 1900, Belgium, Germany and France were already self sufficient in sugar. But Britain continued to rely for a large portion of its sugar requirements from the colonies in the Caribbean, who were the lowest cost producers at that time.

However in the 1930s, Britain introduced the Import Duties Act, which levied a 10% duty on imports and also established a system of tariffs. Also at that time, British colonies were granted preferential tariffs on a wide range of imports which included sugar (Mahler, 1981). As Europe went to war in the 1940s, the price of cane sugar rose dramatically because European beet farms were disrupted by the war. Britain sought to reduce her reliance on European sources for sugar, because she herself was at war, and feared that sugar might be used as a political weapon against her during the war. Thus Britain entered an agreement under the CSA to purchase a certain quantity from her colonies. The economic reasons which influenced the formation of this agreement were twofold:

(1) That CSA prices were predetermined while the world price experienced considerable vacillation. Thus stable prices benefited both the British consumers and the confectionary industry; and

(2) That Britain wanted to pay for imports in Sterling to conserve on dollar payments, since the economy was experiencing a serious dollar outflow at that time (Moynagh, 1977).

These two points justified the reliance on Commonwealth cane sugar well into the 1960s and partly in the 1970s. When Britain joined the EEC, the Common Agricultural Policy (CAP), had already formulated a sugar policy which provided for highly subsidised prices for fixed quotas (from European beet producers) protected by a levy on competing imports. But Britain was importing cane sugar from Commonwealth countries at prices which were lower than those paid by other EEC members. This reason and the fact that sugar production provided substantial employment and income generation in the colonies

influenced the EEC to make provisions for the entry of Commonwealth sugar. While the Lomé negotiations were in progress the international sugar situation changed. Poor harvests in Cuba, the USSR and in Western Europe in 1973-74, and the development of ethnol alcohol from cane in Brazil caused sugar prices on the world market to increase from £72.00 per tonne in 1972 to £560.00 per tonne in 1974. This influenced Commonwealth producers to request a re-negotiation of their guaranteed price which was only £61.00 per metric ton in 1973. Britain's policy of importing about 50% of her sugar needs influenced the decision by her to agree to a three fold increase for Commonwealth sugar imports. The EEC beet farmers also supported the ACP producers since they were paid a price well below the world market price of sugar. The Lobby from the EEC sugar farmers, and British diplomatic endeavours persuaded the EEC Commissioners to agree for the long term access for ACP sugar to the EEC market.

APPENDIX 3.3: HISTORICAL DEVELOPMENT OF SUGAR, RICE AND BAUXITE

THE SUGAR INDUSTRY: HISTORICAL DEVELOPMENT

In the sixteenth and seventeenth centuries, large plantation systems were established in the Caribbean to cultivate sugar cane. These systems developed special characteristics which defined their relationship with the rest of the economy (Beckford, 1972). A brief review of the development of sugar in Guyana is undertaken.

The development of Guyana is related to the growth of the sugar industry. Initially sugar plantations were established in 1758 on the Pomeroon river, situated in the north eastern region of the country. Since then the sugar industry has influenced social, economic, cultural and political institutions. It dominated economic life and directly affected the rate of economic progress.

From small cultivations on the Pomeroon river, the industry developed along the banks of the Demerara and Berbice rivers. By the close of the seventeenth century there were 120 plantations established along the banks of the Demerara and 200 on the east banks of the Essequibo. This gradual movement was caused by two main factors. First, the interior possessed low fertility soils unsuitable for profitable sugar cane cultivation. Second, the Demerara and Berbice rivers were nearer the Atlantic Ocean, and therefore provided a more economical waterway for the establishment of an international sea port. Once this port was established in Demerara, British planters relocated their cultivations to the coastal areas of the Demerara and

Berbice rivers. This led to the development of two towns and the establishment of the capital city of Georgetown. Relocation of cultivation also led to the neglect of other crops such as coffee and cotton which declined at the expense of sugar cane specialisation.

Throughout the eighteenth and nineteenth centuries the industry's output rose dramatically and so did its demand for land and labour (Nath, 1970). However, continued profitability depended on the supply of cheap and readily available labour. Initially the labour demand was fulfilled by the importation of African slaves. After the abolition of slavery in 1850, indentured servants were brought from India on an organised scale. The new immigrants proved to be better suited to work on sugar plantations than the Africans. This contributed to the survival of sugar and its return to a prominent position in the economy.

During the first part of the nineteenth century several industrial changes in the industry affected the demand of labour. Amalgamations of the smaller producing units resulted in inefficient plantations giving way to more efficient ones, and capital intensive methods were introduced. This increased the demand for a more skilled and professional labour force, which was unavailable at that time, and had to be imported from Europe. The industry was also forced to adjust itself to price fluctuations on the world and European markets. The changes in international prices dictated the course of development in the industry, with price fluctuations remaining a permanent feature.

The first major fall in sugar prices occurred in the 1880s, when European beet sugar expanded causing a glut in the international

market. The consequences for the industry in Guyana were disastrous, leading to further reorganisation. First, many estates were declared bankrupt while others were amalgamated with larger ones. Second, the surviving estates reacted by releasing their excess labour force. The policy was to encourage displaced labour to settle on abandoned sugar estates. This policy suited planters since it made labour easily available if a labour shortage ever occurred. Also this labour reserve helped to keep the price of labour on the estates low.

But the displaced labour force soon organised themselves into village settlements and emerged as a new independent peasantry which subsequently led to the development of the rice industry alongside the sugar plantations (Farley, 1953-54). Economic activities such as logging and mining absorbed some labour but by far rice cultivation attracted the majority. Indian immigrants were accustomed to rice planting in their native country. It was at this juncture that the first attempt was made at diversifying out of sugar. But diversification was limited in the sense that policy was directed at engaging East Indians in rice cultivation only as part time peasant farmers, and part time wage earners on the sugar estates.

World War I increased the profitability of sugar. This was however short-lived, for immediately afterwards, increased competition from beet sugar in Europe, and the economic crisis of the 1930s, reversed this trend. The continued success of the industry depended on a guaranteed price. In fact, special preference was accorded to sugar in the United Kingdom from the colonies. In this new arrangement, a guaranteed overseas market remained a decisive factor for the industry's growth and development. Sugar production was vertically

integrated with European food manufacturing. This policy shaped the future growth of sugar not only in Guyana, but the entire British Commonwealth. The outbreak of World War II brought shortage of technological inputs from Europe, and migration of workers from the plantations. This increased labour costs, and eventually led to the abandonment of many estates. In response, the industry gradually mechanised its operations. Modernisation led to increased capacity of the factories. By 1960, although there were only eleven factories, production had increased substantially since 1948.

After the Second World War, many British colonies were granted independence. Nationalist movements in most of these countries demanded more local participation in foreign owned enterprises. In response, the sugar industry carried out protective measures. It increased field mechanisation, encouraged peasant cane farming, employed more nationals in management positions, reduced expatriate staff and diversified operations abroad. These measures were carried out against a militant trade union, the Guyana Agricultural and General Workers Union (GAWU). Although the GAWU commanded the largest number of sugar workers, the companies refused recognition of the union. The GAWU intensified its struggle by pressuring the government to initiate discussions with the sugar companies for increased national participation.

This led to the nationalisation of the industry. By then, the amalgamation of estates had resulted in only two companies. The smaller, Sanbach Parker & Co. Ltd., was nationalised in 1974, and the larger Bookers McConnel Ltd., in 1976. Despite these changes, viability still rested on two factors, both of which are exogenous to

the industry: a guaranteed overseas market and profitable prices. In the post nationalisation period, changes were carried out which reduced total reliance on sugar. Thus the Other Crops division of the Guyana Sugar Corporation (Guysuco) was established, to concentrate on oil palm, mung, corn and inland fishing. In the process of diversification significant financial losses have been incurred by the Corporation. The Other Crops division is defended as deploying idle resources from sugar production into other agricultural crops.

THE RICE INDUSTRY: HISTORICAL DEVELOPMENT

Rice evolved as a direct by-product of the typical sugar plantation. Cultivation began without active economic support from the colonial government. The beginning is traced to the 1880s crisis in sugar, when deteriorating markets for Commonwealth sugar in Europe led to recession and reduced demand for labour. The displaced labour was encouraged to settle on abandoned plantations and crown lands. This led to a rise in rice cultivation and, to a lesser extent, cattle ranching. From the 1890s, the rice industry consolidated with a phenomenal increase in production and exports. Exports rose between 1903-1918, and subsequently rice imports were virtually eliminated (Nath, 1970), Tables 13 and 14.

The growth of the industry may be linked to two important factors: immigration and economic conditions in sugar. First, immigration beyond the sugar industry's requirements created a free village population. Although the estates provided the chief means of livelihood for these people, they were left unemployed or underemployed in the slack ('out of crop') period on the sugar estates.

This encouraged part time cultivation of other crops. Second, the depression in sugar during the 1890s provided the necessary impetus for the growth in rice. Growing unemployment and poverty in the settlements near the estates influenced the plantation owners to release additional sugar cane lands for alternative crops, which were converted to the cultivation of rice.

Rice cultivation started as subsistence peasant farming, with one crop per year, to enable workers to participate in sugar production during harvesting. This policy of adjacent settlement created the part time labourer on the sugar estates, and the part time subsistence rice farmer. However where sugar estates were abandoned, rice cultivation expanded rapidly into commercial farming.

When the market prospects for sugar improved by 1903, rice cultivation was viewed as a direct competitor for labour, and sugar planters restricted the further growth of rice near the estates. The timing of the sugar cane harvest was rearranged to a period when intense attention to paddy was not required, which allowed the rice industry to expand further.

Despite growth in rice production, Guyana remained a sugar plantation economy, where plantation activities had a pervasive influence on the rest of the economy. Increasing prosperity in sugar meant a continued need for considerable numbers of unskilled labourers. This need was fulfilled by discouraging the growth of alternative employment opportunities. In rice, productivity was deliberately kept low to make rice production an unrewarding occupation. The policy was to maintain low prices for rice.

In the interwar years to 1950, several factors led to further growth of rice. The First World War provoked shortages of staple foods from Europe and created a market for Guyana's rice in the Commonwealth Caribbean. The rice industry received a big push during the depression of the 1930s, when employment was at a very low level and farmers had to expand their acreage to maintain their standards of living. The Depression, together with the outbreak of the Second World War, provided an opportunity for extensive production and exports of rice. Exports to the Commonwealth Caribbean were so important that the Government established the Rice Marketing Board (RMB) in 1939 with full statutory powers to purchase and market rice. The RMB provided a ready market for rice at a guaranteed price. Later the Government established the Drainage and Irrigation Board (DIB) and the Mahaicony Abary Rice Development Company (MARDS), which resulted in the enlargement of the rice industry into a commercial crop.

Since the 1940s production techniques rapidly changed. Tractors and combine harvesters replaced the wood plough and the grass knife, and multistage mills took over from single stage ones. Rice research activities became increasingly important. With the spread of the green revolution improved varieties replaced old ones. By 1975 the industry was fully mechanised, with adequate supporting infrastructure.

THE BAUXITE INDUSTRY: HISTORICAL DEVELOPMENT

During the early twentieth century, the US Government classified bauxite ore as a strategic raw material. Demand was high in Europe and North America, since it was an input into the production of military and commercial aircraft. With the coming of the First World War,

Britain became interested in developing bauxite resources from deposits located in her colonies. Guyana had large reserves of bauxite, and investments were undertaken to exploit it (Spackman, 1975).

Bauxite mining was carried out by two North American companies. The Demerara Bauxite Company Limited (Demba), established in 1916 was owned and operated as a subsidiary of the Aluminium Company of Canada (Alcoa). A smaller company, Reynolds Metal Company Limited, was registered in the USA. This company started mining operations in 1938. Demba built mining and processing facilities in the densely forested and uninhabited area of Wismar. Reynolds set up mining and processing facilities at Kwakwani and Everton. Both companies developed rapidly in response to international demand, but Demba, the larger of the two, dominated the industry. Its fixed capital rose from a mere US$ 5 million in 1926 to exceed US$ 160 million in 1969. This included investment in calcined kilns and the alumina plant.

The relationship between mining companies and the government was based on informal understandings in the pre independence period. After independence the new administration sought to redefine the existing arrangements. Within the first five years following independence, the government opened a dialogue with the mining companies to renegotiate the mining contracts. The initial aim was to seek participation in the equity holdings of Demba. The negotiations ended in disagreement because of the unwillingness of the company to concede joint ownership with the government. The assets of the company were nationalised on 15 July 1971, with a promise of full compensation to be paid to the company out of future profits. On a similar issue Reynolds Metal

Company was nationalised in January 1975, with the same repayment terms.

Two separate companies were established to take over the assets of the nationalised companies. The Guyana Bauxite Company Limited (Guybau) took over the assets of Demba, and Berbice Mining Enterprises Limited (Bermine) took over the assets of Reynolds Metal Company Limited. Both Guybau and Bermine operated as separate companies until 1977, when the latter was put into voluntary liquidation and its assets and liabilities transferred to Guybau. To reflect this rationalisation Guybau subsequently changed its name to Guyana Mining Enterprises Limited (Guymine). Further institutional changes occurred in the organisation of the companies' operation. A holding company was established, the Bauxite Industry Development Company Limited (Bidco). The new entity acted as a parent company, whose functions included finance, marketing, research, and held the shares of the Guyana Government. Later, other subsidiary companies were set up. The Guybau Construction Company Limited (Guyconstruct) engaged in the design and construction of large civil projects both within the industry and in the wider economy. A partnership with A/S Bulk Handling Limited, registered in Norway, and Bidco established a shipping line, named Guybulk Shipping Limited, whose function was the shipping of bauxite ore. Finally, the Guyana Trading Company, (Guytrade) was established in the USA, which acted as the bulk purchasing agent of the bauxite companies. Therefore, the present industry consists of four firms and a holding company.

Bauxite is mined and produced in the 'hilly sand and clay belt', about two hundred miles parallel to the Atlantic Ocean. The bauxite layer is usually covered by a thickness of between 50 to 100 feet of residual clay and sand which itself overlies the bedrock. The surface is usually overgrown with 'dakama' trees and mixed hardwood which requires extensive clearing before mining of the ore begins. In the earlier days, mining was concentrated on those deposits which were either available at the surface level, or covered by a thin veneer of white sand sediment. But these deposits were exhausted quickly and the overburden soon became a problem in the bauxite industry.

Originally the clearing was done by labour intensive methods, but more recently the mining of bauxite developed into a highly capital intensive industry. The removal of vast quantities of overburden constitute a high proportion to the overall cost of mining bauxite. Once the clearing and stripping is completed the relative cost of mining decreases, because single deposits of ore can consist of up to twenty million tons of bauxite. Also the ore which lies below 100 feet has an average of 55% alumina content, and therefore reduces the conversion ratio from bauxite to alumina to 2:1.

Because of the depth of the overburden, the companies diverted their operations to Jamaica in the 1950s, where surface deposits in large quantities were available. The overburden presented a serious problem to the industry in the post nationalisation period. The Green Construction Company Limited was contracted to perform the function of removal of overburden and stripping operations.

CHAPTER THREE: REFERENCES

Askari, H. and Cummings, J.T. (1976), Agricultural Supply Response: A Survey of the Econometric Evidence, Praeger Publishers, New York.

Beckford, G.L. (1972), Persistent Poverty and Underdevelopment in Plantation Economies of the Third World, Oxford University Press, London and New York.

Dowling, J.M. and Jessadachatr, P. (1979), The Supply Response of Sugar Cane in Thailand, The Malayan Economic Review, Vol.25, Number 2.

Farley, R. (1953-4), The Rise of the Peasantry in British Guiana, Social and Economic Studies, Vol.2, No.4.

Gafar, J. (1987), The Supply Response for Sugar in Trinidad and Tobago: Some Preliminary Results, Applied Economics, Vol.19.

Harris, S. and Hagelberg, G.B. (1975), Effects of the Lomé Convention on World's Cane Sugar Producers, Overseas Development Institute Review, Vol.2, Part 2.

Johnson, F.I. (1982), Estimating Supply Despite a Quota, Brazil's Supply of Sugar, Economic Inquiry, Vol.20, January.

Johnson, F.I. (1983), Sugar in Brazil's Policy and Production, The Journal of Developing Areas, Vol.17, January.

Mahler, V.A. (1981), Britain, the European Community, and the Developing Commonwealth: Dependence, Interdependence and the Political Economy of Sugar, International Organisation, Vol.53, No.3.

Moynagh, M. (1977), The Negotiation of the Commonwealth Sugar Agreement 1949-51, Journal of Commonwealth and Comparative Political Studies, Vol.15.

Nath, D. (1970), A History of Indians in Guyana, Butler and Tanner Ltd., London.

Sackey, J. (1981), Elasticity of Substitution and Employment Generating Capacity of a Bauxite Firm in Guyana, Social and Economic Studies, Vol.30, NO.2.

Shaw, A. (1984), Impact of New Technology on the Guyanese Rice Industry, Efficiency and Equity Considerations, Journal of Developing Areas, Vol.18.

Spackman, A. (1975), Private Companies in the Politics of Empire, Social and Economic Studies, Vol.14, no.3.

Thomas, A. (1979), A History of the World, Harper and Row, New York.

Thomas, C.Y. (1984), Plantations Peasants and State: A Study of the Mode of Sugar Production in Guyana, Centre for Afro - American Studies, University of California and ISER of the University of the West Indies, Jamaica.

CHAPTER FOUR: EXPLAINING EXPORTS: THEORETICAL FRAMEWORK

INTRODUCTION

Chapter three analysed the production and export of major commodities in the Guyanese economy. The analysis identified the importance of each export commodity in the generation of domestic income and export revenues. The four major export commodities originated from two sectors, namely agriculture and mining. From the agricultural sector two export crops were examined, sugar and rice. Sugar represented the largest of the two export crops. In both cases, a large proportion of output was exported. Originating from the mining sector, bauxite and alumina exports were analysed. All the production of bauxite and alumina produced was exported except for a small level of inventory held by the mining companies. Therefore the export sector was characterised by primary products and their role was critical to the growth process of the economy. The importance of these primary commodity exports must be emphasised since the manufacturing sector was small and underdeveloped. Exports from this sector are insignificant, when compared to the levels achieved in the sugar, bauxite or rice industries. Only a theoretical and empirical analysis of the flow of commodity trade can provide a basis for formulating policy decisions.

Objective of Investigation

Our analysis is to examine the determinants of the supply of exports. Here we are analysing supply relationships in the export sector. This approach allows the identification of economic factors

which are responsible for commodity trade flows. In analysing the determinants of exports, we make the assumption that exports are influenced by supply side variables, such as domestic output, prices and the exchange rate. The analysis will ultimately allow us to investigate if a relationship between exports and these variables exists.

DEVELOPMENT OF FRAMEWORK OF ANALYSIS

It has been argued that trade between developing countries is a key element in the growth of national income, and that trade provides the 'engine of growth'[1] (Bhagwati, 1964). In the literature this relationship between exports and growth of national income is generally known as 'export led growth' (Kindleberger, 1962; Caves, 1971). Essentially this theory postulates that any growth in exports may contribute directly to the growth of income through the utilisation of unemployed resources, input-output relations, technical progress, increased employment and foreign exchange earnings. Growth in exports can affect not only increased domestic income but also increased domestic expenditure. The impact associated with these changes depends on the mechanism through which these changes are transmitted in the economy.

In relation to Caribbean economies, Seers (1964), and Bruce (1972), have found that because these economies were heavily dependent on trade, any increases in export earnings will induce both consumption and investment expenditures. The increase in export revenues may be caused by increases in the productivity of labour, technical progress or an increase in either the price or quantity of exports. Such an

increase in export revenues can be accompanied by an increase in wage claims in the export sector which may affect both the domestic price level and employment. The increase of wages in the export sector can lead to an increase in the supply price of labour. As the price of labour relative to capital rises, this may accelerate the substitution of capital intensive methods for labour using techniques (Demas, 1965). In a similar manner, government expenditures and domestic investment were also linked to the level of export earnings through taxation revenues and profits respectively. Increases in investment were connected with increased demand for capital goods, and for Guyana this meant an increase in the imports of capital goods.

The Kindleberger and Caves propositions emerged from the theory of international trade, where the rationale for encouraging trade was based on the principles of comparative advantage and the theory of factor proportions. But these two principles assume that competitive conditions between countries which participate in trade exist and do not consider some conditions which might affect trade, such as preferential trading arrangements, administered prices, direct foreign investment and inter-company trading practices between trading countries. Because of the presence of these conditions in the export sector of Guyana and most Commonwealth Caribbean countries, these theories may provide inadequate explanations of the determination of exports, and consequently one needs to look at alternative explanations for export flows.

In the previous chapter one observed that exports were responsible for a sizeable proportion of domestic income, but that the level of exports was unstable, which led to poor performance in economic growth.

Because of the importance of exports to the economy an investigation into the factors which determined their supply is necessary. Analysing supply rather than demand response is appropriate because exports rather than domestic consumption constitute a larger proportion of total production. This factor leads us to the second group of theoretical analyses. Here supply relationships are defined for exports, using the partial adjustment/stock adjustment model and its extensions. Originally these models were developed and applied to analyse supply response for agricultural crops and their application can be traced back to, Nerlove (1958). He proposed two basic theories of supply response behaviour for agricultural crops, the partial adjustment hypothesis, and the adaptive expectation hypothesis. In our analysis of exports both of these models are reviewed and applied.[2]

THE PARTIAL ADJUSTMENT MODEL

The use of the partial adjustment model to assess the responsiveness of supply to price has become a regular practice in underdeveloped countries. The survey of Askari and Cummings (1977 and 1976) provided a comprehensive analytical overview of the numerous studies conducted. Arising out of the debate three broad hypotheses can be identified:

1. That producers in underdeveloped countries respond positively and efficiently to relative price change, that is the supply curve is foward bending, and this has been found in the cases investigated so far (Schultz, 1965). There are numerous studies which support this view, some of which are, Behrman (1968); Krishna (1963); Parikh (1971); Bauer and Yamey (1959); and Stern (1962);

2. That the marketed surplus production of subsistence farmers responds perversely to price changes. Here the supply curves are backward sloping, being the result of economic factors: (Neumark, 1959; Mathur and Ezekiel, 1961; Khatkhate, 1962); and

3. That producers are insensitive to price changes, because of various institutional, structural, historical, political or sociological constraints (Dalton, 1962; Bourne, 1971). Here the supply curves are either nonexistent or backward sloping being the result of non-economic factors.

In short, all these studies utilised various formulations of Nerlove's (1958) partial adjustment or adaptive expectations model to analyse supply response in underdeveloped agriculture. Most of these models either adapted or extended Nerlove's basic model to incorporate additional explanatory variables.

Limitations of the Model

Depending on the nature and objectives of the investigation, the basic model was modified and extended in several different forms to analyse supply response. Despite its frequent use, there existed conceptual difficulties and problems in estimating and interpreting the results of such models. These were fully discussed and analysed in, Braulke (1982) and Askari and Cummings (1976 and 1977). Any discussion of these problems will therefore be repetitive, and as such we will only enumerate the most important ones here. These are as follows:

1. The choice of the price variable to be used in the estimation of the model. The argument is that a farmer's price adjustment process may depend on several factors, and it may not then be appropriate to test only the Nerlovian concept of price which is defined for normal or expected prices (using past market price data). We will then need to consider different price variables which might influence farmers to increase output;

2. The definition of the output variable. Here the controversy concerns itself not only with how output is measured; for instance whether to measure output based on weight or volume, or to incorporate the actual or desired acreage under cultivation. The point is that whatever distinction can be made between acreage and weight as measures of output, the analysis must consider crop yields which are influenced strongly by the weather in the short term and improvements in technology in the long term. These factors are relevant only in estimating supply response in

agriculture. They are mentioned because it may help to provide a background to Nerlove's model. Here we are interested in using Nerlove's model to estimate lags in export responses;

3. Serial correlation amongst the residuals, which can lead to biased parameters and estimates;

4. The difficulties associated with poor and unreliable data; and

5. The problem of multi-collinearity among explanatory variables which can produce errors in the estimation of parameters, and therefore affect the calculation of short and long run elasticities. The correction of the latter problem if observed in the analysis was quite difficult to remedy, and therefore the analysis can only serve as a guide in these circumstances (Braulke, 1982)

The analysis of exports of agricultural commodities, (sugar and rice), and mineral commodities, (bauxite and alumina), was conducted against those limitations, but most of the models considered by Askari and Cummings explained supply response of price to acreage planted. In our case we adapted the basic model to investigate the supply response of agricultural and mineral exports. The estimation of export supply functions for developing countries is well known in the literature. Hojman (1984a) analysed the economic factors responsible for changes in agricultural exports of some Latin American countries, while Gafar (1980) examined the supply response of agricultural exports from Jamaica using the partial adjustment model. Although these two studies dealt primarily with agricultural exports, supply functions can be

estimated for any type of exports, whether it be mineral or manufacturers'. It can take the conventional form arising from the theory of supply, or can be extended to incorporate distributed lags. In our case we concentrated on two basic versions of the lag distribution model, namely the partial adjustment and the adaptive expectation models to investigate exports.

DEVELOPMENT OF ANALYTICAL FRAMEWORK

The partial adjustment model postulates that the desired level of exports, (X^d_t) is determined by a function of the current level of price, (P_t). This can be expressed as follows:

$$X^d_t = \alpha + \beta p_t \qquad (4.1.i)$$

Where X^d_t = the desired current level of exports which depends on P_t in the long run supply relationship.

P_t = the actual current level of price.

For several reasons, for instance, uncertainties about future prices, the state of technology, and institutional rigidities, it may not be possible to adjust the actual and the desired level of exports within a single time period. Since the values of (X^d_t) are unobservable, it can be assumed that an attempt will be made to bring the level of (X_t) to the desired level of (X^d_t). Such an attempt can only be achieved partially in a single period.

Because of this difficulty, it is necessary to define a relationship between the actual and desired level of (X). This hypothesis can

stipulate that the current period's actual level of exports will be equal to the last period's level of exports plus an adjustment, which is taken to be some fraction (κ), of the difference between last period's actual exports and this period's desired level of exports. This relationship can be defined and written as follows:

$$X_t - X_{t-1} = \kappa(X^d_t - X_{t-1}) \quad (4.1.ii)$$

Where $0 < \kappa < 1$.

Equation (4.1.ii) suggests that changes in (X) will respond only partially to the difference between the desired level of (X) and the past level of (X). The rate of response being a function of the adjustment coefficient (κ). The unobservable term (X^d_t) can be solved for in equation (4.1.ii) which results in the following equation:

$$X^d_t = (1/\kappa)X_t + (\kappa - 1)/\kappa)X_{t-1} \quad (4.1.iii)$$

Substitution of (X^d_t) from equation (4.1.iii) into equation (4.1.i) yields a solution for (X_t).

$$X_t = \alpha\kappa + \beta\kappa P_t + (1 - \kappa)X_{t-1} \quad (4.1.iv)$$

In a similar manner this model can be reformulated so that the lag starts with (P_{t-1}) in equation (4.1.i) instead of P_t, as follows:

$$X^d_t = \alpha + \beta P_{t-1} \quad (4.2.i)$$

In this formulation the current level of (X) is a function of the preceding level of (P) rather than on the current level of (P). By substituting X^d_t from equation (4.1.iii) into equation (4.2.i) and rearranging terms, the solution for (X_t) is as follows:

$$X_t = \alpha\kappa + \beta\kappa(P_{t-1} + (1 - \kappa)X_{t-1} \quad (4.2.ii)$$

The difference between equations (4.1.iv) and (4.2.ii) is that (P_t) in the former is now replaced by P_{t-1} in the latter. Here the short run price elasticity is obtained from ($\beta\kappa$), and the long run elasticity is obtained from (β), and the mean lag is given as ($1 - \kappa)/\kappa$

In the above relationships, prices are defined either as current or past prices. However in the adaptive expectations hypothesis it is postulated that exports in any period are a function of the expected price of that period. This relationship can be written as:

$$X_t = \alpha_0 + \alpha_1 P^e_t \qquad (4.3.i)$$

Where P^e_t = the expected price in the current period.

X_t = the quantity of exports in the current period.

This relationship, states that the adjustment of prices can be expressed as a function of the difference between last period's actual and expected prices, or since prices are not known in advance, expectations have to be revised by comparing (P^e_{t-1}), with (P_{t-1}), because (P^e_{t-1}) is the most recent available of the prices. This relationship can be written as follows:

$$P^e_t = P^e_{t-1} + \beta(P_{t-1} - P^e_{t-1}) \qquad (4.3.ii)$$

Where β = the coefficient of adjustment, and

Where $0 < \beta < 1$.

If $(\beta) = 0$, expectations are totally divorced from actual prices; if $\beta = 1$ then expected prices are identical to last period's realised price and this resembles the cobweb model.[3] Also equation (4.3.ii) is of the same form as Koyck's distributed lag model,[4] where the formulation represents a moving average of past prices with the weights declining the further back in time. Equation (4.3.ii) can be written as follows:

$$P^e_t = P^e_{t-1} + \beta P_{t-1} - \beta P^e_{t-1} \quad \text{or}$$

$$P^e_t = P^e_{t-1}(1-\beta)+\beta P_{t-1} \quad \text{or}$$

$$\beta P_{t-1} = P^e_t - (1 - \beta)P^e_{t-1} \quad (4.3.iii)$$

From equation (4.3.i), lagging it once and multiplying by $(1 - \beta)$ results in the following expression:

$$X_{t-1} = \alpha_0+\alpha_1 P^e_{t-1}(1-\beta)X_{t-1} = \alpha_0(1-\beta)+\alpha_1(1-\beta)P^e_{t-1}$$

(4.3.iv)

Equations (4.3.i) and (4.3.iv) can be combined to produce the following expression:

$$X_t - (1 - \beta)X_{t-1} = \alpha_0 - \alpha_0(1 - \beta) + \alpha_1 P^e_t - \alpha_1(1 - \beta)P^e_{t-1}$$

(4.3.v)

Substituting equation (4.3.iii) into equation (4.3.v) results in the following expression:

$$X_t - (1 - \beta)X_{t-1} = \alpha_0 - \alpha_0(1 - \beta) + \alpha_1 P^e_t - \alpha_1(P^e_t - \beta P_{t-1})$$

$$X_t - (1 - \beta)X_{t-1} = \alpha_0(1 - (1 - \beta)) \alpha_1 P^e_t - \alpha_1 P^e_t \alpha_1 \beta P_{t-1}$$

$$X_t - (1 - \beta)X_{t-1} = \alpha_0 \beta \alpha_1 \beta P_{t-1} \qquad (4.3.vi)$$

Which can be reduced to the following expression:

$$X_t = \alpha_0 \beta + \alpha_1 \beta P_{t-1} + (1 - \beta)X_{t-1} \qquad (4.3.vii)$$

In equation (4.2.ii) the expected level of (P) is a weighted average of the present level of (P) and the previous expected level of (P). The expected levels of (P) are adjusted period by period taking into account present levels of (P). In equations (4.3.i) and (4.2.ii) the non-observable variables can be eliminated by the simplifications carried out in equations (4.3.iii) to (4.3.vii). The formulation of equation (4.3.vii) explains the current levels of exports as a function of the lagged dependent variable, (one period), and the price in the previous period. However it may be useful to modify the model to reflect price in the current rather than in the previous period. Here equation (4.3.i) can be rewritten in the same format, but equation (4.3.ii) must be reformulated as follows:

$$P^e_t - P^e_{t-1} = \beta(P_t - P^e_{t-1}) \qquad (4.4.i)$$

Where $0 < \beta < 1$.

The difference between equations (4.3.ii) and (4.4.i) is that in the former P_{t-1} is replaced by P_t, and the latter equation can be rewritten as follows:

$$P^e_t = \beta P_t + (1 - \beta)P^e_{t-1} \qquad (4.4.ii)$$

This equation shows that the expected level of (P) is a weighted average of the present level of (P) and the previous expected level of (P). The expected levels of (P) are adjusted period by period by taking into account the present levels of (P). By lagging equation (4.4.ii) period by period and multiplying by (1 - β); and substituting in repeatedly for P^e_{t-1}, P^e_{t-2}, ect. we get

$$(1 - \beta)P^e_{t-1} = \beta(1 - \beta)P_{t-1} + (1 - \beta)^2 P^e_{t-2}$$

$$(1 - \beta)^2 P^e_{t-2} = \beta(1 - \beta)^2 P_{t-2} + (1 - \beta)^3 P^e_{t-3} \quad \text{.....(4.4.iii)}$$

Substitute equation (4.4.iii) into (4.4.ii) and collecting terms gives the following expression:

$$P^e_t = \beta[P_t + (1 - \beta)P_{t-1} + (1- \beta)^2 P_{t-2} + ...]$$

$$P^e_t = \beta\sum_{s=0}^{\infty}(1 - \beta)^s P_{t-s} \qquad (4.4.iv)$$

Here the desired level of (P) is a weighted average of all present and previous values of (P) since the weights sum up to unity.

$$[\beta\sum_{s=0}^{\infty}(1 - \beta)^s = 1\ ]$$

Substituting equation (4.4.iv) into (4.3.i) results in the following:

$$X_t = \alpha_0 + \alpha_1\beta\Sigma(1 - \beta)^s P_{t-s} + E^*_t \qquad (4.4.v)$$

which (adding an error term for estimating) can be rewritten as;

$$X_t = \alpha_0\beta + \alpha_1\beta P_t + (1 - \beta)X_{t-1} + U^*_t \qquad (4.4.vi)$$

Where $U^*_t = E^*_t - (1 - \beta)\ E^*_{t-1}$

Here again the difference between equations (4.3.vii) and (4.4.vi) is that the latter has current prices, whereas the former has prices in the previous period. This is because of the difference pointed out in the formulation of equations (4.2.ii) and (4.4.i). These differences do not however affect the estimation of the equation parameters. If it is assumed that exports in the current period are influenced by price in the next period, then equation (4.3.i) can be modified as follows:

$$X_t = \alpha_0 + \alpha_1 P^e_{t+1} \qquad (4.5.i)$$

Here also the adaptive expectation model can be incorporated and it can be further reduced to a form which can be estimated as in equation (4.4.vi) or (4.3.vii)[5] However what is certain is that the same final equation is obtained from the partial adjustment hypothesis as that obtained from the adaptive expectation formulation. This shows the duality between the two hypotheses. Finally it should be noted that the adaptive expectations and the partial adjustment models can be combined into one compound geometric lag model. When equations (4.3.i) and (4.1.i) are compared, it is is found that each one represents a simple modification of the simple regression model:

$$\chi_t = \alpha + \beta P_t + E_t$$

In the adaptive expectations hypothesis P_t is replaced by its expected value of P^e_t, whereas in the partial adjustment hypothesis X_t is replaced by the desired level of X^d_t. Combining these two specifications results in the following equation:

$$X^d_t = \alpha + \beta P^e_t + E_t \qquad (4.6.i)$$

This equation postulates that the desired level of (X) is a linear function of the expected level of (P). In order for the model to be completed we must specify how the unobserved P^e_t and X^d_t are determined. For the former variable assume that it is determined by the hypothesis of the adaptive expectation model as outlined in equations (4.4.i) to (4.4.iv). For the latter variable it is presumed that it is determined by the hypothesis of the partial adjustment model as outlined in equations (4.1.i) to (4.1.iv). A final solution to the combination of the adaptive expectation and the partial adjustment model and its associated problems of estimation can be found in, Stewart (1976) and Eddie (1971). The basic model can be extended to include other explanatory variables besides price and the lagged dependent variable. These include the exchange rate, labour cost, a time trend, current production and a dummy variable to measure other variables which cannot be quantified.

Estimation Difficulties

A dummy variable may be included to account for factors such as institutional bottlenecks and industrial disputes, in particular years or periods. But the estimation of an equation which includes a lagged dependent variable on the right hand side presents some difficulties. Because of the anticipation of this problem, it is presumed that μ_t will follow the first order auto-regressive process as follows:

$$\mu = \lambda \mu_{t-1} + e_t$$

where $\lambda<|1|$ and

where $E(e)=0$; and

where $Cov(e) = \sigma^2 i$

The problem of auto-correlation and its treatment is explained in Stewart and Wallis (1981)[6] while the inclusion of the dummy,[7] takes care of the variables which cannot be measured quantitatively.

The preceding analysis developed a theoretical background to analyse the behaviour of exports. The basic partial adjustment/adaptive expectation model and its extensions were examined. These will be applied to conduct an analysis of exports in the following chapter.

CHAPTER FOUR: NOTES

1. The Ricardian and Heckscher Ohlin theories have been developed and tested to explain the reason for trade among countries. A survey and discussion of these theories and their statistical findings can be found in Bhagwati (1964).

2. A comprehensive survey of the origin, development and application of this model can be found in Askari and Cummings (1976 and 1977).

3. The cobweb model is well known in economic theory. A review of its theoretical justification and application can be found in Chiang (1984) and Waugh (1964).

4. Refer to Askari and Cummings, (1976) Chapter Three for a description of Koyck distributed lags, and to Appendix 4.1 where the Koyck-Nerlove Adaptive Expectations Model is outlined.

5. An example of this procedure can be found in Stewart and Wallis (1981), page 49.

6. When the estimation of an equation shows the presence of autocorrelation, Stewart and Wallis (1981) suggest several procedures to resolve this problem, the ~~The~~ Cochrane-Orcutt Iterative Method; The Cochrane-Orcutt two step Method; The Durbin's two step method; and The Hildreth-Lu Search method, known as the HILU method for short. TSP provides for the use of the first and last methods. The latter method specify the values of λ

a minimum and maximum value. The final estimate of this statistic is obtained by the search technique which look over alternate values of λ ranging from -1 to + 1, and selecting that result where sum of squares of the residuals is minimised. That is, the value of λ which causes it to be chosen as the estimate of the adjusted λ, and its coefficients as the estimate of α and β. The search technique is preferred over the other methods for the following reasons; First, because the iterative method stops after the estimates of α and β have been obtained at the start of the second stage. Therefore λ is estimated only once and the data transformed once. Second, TSP does not provide for the second method and in these circumstances the fourth method was chosen, because it provides a more efficient estimation in the presence of autocorrelation.

7. The use of the Dummy variable is well established, and its applications are found in, Intriligator (1978); Stewart and Wallis (1981) and Stewart (1976). In our case the dummy was specified as 1 in the first part of the period 1962-72, and 0 for the remainder of the period.

APPENDIX 4.1: OUTLINE OF KOYCK-NERLOVE ADAPTIVE EXPECTATIONS MODEL

The model is presented in six equations as follows;

$$X_t = \alpha_0 + \alpha_1 P^e_t \qquad (4a)$$

$$P^e_t = P^e_{t-1} + \beta(p_{t-1} - P^e_{t-1}) \qquad (4b)$$

Where X_t = the quantity in current period

Where P^e_t = the expected price in time t

Where P_t = the current price in time t.

And $\alpha_1 > 0$ in the case of supply; and

$\alpha_1 < 0$ in the case of demand.

β represents the coefficient of expectation, and the expected price is non observable and can be eliminated from equation (4b), which results in the following equation:

$$\beta P_{t-1} = P^e_t - (1-\beta) * P^e_{t-1} \qquad (4c)$$

Manipulation of equation (4a) by lagging it once and then multiplying by $(1-\beta)$ results in the following equation:

$$(1-\beta)X_{t-1} = (1-\beta)*(\alpha_0 P_0 + \alpha_1 P^e_{t-1}) \qquad (4d)$$

Combining equations (4a) and (4d) yield the following equation:

$$X_t-(1-\beta)X_{t-1} = \alpha_o-(1-\beta)\alpha_0+\alpha_1[P^e{}_t-(1-\beta)P^e{}_{t-1}]$$

(4e)

When equation (4c) is substituted into equation (4e) the following result is obtained:

$$X_t-(1-\beta)X_{t-1} = \alpha_0\beta+\alpha_1\beta P_{t-1}$$

(4f)

The reduced form equation obtained is,

$$X_t = \alpha_0\beta+\alpha_1\beta P_{t-1}+(1-\beta)\ X_{t-1}$$

(4g)

However for bauxite and alumina it is expected that the behaviour of price may be different from agricultural commodities. Here assume that production in the present period is influenced by the price in the next period. Thus equation (4a) can be modified to reflect this change.

$$X_t = \alpha_0+\alpha_1 P^e{}_{t-1} \qquad (4h)$$

Taking this factor into consideration equation (4g) can be re written follows follows:

$$X_t = \alpha_0\beta+\alpha_1\beta P_t+(1-\beta)\ X_{t-1}$$

(4i)

Where $(1-\beta) < 1$

Equation (4i) represents the Koyck-Nerlove model. The basic model is modified to incorporate other variables besides price, which are important in explaning X_t.

CHAPTER FOUR: REFERENCES

Askari, H. and Cummings, J.T. (1976), Agricultural Supply Response, A Survey of the Econometric Evidence, Praeger Publishers, New York and London.

Askari, H. and Cummings, J.T. (1977), Estimating Agricultural Supply Response with the Nerlove Model, A Survey, International Economic Review, Vol.18, No.2.

Bauer, P.T. and Yamey, B.S. (1959), A Case Study of Response to Price in an Underdeveloped Country, Economic Journal, Vol.69, December.

Behrman, J.R. (1968), Supply Response in Underdeveloped Agriculture: A Case Study of Four Major Annual Crops in Thailand, 1937-1963, North Holland Publishing Co.

Bhagwati, J. (1964), The Pure Theory of International Trade, Economic Journal, Vol.74.

Bourne, C. (1971), Supply Behaviour in the Rice Industry, 1950-1969. A Preliminary Analysis, Proceedings of the Sixth West Indian Agricultural Economic Conference, University of the West Indies.

Braulke, M. (1982), A Note on the Nerlove Model of Agricultural Supply Response, International Economic Review, Vol.23, No.1, Feburary.

Bruce, C.J. (1972), The Open Petroleum Economy. A Comparison of Keynesian and Alternative Formulation, Social and Economic Studies, Vol.21, No.2, June.

Caves, R.E. (1971), Export Led Growth and the New Economic History, in Bhagwati, Jones, Mindell and Vanek eds., Trade, Balance of Payments and Growth, North Holland Publishing Co.

Chiang, A.C. (1984), Fundamental Methods of Mathematical Economics, Mc Graw-Hill International Book Co., International Student Edition, Japan.

Dalton, G. (1962), Traditional Production in Primitive African Economy, The Quarterly Journal of Economics, vol.lxxvi.

Demas, W.G. (1965), The Economics of Development in Small Countries With Special Reference to the Caribbean, Mc Gill University Press, 1965.

Eddie, M. (1971), Farmers Response to Price in Large Estate Agriculture, Hungary 1870-1913, The Economic History Review, Vol.xxiv.

Gafar, J. (1980), Price Responsiveness of Tropical Agricultural Exports: A Case Study of Jamaica, 1954-1972, The Developing Economy, Vol.18.

Hojman, D.E. (1984a), The Effects of Oil and Migration on Bananas, Cocoa, Coffee and Cotton Exports in Latin America, Journal of Agricultural Economics, Vol.35.

Intriligator, M.D. (1978), Econometric Models, Techniques and Applications, Prentice-Hall Inc., New Jersey, USA.

Khatkhate, D.R. (1962), Real Effects of Foreign Surplus Disposal in Underdeveloped Economies, The Quarterly Journal of Economics, Vol. Lxxv1.

Kindleberger, C.P. (1962), Foreign Trade and the National Economy, New Haven, Yale University Press,

Krishna, R. (1963), Farm Supply Response in India Pakistan, A Case Study of the Punjab Region, Economic Journal, Vol. Lxx111.

Mathur, P.N. and Ezekiel, H. (1961), The Marketable Surplus of Food and Price Fluctuations in a Developing Country, Kyklos, Vol.v1x.

Nerlove, M. (1958), The Dynamics of Supply, Estimation of Farmers Response to Price. John Hopkins Press, USA.

Neumark, S.D. (1959), Some Economic Problems of the African Agriculture, The Journal of Farm Economics, Vol.x11.

Parikh, A. (1971), Farm Supply Response: A Distributed Lag Analysis, Bulletin of Oxford University, Institute of Economics & Statistics, Vol.33.

Schultz, T.W. (1965), Economic Crisis in World Agriculture, University of Michigan Press, USA.

Seers, D. (1964), The Mechanism of an Open Petroleum Economy, Social and Economic Studies, June.

Stern, R.M. (1962), The Price Responsiveness of Primary Producers, Review of Economic Statistics, Vol.44, May.

Stewart, M.B. and Wallis, K.F. (1981), Introductory Econometrics, Basil Backwell, Oxford.

Stewart, J. (1976), Understanding Econometrics, Hutchinson Publishing, London.

Waugh, F.V. (1964), Cobweb Models, Journal of Farm Economics, Vol.46.

CHAPTER FIVE: EXPORT EQUATIONS EMPIRICAL RESULTS

INTRODUCTION

Exports are analysed within the framework outlined in the previous chapter. Section one examines agricultural exports, which include sugar and rice, while section two examines mineral exports, consisting of bauxite and alumina.

SECTION A: EXPORTS OF AGRICULTURAL COMMODITIES

Sugar is the largest export crop, produced from eleven sugar plantations. Rice is a private sector activity, but marketing is performed by a statutory institution, the Guyana Rice Board (GRB). Relationships in these two industries are expected to be different, because of their special characteristics. Government sugar policy is aimed at increasing export rather than domestic revenue. Domestic demand is lower than export demand. Any increase in the domestic price of sugar would not have much impact on total revenue. The other reason is that the government wants to encourage the local industrial use of sugar. The policy of depressing the price of sugar discourages peasant farmers from increasing sugar cane cultivation significantly. Sugar is a plantation crop, with only a small amount produced by private farmers (the extent of this involvement is pointed out in Chapter Three). Consequently production decisions are influenced largely by government policy.

Relations in the rice industry may be different. First, production decisions are under the control of private farmers, although

distortions may exist because of the setting of prices by the GRB. Second, rice is a staple and is consumed by a large majority of the population, with twice daily consumption of the product. For this reason the policy has been to keep the domestic price low, while subsidising agricultural inputs. But this policy was pursued during a period of steeply increasing export prices for rice, and has influenced farmers to reduce their cultivation and output of the crop.

EXPORTS OF SUGAR

Studies Relating to Sugar

Several studies deal with supply response in sugar cane.[1] At least one well known empirical publication includes the Guyanese sugar industry (Gemmill, 1978). Other studies are of a descriptive nature.[2]

Factors Affecting Sugar Exports

Besides price, other factors are likely to affect sugar exports. The basic model can be modified to incorporate other explanatory variables: the exchange rate, labour costs, and production. Price, labour costs and production are discussed in Chapter Three, while the exchange rate is examined in Chapter Six.

Presentation of Model Results: Sugar

Two models are considered. The partial adjustment model is tested, and its results reported in equation 5.01, Table 5-R1. In the second

model the lagged dependent variable is excluded. Here four equations are estimated, which include the following explanatory variables: the wage rate in sugar, a dummy variable (which possibly stands for industrial disputes), a time trend (standing for migration of skilled manpower and low capital replacement), the price level deflated exchange rate and current production. The results are presented in equations 5.02 to 5.05, Table 5-R1.

In all equations the following notation is observed.

t-Statistic = Student t statistic, between parentheses.

$\bar{R}^2$ = The coefficient of determination adjusted for degrees of freedom.

D.W. = Durbin Watson Statistic.

N = Sample size.

Rho = λ coefficient of first order autocorrelation of errors.

OLS = Ordinary Least Squares Method.

Hilu = Hildreth-Lu-Search Method.

In all the regressions about 80% or more of the variation in sugar exports is explained, as indicated by the coefficient of determination $\bar{R}^2$. In equation 5.01 the lagged dependent variable is positive but statistically insignificant. The lagged price of sugar is positive and statistically significant but only at the 20% level of significance. The current production variable is statistically significant and its sign positive as expected. The dummy variable, representing industrial disputes, reports a negative sign and it is

statistically significant. This reflects poor industrial relations in sugar after 1973. The wage rate, a proxy for labour cost, is negative and statistically significant, indicating an inverse relationship between exports and wages. This is the best fit among those using the partial adjustment model, which suggests that partial adjustment is inadequate in explaining sugar exports.

Labour cost, poor industrial relations and current production are important (more than the lagged price and lagged dependent variable) in explaining exports of sugar. A point to note is that sugar cane cannot be replaced by other crops, and therefore the inclusion of an alternative price variable does not arise.[3]

Elasticity estimates are reported in Table 5-R1-1. The wage rate elasticity is low in the short and long run, while production elasticity is less than one in the short run but greater than unity in the long run.

TABLE 5-R1 RESULTS FOR SUGAR EXPORT EQUATIONS

	(5.01)	(5.02)	(5.03)	(5.04)	(5.05)
Lag. Dep.	0.905	-----	-----	-----	-----
	(0.648)	(-----)	(-----)	(-----)	(-----)
Constant	-4.773	25.009	28.775	18.735	-58.228
	(-0.069)	(0.504)	(0.261)	(0.374)	(-0.995)
Price	30.111	24.713	24.988	31.546	21.375
	(1.621)	(1.648)	(1.457)	(2.084)	(1.223)
Production	0.082	0.072	0.072	0.075	0.067
	(5.427)	(5.434)	(4.873)	(5.601)	(4.742)
Wage Rate	-0.400	-0.701	-0.727	-0.386	-----
	(-2.016)	(-2.473)	(-0.968)	(-2.243)	(-----)
Dummy	-45.627	-55.236	-55.648	-44.435	-44.557
	(-3.304)	(-4.307)	(-3.257)	(-3.935)	(-3.180)
Time	-----	2.498	2.484	-----	2.148
	(-----)	(1.379)	(1.294)	(-----)	(1.070)
Exc. Rate	-----	-----	-70.815	-----	1561.472
	(-----)	(-----)	(-0.039)	(-----)	(2.063)
$\bar{R}^2$	0.798	0.830	0.816	0.807	0.802
D.W.	2.440	2.33	2.3	2.2	2.4
N	19	19	19	19	19
Rho	-0.400	-0.50	-0.50	-0.40	-0.40
t-Stat.	(-1.90)	(-2.52)	(-2.52)	(-1.90)	(-1.90)
Method	HILU	HILU	HILU	HILU	HILU

(Continues on next page).

NOTES TABLE 5-R1

(1) The dependent Variable is exports of sugar in volume.
(2) Lag. Dep. is lagged dependent variable.
(3) Price, is the ratio of the index of export price of sugar to the index of the EEC import price of sugar, lagged one period.
(4) Production is current output of sugar cane, by volume.
(5) Wage rate is a proxy for labour cost in the sugar industry.

(6) Dummy is a dummy variable specified as 0 between 1962 - 72, and 1 between 1973 - 83, accounting for industrial disputes.
(7) Time is a time trend variable specified as 1 to 22 standing for migration of skilled manpower and low capital replacement.
(7) Exc. Rate is the exchange rate, Guyana dollars to the U.S. dollar, deflated by the consumer price index.

TABLE 5-R1-1 ESTIMATES OF ELASTICITY: SUGAR EXPORTS

Equations	(5.01)	(5.02)	(5.03)	(5.04)	(5.05)
Price					
Short Run	0.095	0.086	-----	0.110	-----
Long Run	0.105	-----	-----	-----	-----
Production					
Short Run	0.982	0.959	0.962	0.990	0.894
Long Run	1.085	-----	-----	-----	-----
Wage Rate					
Short Run	-0.070	-0.136	-----	-0.075	-----
Long Run	-0.078	-----	-----	-----	-----
Exchange Rate	-----	-----	-----	-----	0.238

Because of the failure of the partial adjustment model, another model was estimated. This model is represented by the four equations 5.02 to 5.05. These four equations report slightly improved results over the partial adjustment model, with the coefficient of determination $\bar{R}^2$ above 0.80 in all four equations. The lagged price variable is positive in all, and statistically significant in at least one of the equations. The production variable is positive and statistically significant in all cases. Labour cost and the dummy variable are negative as expected. The wage rate is statistically significant in equations 5.02 and 5.04, and the dummy variable in all equations. In the best fit (equation 5.02) all the explanatory variables except the trend are statistically significant. With regard to the other regressions, a model which includes the exchange rate (equation 5.03) performs slightly worse than the one which excludes it (equation 5.02). The price variable becomes statistically weaker and the wage rate statistically insignificant. The other variables are unchanged. When the trend and the exchange rate are excluded $\bar{R}^2$ falls to 0.807 (equation 5.04). Price and the wage rate variables are statistically stronger. Production and the dummy variable remain unchanged. A model which excludes the wage rate, but includes the time trend and the exchange rate (equation 5.05) results in the only case where the exchange rate becomes positive and statistically significant. The price variable becomes insignificant. The trend remains insignificant, with the dummy and production variables remaining significant. Possibly there exists collinearity between labour cost and the exchange rate. This is evident from the comparison of equations (5.02, 5.03, 5.05).

Some Conclusions:[4] First, explanatory variables such as production, wages, and a dummy are more important than price and the exchange rate in explaining sugar exports. The time trend is statistically weak. This suggests that the sugar industry is uncompetitive due to high labour costs and intense industrial disputes leading to reduced exports. Elasticities estimated at the means are low for the wage rate variable, but higher for production (Table 5-R1-1). Low elasticities for all regressors except production may be because production is included as an additional explanatory variable. Second, a comparison of these results with those reported by Gafar (1980 and 1981) for Jamaica, indicate that the relative decline of sugar in Guyana was more rapid than in Jamaica. This study investigated a more recent period than Gafar conducted for Jamaica. Finally, the analysis covered a period during which the entire industry was nationalised, and therefore some of the historical connections were abruptly broken up. These factors may explain at least partly the poor performance of the partial adjustment term.

EXPORTS OF RICE

The analysis of rice exports is conducted within the framework outlined in Chapter Four. The production and exports of rice are heavily dependent on imported inputs and machinery, because high yielding strains of paddy, (originating out of the Green Revolution) are cultivated. These varieties require the importation of insecticide and pesticides, fertilisers, agricultural machinery, storage and drying facilities. The policy in the rice industry is to maximise foreign exchange earnings from exports as against increasing the domestic price paid to farmers. Consequently, imported inputs and

machinery (needed in the production and export of rice) are sold to producers at subsidised prices, paid out from the revenues earned out of the difference between the export and domestic prices. The objective is to encourage farmers to use industrial inputs and modern machinery, rather than traditional farm implements. Increased costs of imported inputs and machinery arising out of any exchange rate movements are offset by subsidies.

Factors Affecting Rice Exports

Besides price, the other variables likely to affect rice exports are: the exchange rate, and current production. Two price variables are tested: the first consists of the ratio of the index of the price of exports to the index of the USA import price of rice; the second variable is the international price of rice in the USA. Both price variables are lagged one period. The domestic price of rice is unavailable for the entire period, therefore the export price is used as a proxy. Finally, the price level deflated exchange rate is incorporated to determine its effect on exports.

Presentation of Model Results: Rice

The model relies on the following explanatory variables: the lagged dependent variable, the lagged price, the price level deflated exchange rate and current production. The results are presented in Table 5-R2. All equations are estimated by the HILU method, which improved results over OLS.

TABLE 5-R2 RESULTS FOR RICE EXPORT EQUATIONS

	(5.06)	(5.07)	(5.08)	(5.09)
Lag. Dep.	0.386 (2.899)	0.392 (3.183)	0.499 (2.267)	0.388 (2.930)
Constant	-127.365 (-1.149)	-120.718 (-1.486)	36.194 (0.719)	-125.845 (-1.082)
Price	PPR1 2.841 (0.074)	----- ----- (-----)	PPR1 7.709 (0.240)	PR1 0.006 (0.051)
Exc. Rate	1818.509 (1.563)	1738.764 (2.146)	----- (-----)	1798.429 (1.483)
Production	0.813 (1.969)	0.809 (2.112)	0.478 (1.550)	0.814 (2.030)
Time	----- (-----)	----- (-----)	-3.290 (-1.635)	----- (-----)
R^2	0.460	0.496	0.412	0.460
DW	2.188	2.191	2.05	2.197
N	19	19	19	19
Rho	-0.300	-0.300	-0.200	-0.300
t-Stat.	(-1.37)	(-1.37)	(-0.89)	(-1.37)
Est. Method	HILU	HILU	HILU	HILU

Notes Table 5-R2

(1) The dependent variable is exports of rice in volume.
(2) Price is the price of rice; PR1 is international price of rice (USA price) lagged once. PPR1 is the ratio of the index of the export price of rice to the index of the USA import price of rice lagged one period.
(3) Production is the output of rice in volume.
(4) Exc.Rate is the exchange rate Guyana dollars to the U.S. dollar, deflated by the consumer price index.
(5) Time is a time trend variable specified as 1 to 22, standing for credit to producers.

TABLE 5-R2-1 ESTIMATES OF ELASTICITY: RICE EXPORTS

Equations	(5.06)	(5.07)	(5.08)	(5.09)
Exchange Rate				
Short Run	0.400	0.388	-----	-----
Long Run	1.036	0.991	-----	-----
Production				
Short Run	0.626	0.631	0.477	0.630
Long Run	1.620	1.612	0.954	1.622

In all equations the adjustment coefficient is positive and statistically significant. The speed of adjustment is high, indicating that over one half of the difference between the desired and actual quantity of exports are achieved in each year. The adjustment process is fairly short. The two price variables tested are positive but statistically insignificant. In the best fit (equation 5.07) $\bar{R}^2$ is equal to 0.496, accounting for one half of the variation in rice exports. In this equation the exchange rate and current production are positive and statistically significant. All the signs are as expected. Equation 5.06 includes the price variable (PPR1) in addition to those variables in equation 5.07. A comparison of equations 5.07 and 5.06 reveals that $\bar{R}^2$ decreases in the latter estimation, and the level of significance of the exchange rate falls. In equation 5.08 the exchange rate is excluded, but a time trend is included. These results suggest the weakness of the price variable (PPR1) in determining rice exports. Because of the insignificance of (PPR1) another price variable (PR1)

is tested in equation 5.09. This did not improve the fit substantially. Here again the price variable is statistically insignificant.

Although these equations do not represent statistically ideal results, they are exploratory and provide possible explanations for exports from an industry emerging from subsistence conditions. The exchange rate yields better results in the absence of the trend, and its level of significance drops with the inclusion of the price variable, suggesting the possibility of collinearity between the exchange rate, the price, and the trend variables.

These results imply that the exchange rate and current production are more important than price in explaining exports of rice. The partial adjustment model is adequate in providing an explanation for rice exports. Estimates of elasticities at the means are presented in Table 5-R2-1. The response for the exchange rate is low in the short run, but improves in the long run. The production elasticity in the short run is 0.63 but above unity in the long run. Low elasticities for some regressors may be because production is included as an additional explanatory variable.

The analysis of rice exports reveals three important features of the industry. First, that the industry can adjust to changing circumstances in a comparatively short period. Second, that exchange rate movements and production affect rice exports in a positive manner. Third, that the price impact is positive but weak. In relation to the latter point the results of the price response obtained are not unique to this study. Bourne's (1971) findings reveal a low price elasticity for rice. Shaw and da Costa (1985) report that output response to

inputs such as chemical fertilisers and use of mechanical equipment is positive and strong. Also, where drainage and irrigation are available, these have minimised the risks associated with adverse weather. A study by Henry (1984) reports similar results. The rice industry is one of the largest recipients of external loans in this period. This enables it to invest in harvesting, storing, drying and packing equipment, enhancing the export capability and ensuring that the quality of rice is consistent with foreign demand.

Summary

The rice and sugar industries occupy an important place within the agriculture sector, and they account for the largest proportion of export earnings originating from that sector. Further, exports are affected positively by economic variables, such as the exchange rate and production in the case of rice, labour cost, industrial disputes and production in the case of sugar. The elasticity of response for most variables except production is low. This is possibly because production is included as an explanatory variable. For sugar, the wage rate shows an inelastic response. In the case of rice the response of exports to production is high. The response of exports to exchange rate movements is close to unity in the long run. The exchange rate and production are more important than price in explaining exports. For agricultural producers, the exchange rate can be important. Exchange rate movements can contribute to the explanation of export behaviour in agricultural producers through effects on both income and cost (Hojman 1984a). For sugar and rice production, imported intermediate inputs are necessary. Fuel, factory equipment, spare parts and chemicals are needed for the successful cultivation, manufacture and

export of these crops. Here a lower exchange rate (less Guyana dollars per U.S. dollar) will result in lower production costs for the industry. That is, as the Guyana dollar is allowed to appreciate against the U.S. dollar, imports will remain relatively cheaper in domestic currency, while Guyana's exports abroad will become less profitable. This will result in less being exported, and at the same time, lower earnings in Guyana dollar values for exports. By contrast, a devaluation of the domestic currency will result in an increase in Guyana dollar revenues for those farmers engaged in exports. Each U.S. dollar earned through exports will mean more income to producers in domestic currency. But any depreciation of the domestic currency will result also in input imports becoming more expensive, and this will increase the cost of production for those producers who rely on imported inputs and machinery for their production.

SECTION B: EXPORTS OF MINERAL COMMODITIES

Introduction

Numerous studies examine the production, supply and demand for minerals from developing and developed countries. These fall into two categories. The first group include studies which are descriptive and analytical: (Auty 1980, 1983; Girvan 1967, 1970, 1971; Graham 1982). The second group consist of studies which are empirical in nature: (Hojman 1980, 1981, 1984b). The latter three studies review the controversies in the literature relating to mineral commodities. They discuss various empirical findings for mineral industries in the developed and developing countries.

Sackey (1981) estimates the elasticity of substitution between capital and labour inputs for one bauxite firm in Guyana and concludes that the employment generating capacity of the bauxite firm is limited. Any attempt to encourage large scale employment in the local industry can lead to higher costs which will result in lower productivity. This however is a micro study dealing specifically with the substitution between factors of production. Hojman (1984b) is a comprehensive analysis of the industry in the producer and the consumer countries. This work provides estimates for the Caribbean countries of Jamaica and Suriname. His specification of both supply and demand functions for bauxite producers and consumers departs from the conventional model, as developed by Koyck-Nerlove, where they emphasise the own price and the lagged dependent variables. This departure is significant for some mineral producers in Latin America and the Caribbean. In Caribbean countries, the mineral sector is the modern sector. It generates a substantial proportion of export revenues. In these circumstances a more detailed analysis and understanding of the inter-relationships existing in the industry will be required, than those which result from the Koyck-Nerlove model. Hojman's model, incorporating other variables such as industrial activity indices, substitute prices and energy costs provide an alternative model. This is used here to analyse Guyana's bauxite-alumina industry.

Factors Affecting Bauxite Exports

Bauxite exports may be influenced by: the price of aluminium, energy costs, labour costs, industrial activity in the consuming country, a partial adjustment term and the price of a substitute, in this case copper. Despite the nationalisation of the industry, the relationships

existing between producer and consumer have not been altered significantly. The raw material is exported to the same destination as before, where it is used in the manufacture of aluminium. Alumina and aluminium production are energy intensive. For a small non-oil producer country, any increase in the price of oil which is not matched by a similar increase in the price of aluminium may result in a decline in exports.

The model used for estimation is the partial adjustment/adaptive expectations model. The Koyck-Nerlove adaptive expectations model is outlined in Appendix 4.1. This basic model is modified to incorporate other variables besides the own price, which are seen as important in explaining exports.

Presentation of Model Results: Bauxite

The results are presented in five equations in Table 5-R3. The price of bauxite yields unsatisfactory results and is therefore eliminated from the analysis. The other price variables tested are the price of aluminium and the ratio of aluminium to oil prices.

The demand for bauxite is a derived one, determined solely by the demand for aluminium, which in turn depends on its own price and some other substitute, or related variables, in this case the cost of energy and industrial activity index of the consuming country.

In all equations, the lagged dependent variable is positive and statistically significant. The model results are good, accounting for

about 90% of the variation in exports, as indicated in the $\bar{R}^2$ which ranges from 0.893 to 0.968.

TABLE 5-R3 RESULTS FOR BAUXITE EXPORT EQUATIONS

	(5.10)	(5.11)	(5.12)	(5.13)	(5.14)
Lag. Dep.	0.471	0.249	0.478	0.458	0.361
	(5.421)	(8.010)	(7.467)	(5.385)	(12.893)
Constant	263.628	3790.961	-1707.100	2851.111	-2507.279
	(0.264)	(3.523)	(-1.832)	(-2.141)	(-2.323)
Aluminium Price	-----	1.481	-----	-----	-----
	(-----)	(1.633)	(-----)	(-----)	(-----)
Aluminium Price/ Oil Price	-----	-----	5.592	6.516	4.930
	(-----)	(-----)	(5.129)	(3.660)	(3.634)
Wage Rate	-25.083	-----	-18.700	-19.523	-----
	(-2.952)	(-----)	(-3.183)	(-2.359)	(-----)
Dummy	-1002.742	-----	-----	-----	-----
	(-2.913)	(-----)	(-----)	(-----)	(-----)
Time	-----	-245.984	-----	-----	-206.993
	(-----)	(-4.226)	(-----)	(-----)	(-3.661)
Lag.Ind.Index	58.572	-----	55.329	67.941	75.676
	(2.333)	(-----)	(3.360)	(3.059)	(3.887)
$\bar{R}^2$	0.923	0.895	0.957	0.893	0.968
DW	2.182	2.030	2.215	2.355	2.232
N	19	19	19	20	19
Rho	-0.300	-0.100	-0.300	-----	-0.500
t-Stat.	(-1.371)	(-0.438)	(-1.371)	(-----)	(-2.517)
Est. Method	HILU	HILU	HILU	OLS	HILU

Notes Table 5-R-3

(1) The dependent variable is exports of bauxite in 000'tons.
(2) Aluminium price is international price of aluminium.
(3) Aluminium price to oil price is the ratio between the international prices for aluminium and oil.
(4) Wage rate is the proxy for labour cost in the bauxite industry.
(5) Dummy is a variable specified as 0 between 1962-72, and 1 between 1973-83, accounting for the nationalisation of the industry.

(6) Time is a time trend variable specified as 1 to 22, standing for technological capability.
(7) Lag.Ind.Index is the USA industrial activity index lagged one period.

TABLE 5-R3-1 ESTIMATES OF ELASTICITY: BAUXITE EXPORTS

Equations	(5.10)	(5.11)	(5.12)	(5.13)	(5.14)
Aluminium Price					
Short Run	-----	0.173	-----	-----	-----
Long Run	-----	0.697	-----	-----	-----
Aluminium Price/Oil Price					
Short Run	-----	-----	0.260	0.290	0.173
Long Run	-----	-----	0.543	0.633	0.479
Wage Rate					
Short Run	-0.612	-----	-0.464	-0.464	-----
Long Run	-1.300	-----	-0.970	-1.012	-----
Lagged Industrial Index USA					
Short Run	1.163	-----	1.116	1.313	1.154
Long Run	2.471	-----	2.330	2.866	3.193

In the best fit (equation 5.14) all the regressors: the ratio aluminium price to oil price, the time trend and the USA lagged industrial index are statistically significant. The trend which possibly stands for technological capability is negative, indicating that as the industry grows older, this capability diminishes and exports decline. This is reasonable for an industry which is capital intensive, but unable to replace its capital equipment because of the shortage of foreign exchange. Any increase in wages (equations 5.10, 5.12, 5.13) will decrease the competitive edge of exports originating from this sector. The industrial activity index of the USA is lagged once, and its coefficient is positive, indicating that industrial growth in the consuming country in the previous year will stimulate production and exports in the current period.

The results suggest the following:

1. That the trend is statistically significant in the model explaining bauxite exports;

2. That the price of aluminium deflated by the oil price is important in determining the level of bauxite exports;

3. That the partial adjustment model provides efficient estimates for explaining bauxite exports;

4. That industrial activity in the USA in the previous period affects current exports.

5. That the price of aluminium is not as important as other variables such as labour cost and technology capability when explaining bauxite exports (even if the labour cost does not appear in the best fit, possibly because they are collinear with other regressors).

Elasticities estimated at the means are presented in Table 5-R3-1. The response to changes in the USA industrial activity impacts strongly on exports in the short and long run. The aluminium to oil price response is inelastic. Labour elasticity is low in the short run, but increases in the long run.

Exports of Alumina

Alumina production began in the early 1960s, out of a general expansion programme by the multinational firms to expand processing facilities in the bauxite producing countries. The implementation of this programme was in response to nationalist pressures in some developing countries, for mining companies to increase the local value added from bauxite mining. Alumina plants were established in Jamaica and Guyana and an aluminium plant was set up in Suriname.

The alumina plant built in Guyana was small, with an annual capacity of less than one million tons. The size of the plant at that time was considered to be efficient, but with the advancement of technology, it soon became uneconomical to produce alumina with such a small plant. Further, the production of alumina requires cheap and reliable energy supplies. After the OPEC oil shocks of the 1970s the cost of producing alumina rose sharply, and exports became uncompetitive. These two

factors may have influenced the decision to discontinue alumina production by the end of 1984.

Presentation of Model Results: Alumina

Alumina exports are analysed in three equations in Table 5-R4. In all of the equations over 80% of the variation in exports of alumina is explained. In these equations the lagged dependent variable is positive and statistically significant, with a fast rate of adjustment. The price of aluminium is positive, but statistically insignificant in equation 5.17. Equation 5.15 which includes the lagged dependent variable, the price of oil and the price of copper, reports all the explanatory variables as statistically significant. The price of oil is negative as expected and the price of copper is positive. A model which includes the production of bauxite (equation 5.16) results in a minor reduction in $\bar{R}^2$ to 0.83 when compared with equation 5.15, but all the other variables remain significant. In equation 5.17 the oil price is excluded, but the price of aluminium and a time trend (standing for technology capability) are introduced into the analysis. This increases the goodness of fit compared to equation 5.16. Both the production variable and the aluminium price remain insignificant. The trend is negative and statistically significant, suggesting that over time, exports decline because of low capacity utilisation caused by obsolete machinery in the alumina plant.

TABLE 5-R4 RESULTS FOR ALUMINA EXPORT EQUATIONS

	(5.15)	(5.16)	(5.17)
Lag. Dep.	0.221	0.236	0.045
	(4.030)	(3.767)	(5.325)
Constant	-89.870	-146.675	-1538.047
	(-0.265)	(-0.399)	(-0.900)
Oil price	-17.083	-14.728	-----
	(-3.370)	(-2.463)	(-----)
Copper Price	7.130	6.506	33.680
	(2.303)	(2.149)	(1.935)
Production	-----	0.038	0.341
	(-----)	(0.375)	(0.666)
Aluminium Price	-----	-----	0.249
	(-----)	(-----)	(0.259)
Time	-----	-----	-126.741
	(-----)	(-----)	(-2.227)
$\bar{R}^2$	0.842	0.832	0.847
D.W.	2.362	2.314	2.256
N	19	19	19
Rho	-0.300	-0.300	-0.400
t-Stat.	(-1.371)	(-1.371)	(-1.900)
Est. Method	HILU	HILU	HILU

Notes Table 5-R4

(1) The dependent variable is exports of alumina in 000'tons.
(2) Oil price is the international price of petroleum.
(3) Copper price is the international price of copper.
(4) Production is the output of bauxite in 000'tons.
(5) Aluminium Price/Oil Price is ratio of aluminium price to oil price.
(6) Aluminium price is the international price for aluminium.
(7) Time is a time trend variable specified as 1 to 22, standing for technology capability.

TABLE 5-R4-1 ESTIMATES OF ELASTICITY: ALUMINA EXPORTS

Equations	(5.15)	(5.16)	(5.17)
Oil Price			
Short Run	-0.169	-0.155	-----
Long Run	-0.764	-0.658	-----
Copper Price			
Short Run	0.370	0.425	0.415
Long Run	1.673	1.805	9.318

The analysis of alumina exports indicate that the copper price, the oil price and the trend are more important than production and aluminium price in explaining the behaviour of alumina exports. Alumina production requires much more energy than bauxite production. The elasticity estimates are presented in Table 5-R4-1.

SUMMARY

The model explains bauxite and alumina exports adequately, taking into account the relative decline of the industry. These results compare favourably with those obtained for other bauxite producers in the Caribbean, as reported by Hojman (1984b). For Jamaican bauxite the price response is perverse, but for Suriname the response to price is positive. In our case the price does not seem to be important in the case of alumina, but for bauxite, the aluminium price is positive and

statistically significant. The bauxite industry declined faster in Guyana than in Jamaica, but the functional relationship of Guyanese bauxite towards the international bauxite industry remained the same, that is, a supplier of ore to producers of aluminium. The size of operation contracted after 1971, and was unable to exert any considerable influence on demand or price. Unlike Jamaica, which applied a bauxite levy on exports, Guyana nationalised the industry. In the case of the former, the levy had adverse effects on exports. In the Guyana case, the industry was unable to apply a levy since it had to compete with other producers in the international market. Therefore price was not merely a transfer price between a subsidiary and a parent company as in the case of Jamaica but a price between a small producing firm and a large multinational company.

CHAPTER FIVE: NOTES

1. Surveys of those studies are conducted by Askari and Cummings (1976) Chapter Eight.

2. A full description of the economic and social relations in the industry is available in Thomas (1984).

3. In Guyana it is quite difficult to rotate cane with other agricultural crops because of the method of land preparation required. For example rice cultivation is practised in flooded fields, whereas sugar cane requires dry fields, with sufficient irrigation facilities. Cattle ranching also requires extensive pastures which cannot be grown on existing sugar cane fields. For these reasons the price of an alternative crop or activity was not tested in this model.

4. Other variables were tested: the personal disposable income of the U.K, which failed to link exports of sugar from Guyana to income expenditures in the U.K., the industrial production index of the U.K., the USA import price of sugar, (US$ per ton), and the number of those employed in the sugar industry.

CHAPTER FIVE: REFERENCES

Askari, H. and Cummings, J.T. (1976), Agricultural Supply Response. A Survey of the Econometric Evidence, Praeger Publishers, New York.

Auty, R.M. (1980), Transforming Mining Enclaves: Caribbean Bauxite in the 1970s, Tijdschrift Voor Economische en Sociale Geografie, Vol.lxx, No.13.

Auty, R.M. (1983), Multinational Corporations and Regional Revenue Retention in a Vertically Integrated Industry, Bauxite and Aluminium in the Caribbean, Regional Studies, Vol.117, No.1.

Bourne, C. (1971), Supply Response in the Rice Industry, 1950-1969: A Preliminary Analysis, Proceedings of the Sixth West Indian Agricultural Conference, University of the West Indies.

Gafar, J. (1980), Price Responsiveness of Tropical Agricultural Exports: A Case Study of Jamaica 1954-72. The Developing Economies, Vol.18.

Gafar, J. (1981), Devaluation and the Balance of Payments in a Developing Economy: An Analysis Relating to Jamaica, 1954-1972, Applied Economics, Vol.13.

Gafar, J. (1987), The Supply Response for Sugar in Trinidad and Tobago, Some Preliminary Results, Applied Economics, Vol.19.

Gemmill, A. (1978), Asymmetric Cobwebs and the International Supply of Sugar Cane, Journal of Agricultural Economics, Vol.xxlx.

Girvan, N. (1967), The Caribbean Bauxite Industry, Institute of Social and Economic Studies, University of the West Indies, Jamaica.

Girvan, N. (1970), Multinational Corporations and Dependent Underdevelopment in Mineral Export Economies, Social and Economic Studies, Vol.19, No.4.

Girvan, N. (1971), Bauxite, the Need to Nationalise, The Review of Black Political Economy, Fall.

Graham, R. (1982), The Aluminium Industry and the Third World, Multinational Corporations and Underdevelopment, Zed Press, London.

Henry, M.C. (1984), Farm Response to New Technology: An Econometric Appraisal of the Case of Guyana, Institute of Agricultural Economics, Report Series, No.10, University of Oxford.

Hojman, D.E. (1980), The I.B.A. and Cartel Problems, Prices, Policy Objectives and Elasticities, Resources Policy, Vol 6.

Hojman, D.E. (1981), An Econometric Model of the International Bauxite Aluminium Economy, Resources Policy, Vol.7, No.2.

Hojman, D.E. (1984a), The Effects of Oil and Migration on Bananas, Cocoa, Coffee and Cotton Exports in Latin America, Journal of Agricultural Economics, Vol. 35.

Hojman, D.E. (1984b), The Economics of Bauxite and Aluminium, Distributed Lags and New Econometric Estimates, Resources Policy, September.

Sackey, J. (1981), Elasticity of Substitution and Employment Generating Capacity of a Bauxite Firm in Guyana, Social and Economic Studies, Vol.30. No.2.

Shaw, A.B. and da Costa, R.C. (1985), Differential Levels of Technology Adoption and Returns to Scale in the Guyanese Rice Industry, Canadian Journal of Agricultural Economics, Vol.33.

Thomas, C.Y. (1984), Plantations Peasants and State: A Study of the Mode of Sugar Production in Guyana, Centre for Afro - American Studies, University of California, and ISER of the University of the West Indies.

Worrell, D. (1981), External Influences and Domestic Policies. The Economics of Barbados and Jamaica in the 1970s, Social and Economic Studies, Vol.30, No.9.

CHAPTER SIX: INFLATION AND THE EXCHANGE RATE

INTRODUCTION

Inflation grew faster in the second half of the 1970s. The analysis of agricultural exports reveals that the exchange rate is an important variable. Inflation and the exchange rate are related and their relationship is examined in this chapter. The first part examines factors influencing inflation, while the factors influencing the exchange rate are analysed in the second part.

The examination of the inflationary process takes into consideration the economic strategy of the government after 1966.[1] The growth in prices was gradual. In percent terms, inflation was in single digits until 1973, increased to 17.6% in 1974, and fell below 10% between 1975 to 1977 (Chart 6.1). Since 1977 inflation was again in double digits (Table 6-1).

Some possible explanations for the rise in domestic prices are examined below with the help of an analysis which divides the economy into tradeable and non - tradeable sectors.

DEFINITION OF INFLATION

Inflation is defined as the persistent or sustained rise in the general level of prices. Two schools of thought provide explanations for the causes of the inflationary process: the "demand-pull" and the "cost-push" theories. The demand - pull school argues that excess demand in the goods market is responsible for the rise in the price

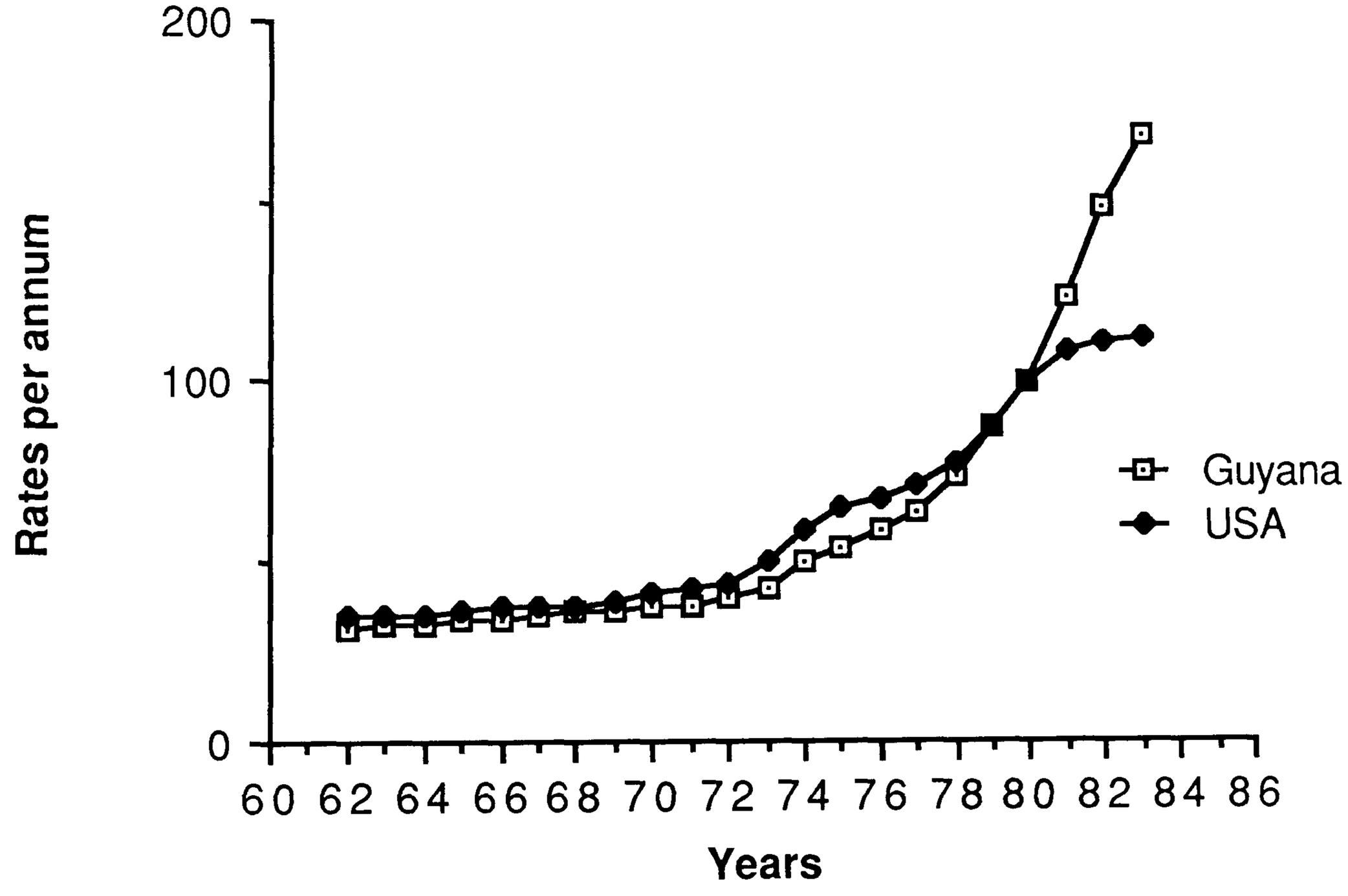
level. Their argument is that if current or expected demand in the market place is in excess of supply at current prices an inflationary gap develops. This problem is examined from two approaches: the Keynesian and the Monetarist approaches. The former suggests that excess demand is caused either by shifts in aggregate demand or interest rate movements which in turn influence changes in investment. The Monetarist approach grew out of the Chicago School, and argues that excess demand is caused by an excess of money supply which increases expenditure in excess of cash balances.

The cost push school contends that inflation is caused by increased costs of production which trigger the inflationary process. There are two basic theories: the mark-up and the bargaining power approaches. The mark-up theory assumes an uncompetitive economy in which groups attempt to control a portion of the national income by influencing money prices. The bargaining power theory argues that trade unions have considerable power to cause wages to rise.

The demand-pull and cost-push theories were supplemented by the Phillips/Lipsey hypothesis in the 1960s. Their theory suggests that in the long run, changes in wages are determined by excess demand in the labour market measured by the unemployment rate. In the short run, changes in import prices and productivity together with excess demand cause inflation to rise. These are well known theories in the economic literature, and a discussion here would only be repetitive.[2] More relevant to discuss are the factors responsible for the development of the inflationary process in Guyana.

CHART 6.1

Inflation: Guyana and USA



Factors Affecting Inflation

Inflation may be caused by the interaction of cost push and demand pull factors. These forces may operate in the external sector. The economy is heavily dependent on foreign exchange earnings obtained from the main export commodities, sugar, bauxite and rice, and from foreign capital inflows. These are needed to finance the importation of consumer, intermediate goods and capital equipment. Increases in export earnings may be accompanied by an increase in wage demands in the export sector. Wage increases in this sector may lead to a rise in the domestic price level.[3] Alternatively, an increase in export earnings may also result in higher consumption and investment expenditure, which subsequently lead to an increase in imports. Because imports are large as a share of GDP, any increase in the price of imports will result in an upward movement of the domestic price level.

Fixed exchange rates may lead to higher prices for tradeables resulting in a deterioration in the current account of the balance of payments. This analysis developed from the study of Scandinavian countries in the 1960s. Their economies experienced rapid growth, strong currencies and favourable balance of payments, but inflation rates were higher than the world rate. Examination of this phenomenon led to the development of an analysis of inflation which distinguished between tradeables and non- tradeables,[4] and found that productivity was higher in the tradeables sector (Morley, 1988). This basic model is outlined in Appendix 6.1.

The model was used to study inflation in Australia (Salter, 1959), the Scandinavian countries[5] (Edgren et al, 1969), Israel (Bruno, 1979) and Chile (Corbo, 1985). Corbo extends the basic model and introduces the following modifications.

(1) Tradeable goods are separated into primary and manufactured commodities.

(2) The Phillips curve approach is used to analyse changes in wage rates in the tradeable and non-tradeable sectors.

(3) The assumption is made that changes in the wage rate are not identical in both sectors; and

(4) The model is developed to accommodate lags.

The basic model divides the economy into two main sectors, the tradeable and non-tradeable sectors, and further distinguishes between tradeable goods according to the degree to which imports can be substituted for them. Some tradeables are homogeneous. They are perfect substitutes for competing imports. Other tradeables are termed differentiated, in those cases where the substitution is less than perfect. There is only one price for identical tradeables, that is, changes in domestic prices are equivalent to the changes in the international price and any exchange rate movement effects.

Increases in the price of non-tradeable goods are influenced by domestic factors. They follow a mark-up rule where price increases are equal to the sum of increases in wages and employers' contributions to social security, net of any improvement in labour productivity (Hojman, 1986). The non-tradeable good prices are also determined by the level of aggregate demand. If imported inputs are used in the production of non-tradeable goods then price rises for these goods may be influenced by both world prices for the imported raw material

inputs, and by changes in the exchange rate. Finally inflation in differentiated tradeables can be affected by those factors affecting price increases for homogeneous tradeables, and also by non-tradeable price rises.

For Caribbean countries, Holder and Worell (1985) developed and applied a similar model to explain inflation in Barbados, Jamaica and Trinidad and Tobago. Their model analysed the effects of price and output of tradeable goods on the price of non-tradeable goods. Their argument is that price increases for tradeable goods may impact on wage increases, which in turn increase the costs of producing non-tradeable goods. An increase in the supply of tradeable goods creates more income and spending, part of which can be directed to non-tradeable goods. Also, foreign exchange reserves may increase if the surplus of tradeable goods is exported. This will lead to an increase in the money supply, and a reduction in the cost of borrowing. A reduction in the cost of capital stimulates the growth in expenditure, which eventually results in the development of inflation. Taking into account the availability of suitable time series data, an analysis based on Corbo's model is developed and applied to explain inflation in Guyana.

Outline of Analytical Framework

The model is expressed in rates of change for all the variables listed.

$$I = \lambda * It + (1-\lambda) * In \qquad (6.0)$$

Where $0<\lambda<1$.

$$It = \mu*Id+(1-\mu)*Ih \qquad (6.1)$$

where $0<\mu<1$.

$$Ih = Ih^{*} + E \qquad (6.2)$$

Where the symbols are defined as follows;

I = Aggregate inflation as measured by the consumer price index.

It = Price inflation in tradeable goods.

In = Price inflation in non-tradeable goods.

Id = Price inflation in differentiated tradeable goods.

Ih = Price inflation in homogeneous tradeable goods.

E = Exchange rate, Guyana dollar to the U.S.dollar.

Ih^{*} = International inflation, homogeneous tradeable goods.

Wrn = Wages for differentiated non-tradeable goods.

Scn = Social security contributions for differentiated non-tradeable goods.

Pln = Marginal productivity of labour for non tradeables.

In^{*} = International inflation, for imported inputs into the production of non-tradeable goods.

Edn = Excess market demand for non-tradeable goods.

Wrd = Wages for differentiated tradeable goods.

Scd = Social security contributions for differentiated tradeable goods.

Pld = Marginal product of labour for tradeable goods.

Id^{*} = International inflation for differentiated tradeable goods.

Edd = Excess market demand for tradeable goods; and

I^{*} International inflation as measured by changes in the wholesale price index of the U.S.A.

$$In = \alpha_0+\alpha_1*(Wrn+Scn-Pln)+\alpha_2*(In^{*}+E) +\alpha_3*Edn \qquad (6.3)$$

$$Id = \beta_0+\beta_1*(Wrd+Scd-Pld)+\beta_2*(Id^*+E) +\beta_3*Edd. \quad (6.4)$$

These five equations outline the basic inflation model. Due to the unavailability of suitable time series data for Ih^*, Id^* and In^* the Guyana model is modified in a manner reflecting this limitation. Thus international inflation, as measured by the wholesale price index of the U.S.A., is used as an approximation for all three of these variables. The use of this proxy is justified since the U.S.A. is one of Guyana's main trading partners.

Therefore $Ih^* = Id^* = In^* = I^*$

To obtain a suitable estimating equation, substitute equations (6.2) and (6.4) into equation (6.1), and then again substitute equation (6.1) and (6.3) into equation (6.0). After these substitutions and making some assumptions,[6] the resulting equation can be expressed as follows.

$$I = \theta_0+\theta_1*(I^* +E)+\theta_2*(Wr- Pl)+\theta_3*Ed. \quad (6.5)$$

Where θ_0, θ_1, θ_2, and θ_3 are expressed in terms of λ, μ, α_0 to α_3 and β_0 to β_3 respectively.

Presentation of Model Results: Inflation

The results of the analysis are reported in Table 6-R1. All the equations are satisfactory. $\bar{R}^2$ is over 0.70 in two cases, and over 0.80 in the remaining two. The signs of the explanatory variables are as expected. The lagged dependent variable is positive and statistically significant, suggesting the possibility of a partial adjustment process. In equation (6.01) international as well as domestic factors are important for explaining inflation. The international price

variable is positive and statistically significant, while the wage rate reports the correct sign, but its level of significance is weak. Both labour productivity and excess market demand are positive but insignificant.

In the second equation (6.02) international price inflation, the wage rate and labour productivity are excluded from the regression, but two additional variables are tested. They are the sum of international inflation and exchange rate changes, and the difference between the wage rate and the average productivity of labour. This experiment results in a reduction in the adjusted $\bar{R}^2$ to 0.69. But the external trade factor, represented by the sum of international inflation and the exchange rate is statistically significant. The excess market demand variable is significant at the 20% level, while the variable representing labour cost net of labour productivity gains is statistically insignificant.

TABLE 6-R1 RESULTS FOR INFLATION EQUATIONS

	(6.01)	(6.02)	(6.03)	(6.04)
Lagged Dep.	0.742 (4.918)	0.734 (4.235)	0.762 (4.869)	0.699 (6.595)
Constant	-0.005 (-0.371)	-0.002 (-0.144)	-0.003 (-0.189)	-0.005 (-0.409)
Int. Price	0.434 (2.395)	----- (-----)	----- (-----)	0.479 (3.403)
Wage Rate	0.073 (1.208)	----- (-----)	----- (-----)	(0.082) (1.505)
Labour pro.	0.015 (0.136)	----- (-----)	----- (----)	----- (-----)
Excess mkt.dem.	0.034 (0.452)	0.104 (1.354)	0.108 (1.461)	----- (-----)
Int.price + exc.	----- (-----)	0.334 (2.160)	0.329 (2.192)	----- (-----)
Wage - lab. pro.	----- (-----)	0.022 (0.441)	----- (-----)	----- (-----)
$\bar{R}^2$	0.830	0.691	0.702	0.856
D.W.	2.153	2.033	2.013	2.162
N	20.0	20.0	20.0	20.0
Rho.	-0.375	-----	-----	-0.411
t statistic.	(-1.586)	(-----)	(-----)	(-1.896)
Est. Method.	AR1	OLS	OLS	AR1

Notes Table 6 R-1

(1) All variables are in rates of change.
(2) The dependent variable is the consumer price index of Guyana, 1980 = 100.
(3) Int. price is the USA's wholesale price index, 1980 = 100.
(4) Wage rate is Guyana's wage rate.
(5) Labour pro. is Average productivity of labour.
(6) Excess mkt. dem. is excess market demand, approximated by the difference between money supply and GDP (real terms).

(7) Int. price + exc. is USA's wholesale price index plus the exchange rate, G$ to the US$.
(8) Wage - lab. pro. is wage rate plus average productivity of labour.
Sources of Data
International Financial Statistics IMF Yearbook 1985, and Yearbook of Labour Statistics, International Labour Organisation various issues.

The difference between the wage rate and the average productivity of labour is also dropped in the third equation. This results in a minor improvement in the fit with $\bar{R}^2$ rising marginally to 0.70. Here the level of significance of both excess market demand and the sum of international inflation and the exchange rate remains unchanged or improves marginally. The final equation (6.04) represents the best fit with the adjusted $\bar{R}^2$ equal to 0.86. Here international inflation is statistically significant, and the wage rate is statistically significant at the 20% level. All the other variables tested in the previous equations are now excluded from this equation.

The results suggest that international inflation or international inflation plus exchange rate movements and labour cost are important factors influencing inflation. The level of significance of the labour cost variable suggests that its effect on the inflationary process is not as strong as one would have expected. This is most interesting, since from a Keynesian point of view, the price level is poised to vary directly with the wage rate.

Summary

In short, international inflation is more dominant than wages in explaining domestic inflation. This does not however exclude the role

of variables such as the wage rate, and excess market demand, and the growth in the money supply. Money supply yielded unsatisfactory results, which does not suggests that the monetarist element may be absent in the inflationary process, but rather that this method of analysis proved inadequate to explain inflation from a monetarist perspective. Despite these drawbacks the model provides satisfactory evidence as to the causes of inflation. Holder and Worrell (1985) used a more disaggregated model for their analysis of Caribbean inflation, but their conclusions are somewhat similar to those obtained here for Guyana. Their conclusion, that foreign trade factors such as foreign prices and exchange rate movements have a significant impact on domestic inflation, coincides with the results obtained by us in the case of Guyana. Evidence that domestic influences such as wage increases may affect inflation is stronger in Jamaica than in Guyana. In the case of Barbados wage effects are insignificant, while in Trinidad and Tobago, labour cost is responsible for a small price response. The importance of factors such as international inflation, labour costs and the sum of international prices plus exchange rate movements suggests that an examination of the exchange rate may provide additional evidence on the behaviour of monetary aggregates. Such an examination is conducted in the next part of this chapter.

PART TWO: THE FOREIGN EXCHANGE RATE

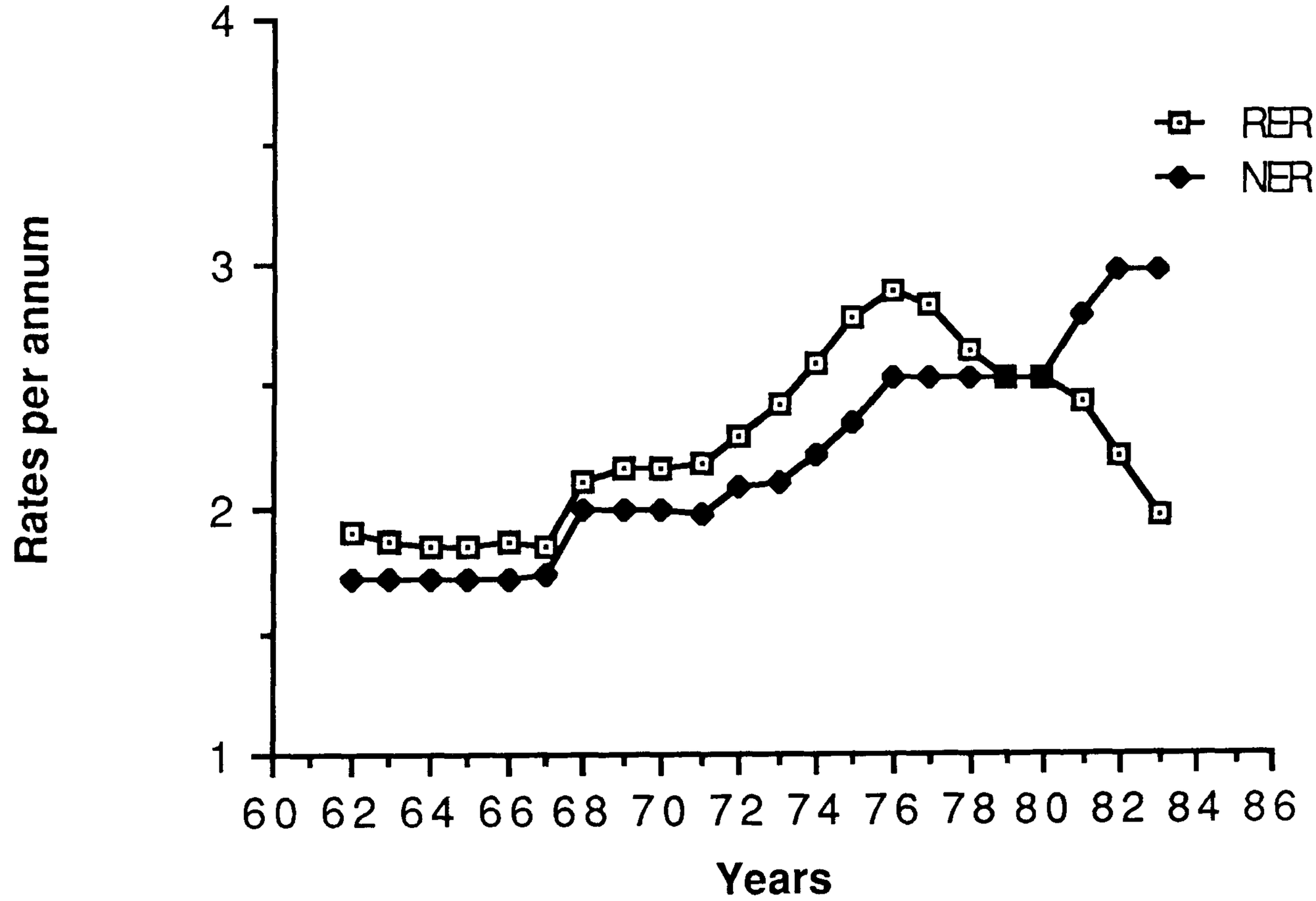
The foreign exchange rate is the relative price of two currencies, expressed as the amount of one currency paid to purchase a unit of the other one. An appreciation or rise in the value of the currency occurs when the exchange rate (domestic currency units per unit of foreign

currency) falls. Depreciation or fall occurs when the exchange rate (domestic currency units per unit of foreign currency) increases.

A fixed exchange rate policy sets it at a value declared and maintained by active intervention of the Central Bank. It declares a central or par value at which it will act to maintain the value of its currency.[7] Countries with flexible or floating exchange rate allow their currency to float with changing market conditions. In this case there may not be an official rate. The Central Bank does not intervene in the foreign exchange market to influence the price of its money. The real exchange rate is the relative price of domestic and foreign goods. This rate is examined in detail below.

CHART 6.2

Nominal and Real Exchange Rates



The exchange rate forms a link between domestic and international prices. If the domestic rate of inflation is higher than the international one and the exchange rate is unchanged, exports will become uncompetitive. Domestic output will fall, and exporting industries will become unprofitable. Imports will become cheaper relative to domestically produced goods, which may lead to increased imports. If a depreciation of the exchange rate is not implemented, then a deficit in the balance of payments may occur.

Exchange Rate Adjustments

The Guyana dollar floated with the Pound Sterling until October 1975. Thereafter it was linked to the US dollar. There were several adjustments to the exchange rate, the more important ones in 1975, 1981 and 1984 (Table 6-2). At the end of 1975 the rate was G$ 2.55 to US$ 1.00. In 1981 the rate was devalued to G$ 3.00 to US$ 1.00, and in 1984 to G$ 3.75 to US$ 1.00 (Chart 6.2). Since 1984, the currency was adjusted weekly against a basket of currencies, with the rate of the Guyana dollar to the US dollar being the intervention band.[8] The basket of currencies consists of the Pound Sterling, the German Mark, the Japanese Yen, the French Franc and the Dutch Guilder, each with equal weights.

The Real Exchange Rate

The real exchange rate indicates the degree of competitiveness of the economy. Changes in the real exchange rate are small (Table 6-2). But changes can be identified in three periods. The rate was below two up to 1967. Between 1968 and 1977 it rose from 2.1 to 2.9, then fell.

In 1983 it fell again below two. The real exchange rate is measured by the relationship below:

$$Rer = EI^{*} \div I$$

Where Rer is the real exchange rate;

E is the exchange rate;

I^{*} is the international price level

I is the domestic price level.

The ratio indicates the degree of competitiveness: the higher its value the more competitive are exports and import substitutes. If EI^{*} falls below I, consumers may switch their preferences to imported goods.[9]

FACTORS AFFECTING EXCHANGE RATE MOVEMENTS

There are two basic approaches to explaining exchange rate movements: absorption and the monetary approaches.

The Absorption Approach

The absorption approach examines the changing pattern of demand and supply of goods between different economies. Changes in this pattern can be a result of changes in income elasticities of demand, different costs of production, technological progress or the discovery of new resources. The absorption approach focuses on the flow of goods and services. If excess domestic absorption exceeds output then the exchange rate should depreciate, or if output exceeds absorption, then the exchange rate would appreciate. In this case the emphasis is on

the variables in the current account which will influence movements in the exchange rate.[10] The approach is limited in a sense that it may not be able to predict extreme exchange rate volatility. They depend on information on the factors which determine changes in the demand and supply of goods and services, and these changes occur slowly.

The Monetary Approach

This approach focuses on the imbalance between the demand and supply of money, and its impact on domestic prices. The impact on domestic prices is linked by the theory of purchasing power parity (PPP).

Purchasing Power Parity

There are two relationships: absolute purchasing power parity and relative purchasing power parity theories of exchange rates. Absolute purchasing power parity is expressed as:

$$E = I/I^*$$

It states that the price level expressed in a single currency will be equal in all countries. Under fixed exchange rates it is assumed that the world has one currency. If there is a BOP disequilibrium, movements in money will take place. These changes will affect I and I^*. The LOOP as discussed in note eight will hold. But when independent monetary policy is pursued by different countries, the purchasing power of different monies falls at different rates. The LOOP will no longer hold. The real exchange rate would fall below unity as I rises faster than I^*, unless E increases. In this case exports and import

substitutes will be uncompetitive. Competitiveness would remain constant if the exchange rate was determined by absolute purchasing power parity, where $E = I/I^*$. But this relationship will not always hold, since the real exchange rate will not always be unity and E can change also. Table 6-2 presents estimates of the ratios. Absolute purchasing power parity was fairly constant up to 1972. It fell between 1973 to 1977, then increased to over one for the remainder of the period.

Relative purchasing power parity states that nominal exchange rates will change in a manner which maintains equilibrium real exchange rates, taking into account differential inflation. It is expressed as:

$$\Delta e = i - i^*$$

The rate of increase in the exchange rate equals the difference between the domestic and international inflation rates. The expression indicates that the difference in competitiveness in goods in different countries will determine supply and demand of currencies and influence exchange rate changes which will move goods price toward equality, if these prices are converted in a common currency. A country experiencing high inflation will have lower export volume, and a lower demand for its currency abroad. This would cause a reduction in the exchange rate to a level where competitiveness is restored. However purchasing power parity has several limiting assumptions:[11]

(1) It is assumed that there exists high substitutability between goods in different countries. If price rises in one country, purchasers will switch from expensive markets to cheaper sources of supply;

(2) That there are no barriers to trade, so that buying from the cheapest source is possible;

(3) It is implicitly assumed that all goods are traded. Although the price of substitutable traded goods may be equalised, this may not be true for non - tradeable goods.

Despite these limitations the PPP is a good measure of a country's competitiveness. It establishes the relationship between inflation and the exchange rate which arise from arbitrage[12] operations in the goods markets. Analysis of the determinants of the exchange rate is presented below.

Presentation of Model Results: Exchange Rate

The results of the foreign exchange rate are presented in four equations in Table 6-R2. In the best fit (equation 6.07) the signs of the trend, domestic inflation and the lagged dependent variable are positive. The trend possibly stands for the progressive deterioration of the public debt position, external debt position and debt service payments. All these have been getting worse in the last 20 years. The trend is statistically significant while domestic inflation and the lagged dependent variable are statistically weaker. The balance of payments impact is negative and statistically insignificant. All the signs are as expected.

TABLE 6-R2 RESULTS FOR EXCHANGE RATE EQUATIONS

	(6.05)	(6.06)	(6.07)	(6.08)
Lag. Dep.	-----	0.097	0.312	0.0903
	(-----)	(0.341)	(1.389)	(0.379)
Constant	1.416	1.279	0.984	1.772
	(16.270)	(3.117)	(3.088)	(3.682)
Domestic Inflation	0.0028	0.0024	0.0016	0.0059
	(1.432)	(1.036)	(1.501)	(2.738)
International Inflation	-0.0028	-0.0020	-----	-----
	(-0.538)	(-0.349)	(-----)	(-----)
Balance of Payments	-0.0004	-0.0004	-0.0004	-0.0004
	(-0.638)	(-0.579)	(-0.516)	(-0.682)
Time	0.0666	0.0588	0.0391	-----
	(3.550)	(1.961)	(2.925)	(-----)
$\bar{R}^2$	0.923	0.918	0.962	0.476
D.W.	1.641	1.757	1.660	1.738
N	19	19	20	19
Rho	0.300	0.300	-----	0.800
t-Statistic	(1.371)	(1.371)	(-----)	(5.812)
Est. Method	HILU	HILU	OLS	HILU

Notes Table 6-R2

(1) The dependent variable is the exchange rate, Guyana dollars per US dollar, period average.
(2) Domestic inflation is the Guyana consumer price index 1980 = 100.
(3) International inflation is the wholesale price index of the US 1980 = 100.
(4) Time is a time trend variable specified as 1 to 22, which stands the progressive deterioration of the public debt position, external debt position and debt service payments.

Source

International Financial Statistics, IMF Yearbook 1985.

With regard to other regressors, a model which includes international inflation (equation 6.06) reduces the significance of all the other variables and the reliability of the estimation, with the trend still statistically significant. The international inflation impact is negative. When both international inflation and the time trend are excluded from the analysis (equation 6.08) the reliability of the estimation falls sharply to 0.476. Here domestic inflation is statistically significant, but the balance of payments insignificant. When the lagged dependent variable is dropped (equation 6.05), the reliability of the estimation does not improve substantially.

Two observations can be derived. First, domestic inflation influences the exchange rate but its impact is not very strong. There is no relationship between the exchange rate and international prices. Domestic inflation was lower than international inflation until 1978, about equal in 1979-80, but faster between 1981-83 (Table 6-1). Second, the exchange rate does not seem to be determined by the balance of payments. Adjustments to the exchange rate are infrequent (Table 6-2). The Central Bank does not change the exchange rate immediately when there are short run fluctuations in the balance of payments, indicating a very cautious attitude towards exchange rate changes.

SUMMARY

The analysis has provided an incomplete explanation for exchange rate changes. Despite inflation and government intervention in the foreign exchange market, changes in the exchange rate were infrequent. This resulted in large movements in the balance of payments (Chart 1.5), consistent with a fixed exchange rate in a small open economy.

In the presence of BOP deficits, the policy was to run down foreign exchange reserves. This influenced capital movements and explains the negative signs throughout the period (Table 6-3). With a weak international position, and a fall in output, debt servicing was deferred. The public debt rose sharply, increasing from G$ 1.3 billion in 1976 to G$ 5.8 billion in 1983. External lending agencies and foreign governments lost confidence in the domestic policies, and suspended credit. This created an acute shortage of foreign exchange.

CHAPTER SIX: NOTES

1. Such an examination may provide background information as to the reasons for the rise in the general level of prices. Direct intervention led to a rapid expansion in the size of the annual budgets of central government. This expansion grew out of the implementation of two five year development plans: 1966-71 and 1972-76. But the implementation of these plans was constrained by insufficient public resource availability due to an inadequate tax base, and by low private foreign capital inflows. These two factors led to deficit financing, so as to bridge the gap between expenditure and revenue. This policy led to annual budget deficits, and inevitably to an increase in the money supply. The growth in the money supply and in the ratio of money supply to gross domestic output in shown in Table 6-1. The fiscal expansion was matched by low levels of output in all producing sectors of the economy after 1977.

2. Surveys of the literature are conducted by Burton (1972), Trevithick and Mulvey (1975) and Aghevli and Khan (1980).

3. This point is discussed in Chapter Four.

4. This approach distinguishes between two type of goods. First those goods which can be traded, or exported to other countries. They include agricultural and mineral commodities and manufactured goods. The goods which are produced by the service sector but cannot be traded abroad, are called non-tradeables. They include

social services, defence, health services, transportation and distribution. The distinction between these two sectors are important since they account for a significant proportion of total output and expenditure. Morley (1988) presents a full treatment of this model.

The price of tradeable goods is determined by the world economy and by the exchange rate. Equilibrium is achieved by price changes in the economy. Internal adjustments are required to clear both markets and therefore involve changes in the price of non-tradeables. The analysis can be extended to analyse the relationship between absorption and income, such that imports are equal to exports, which will lead to conditions where absorption is less than income. The problem in the economy relates to the demand and supply of non - tradeables, that is the quantity supplied must equal the quantity demanded.

5. A survey of the studies on the Scandinavian countries is found in Corbo (1985).

6. The assumptions are those used by Hojman (1986). They are that the growth rates in the marginal product of labour in the non-tradables and the differentiated sectors are equal; that the respective growth rates in nominal wages are equal; and that the respective growth rates in excess market demand are also equal.

7. The Central Bank declares the intervention band. It intervenes if the exchange rate rises above or below the par value by more than a certain percent amount. Its intervention is to prevent the

exchange rate from moving further away from the par value. Under a fixed exchange rate the Central Bank will use its stock of reserves either to raise or lower the quantity of money outstanding in order to maintain its price relative to another money (Parkin and Bade 1988, Chapter Six).

8. Although weekly adjustments are now being made to the foreign exchange rate, this is in relation only to the other currencies in the basket. The adjustment to the intervention band is made less frequently.

9. The theoretical position is consistent with the Law of One Price (LOOP). The LOOP states that there is a tendency for the price of similar goods to be the same in each country when these prices are converted to the same currency using a fixed exchange rate. The LOOP is expressed as:

$$I = EI^{*}$$

This implies that the real exchange rate is unity:

$$Rer = EI^{*} \div I = 1$$

and therefore exports equal imports.

10. The capital account may be included also in this approach. But the emphasis is on the variables in the current account. The capital account can be taken into consideration if an examination of the real sector of the economy is undertaken. For example, changes in

the interest rate will affect capital flows. An increase in government expenditures financed by borrowing will increase the interest rate and will induce capital inflows (Bird 1987, Chapter Five).

11. The restrictive assumptions are fully explained in Bird (1987) Chapter five.

12. Arbitrage is the purchasing of a good at a low price and simultaneously agreeing to sell it for a higher price. In this process of exchange a profit is made, defined as:

$(P_2 - P_1) \div P_1$

P_2 is the price that the good is sold at and P_1 is the price that the good is bought for. Arbitrage will continue until P_2 equals P_1. In this case the LOOP is a proposition concerning the effects of arbitrage, meaning that the process of arbritage will compete away price differences between identical commodities. From this proposition the LOOP is important in determining inflation, the BOP and the exchange rate, through the PPP. Parkin and Bade (1988), Chapter 26 present a detailed discussion of these relationships.

TABLE 6-1 SELECTED MONETARY AGGREGATES, 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	n.a.	n.a.	0.224	31.80	35.26
1963	0.019	0.171	0.312	32.40	35.15
1964	0.003	0.137	0.302	32.50	35.23
1965	0.028	0.063	0.281	33.40	35.93
1966	0.021	0.075	0.296	34.10	37.12
1967	0.029	0.120	0.296	35.10	37.20
1968	0.031	0.127	0.323	36.20	38.13
1969	0.011	0.105	0.337	36.60	39.61
1970	0.036	0.078	0.339	37.90	41.05
1971	0.011	0.164	0.380	38.30	42.42
1972	0.050	0.223	0.452	40.20	44.29
1973	0.075	0.173	0.485	43.20	50.11
1974	0.176	0.159	0.446	50.80	59.54
1975	0.077	0.411	0.529	54.70	65.04
1976	0.091	0.088	0.153	59.70	68.07
1977	0.082	0.230	0.612	64.60	72.23
1978	0.152	0.106	0.598	74.40	77.86
1979	0.179	0.071	0.547	87.70	87.62
1980	0.140	0.193	0.561	100.00	100.00
1981	0.247	0.161	0.499	124.00	109.13
1982	0.203	0.276	0.606	150.00	111.33
1983	0.133	0.211	0.716	169.90	112.73

Notes Table 6-1

(1) Rate of change in Consumer price index of Guyana, 1980=100.
(2) Rate of change in money supply in Guyana (MG$).
(3) Ratio of money supply and gross domestic product.
(4) Consumer price index, Guyana (1980=100).
(5) Wholesale price index, USA (1980=100).

(4) Sources: International Financial Statistics, IMF Year Book 1985.

TABLE 6-2 SELECTED EXCHANGE RATE STATISTICS, 1962-84

Years	(1)	(2)	(3)	(4)	(5)	(6)
1962	1.7143	1.7128	n.a.	1.9008	0.90187	n.a.
1963	1.7143	1.7164	0.0000	1.8598	0.9217	0.0220
1964	1.7143	1.7204	0.0000	1.8583	0.9225	0.0008
1965	1.7143	1.7126	0.0000	1.8442	0.9296	0.0078
1966	1.7143	1.7203	0.0000	1.8661	0.9186	-0.0122
1967	1.7381	1.9984	0.0139	1.8421	0.9436	0.0272
1968	2.0000	2.0131	0.1507	2.1066	0.9494	0.0063
1969	2.0000	1.9994	0.0000	2.1645	0.9240	-0.0278
1970	2.0000	2.0053	0.0000	2.1662	0.9233	-0.0008
1971	1.9807	2.0417	-0.0097	2.1938	0.9029	-0.0228
1972	2.0873	2.2194	0.0538	2.2997	0.9077	0.0055
1973	2.1062	2.2232	0.0091	2.4431	0.8621	-0.0568
1974	2.2269	2.2190	0.0573	2.6100	0.8532	-0.0123
1975	2.3554	2.5500	0.0577	2.8006	0.8410	-0.0156
1976	2.5500	2.5500	0.0826	2.9075	0.8770	0.0448
1977	2.5500	2.5500	0.0000	2.8516	0.8942	0.0208
1978	2.5500	2.5500	0.0000	2.6686	0.9556	0.0739
1979	2.5500	2.5500	0.0000	2.5477	1.0009	0.0534
1980	2.5500	2.5500	0.0000	2.5500	1.0000	-0.0010
1981	2.8125	3.0000	0.1029	2.4613	1.1427	0.1557
1982	3.0000	3.0000	0.0667	2.2266	1.3474	0.1827
1983	3.0000	3.0000	0.0000	1.9905	1.5071	0.1201
1984	3.8316	4.1500	0.2772	n.a.	n.a.	n.a.

Notes Table 6-2
(1) Exchange rate Guyana dollars to US dollar, period average.
(2) Exchange rate Guyana dollars to US dollar, end of period.
(3) Rate of change of exchange rate, calculated from column one.
(4) Real exchange rate.
(5) Absolute purchasing power parity.
(6) Relative purchasing power parity.

Source
International Financial Statistics, IMF Yearbook 1985.

TABLE 6-3 SELECTED PAYMENTS STATISTICS, 1962-83

Years	(1)	(2)	(3)	(4)	(5)
1962	15.09	n.a.	119.5	22.8	96.7
1963	16.90	-161.89	128.6	26.5	102.1
1964	16.55	-179.25	127.9	23.3	104.6
1965	20.12	-194.93	148.0	41.6	106.4
1966	16.90	-220.62	171.0	58.1	113.7
1967	18.85	-233.65	187.6	63.5	124.1
1968	23.55	-204.70	198.5	72.7	125.3
1969	20.55	-232.30	229.7	87.8	141.1
1970	20.40	-249.05	267.2	107.2	160.0
1971	26.16	-260.54	436.2	144.6	291.6
1972	36.75	-261.91	499.6	189.4	310.2
1973	13.97	-317.88	637.6	289.0	348.6
1974	62.57	-451.80	672.7	269.1	403.6
1975	100.50	-619.27	932.6	399.2	533.4
1976	27.28	-683.62	1320.4	657.9	662.5
1977	22.98	-550.30	1526.9	837.1	689.8
1978	58.27	-513.81	1744.1	1000.1	744.0
1979	17.53	-622.24	2082.9	1271.2	811.7
1980	12.70	-780.13	2534.5	1636.7	897.8
1981	6.91	-751.79	3748.4	1806.1	1942.3
1982	10.56	-491.95	4743.5	2730.1	2013.4
1983	6.49	-423.07	5842.7	3745.3	2097.4

Notes Table 6-3
(1) Reserves minus gold (MUS$).
(2) Capital movements (MUS$).
(3) Total public debt (MG$).
(4) Total internal debt (MG$).
(5) Total external debt (MG$).
Sources
International Financial Statistics, IMF Yearbook 1985; Annual Report of the Bank of Guyana 1983.

APPENDIX 6.1: INFLATION

The basic model used to analyse inflation in the Scandinavian countries is outlined in Morley (1988). The objective was to examine the overall rate of inflation, and to explain why the domestic rate was higher than the world rate. The rate of inflation in the two sectors is defined as follows:

$$p = (1-a)\ p^t + ap^n \qquad (6\text{-}a)$$

Where the variables are expressed in rates of change, and are defined as follows.

p is the price index of all output.

p^t is the price index of tradeable output.

p^n is the price index of non - tradeable output, and

a is the proportion of total output that is non - tradeable.

In the tradeable sector it is assumed that:

(a) firms are price takers;

(b) that the inflation rate is the world rate;

(c) that labour productivity is high; and

(d) that money wage is determined competitively at a rate where real wage is equal to the marginal product of labour.

The rate of increase of money wage, (w^t) in the tradeable sector is given as:

$$w^t = p^t + i \qquad (6\text{-b})$$

where i is the rate of increase of output in the tradeable sector, and p^t and i are exogenous. The former variable is taken from the world market, while i is supply determined.

There are proportionate wage differentials between the two sectors, since structural pressures ensure that money wages in the non - tradeable sector rise at the same rate in the tradeable sector. Therefore

$$w^n = w^t \qquad (6\text{-c})$$

where w^n is wages in the non-tradeable sector.

The non-tradeable sector is not subject to competitive pressure in the short run. The profit margins are preserved by a proportionate mark-up over unit labour costs, which increases with money wages but fall as productivity increases.

p^n is caused by wn and k is the increase in labour productivity in the non-tradeable sector. Therefore

$$p^n\ w^n - k \qquad (6\text{-d})$$

From equation (6-c) $w^n = w^t - k$ and

from equation (6-b) $W^t = p^t + i - k$

Lower productivity in the non-tradeable sector results in p^n exceeding p^t. Combining this equation with (6-a)

$$p = (1-a)p^t + a(p^t + i - k) \quad \text{or}$$

$$p = p^t + a(i - k)$$

If i is greater than k the inflation in the domestic price index will be greater than the world rate p^t.

CHAPTER SIX: REFERENCES

Aghevli, B.B. and Khan, M.S. (1980), Government Deficits and the Inflationary Process in Developing Countries, in Coats, W.L. and Khatkhate, D.R. eds., (1980) Money and Monetary Policy in Less Developed Countries. A Survey of Issues and Evidence, Pergamon Press, New York and Oxford.

Bird, G. (1987), International Macroeconomics, Theory, Policy and Applications, Macmillan Press, London.

Bruno, M. (1979), Price and Output Adjustment. Microfoundations and Aggregation, Journal of Monetary Economics, Vol.5, April.

Burton, J. (1972), Wage Inflation, Macmillan Studies in Economics, Macmillan Press Ltd., London.

Corbo, V. (1985), International Prices, Wages and Inflation in an Open Economy. The Chilean Model, Review of Economics and Statistics, Vol.LxVii.

Edgren, G. et al. (1969), Wages, Growth and the Distribution of Income, Swedish Journal of Economics, Vol.71.

Hojman, D.E. (1986), Growth, Inflation and Wages. Endogenous Strike Activity and Collective Bargaining in a Model of Venezuela, Occasional Paper, No.7, Institute of Latin American Studies, University of Liverpool.

Holder, C. and Worrell, D. (1985), A model of Price Formation for Small Economies. Three Caribbean Examples, Journal of Development Economics, Vol.18.

Salter, W.E.G. (1959), Internal and External Balance. The Role of Price and Expenditure Effects, Economic Record, Vol.35.

Trevithick, J.A. and Mulvey, C. (1975), The Economics of Inflation, Glasgow Social and Economic Research Studies, No.3, Martin Robertson and Co. Ltd., London.

Morley, R. (1988), The Macroeconomics of Open Economies: An Introduction to Aggregate Behaviour and Policy, Edward Elgar Publishing Ltd., England.

Parkin, M. and Bade, R. (1988), Modern Macroeconomics, Philip Allan Publishers, Ltd., Oxford.

CHAPTER SEVEN: CONCLUSIONS

This study identifies Guyana as a small, open, low income country, specialised in the export of primary commodities. Such economies have three characteristics that distinguish them from developed countries. First, a large portion of total production is exported, because domestic demand is small. Second, exporters are price takers, since the quantity supplied, compared to total demand, is small. Finally, capital markets are underdeveloped, and the banking system is the only available monetary institution. These three features are dominant in Guyana. Consequently, the economic problems facing the country are related to attempts at reducing reliance on export oriented specialisation.

HISTORICAL REVIEW

The historical review in Chapter One outlined briefly the efforts toward diversification from the traditional export base. Such attempts proved unsuccessful and resulted in economic instability. Economic performance was satisfactory up to the end of the first half of the 1970s, despite a small balance of payments deficit. However, all indicators reveal that Guyana experienced an unprecedented economic decline after 1977. This deterioration is expressed in the widening deficit on the current account of the balance of payments and an acceleration of the inflationary financing of the fiscal deficit.

ECONOMIC STABILISATION

The strategy pursued after 1977 involved stabilisation and structural adjustment programmes, with assistance from the IMF and the World Bank. The implementation of these programmes was discussed in Chapter Two. The IMF and World Bank participated in economic stabilisation during 1978-83. Within this period, the IMF was involved in three arrangements. Of these only the Stand-By Arrangement in 1978 was fully implemented. The two Extended Fund Facility programmes between 1979-84 were aborted. The Bank pursued Structural Adjustment programmes. The initial SAL of 1978 was extended in 1981, and reformulated into a new programme in 1982. The Bank's programmes were supplementary to those of the IMF packages.

The overall objectives of the IMF programmes were to introduce stabilisation policies with the aim of correcting balance of payments deficits in the short term, to promote sustainable rates of growth and to ensure price stability within a stable economic environment.

Effects of Attempts at Economic Stabilisation

The 1978 Stand - By Arrangement emphasised demand management, with the primary objective of reducing domestic absorption, and an improvement in the balance of payments. Fiscal and monetary policies were suggested. These included reductions in public expenditure, lower import levels, higher levels of taxation, restricting domestic credit, a reduction in public debt, and the introduction of wage and price restraint. Under the Stand-By Agreement the full disbursement of credit was guaranteed, irrespective of actual economic performance. The success of the first programme may be assessed by analysing the

performance of selected macroeconomic variables such as the balance of payments, inflation and economic growth.

The phenomenal increase in the gap in the current account of the balance of payments occurred immediately after the fall in commodity prices in 1975, Table 1-8. The deficit increased from US$ 10.7 million in 1974 to US$ 142.8 million in 1976. The most significant reduction occurred in 1978, when the IMF Stand-By Arrangement was implemented. The deficit was reduced to US$ 29.6 million. After 1978, the deficit widened again. A negative balance of payments of US$ 4.3 million in 1977 was turned around to a positive US$ 35.29 million in 1978. However the balance of payments worsened afterwards.

Inflation and economic growth were moderate under the IMF programmes. It is normal for inflation to rise initially and then fall. Growth rates are expected to be slow during the implementation of an IMF programme, but to increase soon afterwards. Inflation increased despite the IMF Stand-By Agreement. It rose to 15% in 1978, and to 17.9% in 1979. Thereafter domestic inflation was higher than the USA inflation rate. Real GDP fell by -4.78% in 1977 and -1.72% in 1978. This was far below the target of five per cent anticipated by the IMF. Clearly, the correction of the deficit in the current account of the balance of payments was the primary objective of the stabilisation programmes between 1978-84. In this respect some success was evident. But in 1982 and 1983 exports fell to their lowest levels since 1974. This affected not only the balance of payments, but also domestic growth.

The suspension of the Extended Fund Facility limits our evaluation of the success of the programme. The programme was enforced in recognition of the balance of payment difficulties, which required economic policies of a longer term nature, than those which were available under the Stand-By Agreement. Under the EFF, the Fund sought not only to introduce financial stabilisation, but also to bring about structural adjustment. Drawings under the EFF were over a three year period, disbursed on an instalment basis. Thus, future drawings were dependent on satisfactory performance for implementing previously agreed policies. Such policies sought to remedy the payments imbalance by correcting structural maladjustments in production and trade, and reducing price and cost distortions. These were to be achieved within a three year period. The programme placed great emphasis on balance of payment adjustment rather than on development, thereby failing to provide a well coordinated package of development aid and international financial support. Besides the World Bank, there was no other financial support for the implementation of the EFF.

The EFF of 1979 and 1980 had both short and long term objectives. The short term policies were an extension of the 1978 Stand-By Agreement. But the longer term strategy was aimed at structural adjustment, through export promotion and the development of the private sector. The inability of the Guyana government to secure sufficient finance to execute successfully such an extensive programme, in a relatively short period, may have led to the suspension of the EFF. Once the targets were not met within the first time period, the Fund suspended further disbursement of credit. The suspension of this programme in 1981 led to further deterioration of the current account of the balance of payments. The deficit on the current account

grew larger and exports declined. Because of these trends a detailed analysis of the export sector was carried out in Chapter Three.

An analysis of the main commodity exports suggests a pattern of decline in both production and export levels. Despite this decline, sugar, rice and bauxite still provide the bulk of the foreign exchange earned, because of the low level of manufacturing activities. These three exports account for over 75% of all export earnings. Sugar represented the largest contributor to export revenues throughout the 1960s, but was overtaken by bauxite, except for the years 1974-76. Rice is still in its infancy, but already shows signs of decline, while alumina exports have ceased.

Rationale for Stabilisation Programmes

The design of stabilisation programmes by the IMF focused on restoring stability to the balance of payments and a reduction in the rate of inflation. This approach is based on addressing both demand and supply factors. Correcting the balance of payments disequilibrium depends on aggregate supply, which rests on the performance of the export sector. In this approach inflation and exports are linked to the balance of payments. Increases in export revenues may be accompanied by an increase in wage claims in the export sector, which may affect both the domestic price level and employment. Wage increases in the export sector may lead to an increase in the supply price of labour, impacting adversely on the price and level of exports. A feature of primary commodity exports is that their price is given, and elasticities in the short run are low. Any stabilisation policy, such as an exchange rate depreciation, may impact on export earnings only

if there is a shift in the supply curve to the right, or increased prices for exports. But the precise dynamics of how exporters may respond to changes in variables such as exchange rate movements or prices is complex. Within the stock adjustment framework, exporters may be inclined to increase inventory levels rather than exports, if they anticipate price increases soon. Consequently, lags may develop when exports are primary products. They may be either short or long, depending on the type of commodities being exported. In the short run, exporters may not be able to improve response to a price rise if it requires investment in new machinery and equipment. Implementing an adjustment programme requires information on the precise behaviour of exports.

The outline of an appropriate framework to analyse exports was described in Chapter Four. Here the supply relationships in the export sector are analysed within the partial adjustment/adaptive expectations model. The assumption is made that exports are influenced by supply side variables, such as domestic output, prices and the exchange rate. This analysis allows us to investigate if lags in the relationship between exports and these variables exist. Within this approach, an examination was conducted of those variables that affect exports of sugar, rice, bauxite and alumina.

The analysis of export supply reveals that the response to price changes is either delayed, inelastic, or insignificant. The results of the analysis were presented and discussed in Chapter Five.

Chapter Six investigated the factors affecting domestic prices and the exchange rate. A two sector model which divides the economy into

tradable and non tradable sectors suggests that external influences are more dominant than domestic factors in explaining inflation. The estimation of the exchange rate provides insufficient explanations for adjustments to it.

RESULTS OF ANALYSIS

A summary of the major empirical findings is discussed below. At the end of each part of Chapters Five and Six a summary of the main findings is presented, while the Appendix presents a summary of the estimated equations. This makes it unnecessary to report all the findings of the study in detail here.

Sugar

Sugar exports were analysed using two models. The partial adjustment model and the export supply function were estimated.

The results of the first model suggest that the partial adjustment process is inadequate in explaining sugar exports. The supply response of sugar exports to a change in the previous year's sugar price is low in the short and long run, as shown by the price elasticities in Table 5-R1-1. The price of sugar in the previous period impacts significantly on the current level of exports, but its significance diminishes when other variables such as the wage and exchange rate are introduced. Other explanatory variables, labour costs, industrial disputes and cane production, contribute to the explanation. The second model provides improved estimates over the partial adjustment model. The lagged price of sugar is positive in all four estimates, but the

results reveal a low price elasticity. This means that one percent change in sugar prices would not be matched by a corresponding change in sugar exports. The change in exports would be only about 0.1 percent. Explanatory variables such as production of cane, labour costs and a dummy representing industrial disputes are more important than the exchange rate. The production elasticity is close to unity, but the wage rate elasticity is lower. The exchange rate elasticity is also low and positive. Increased cane production may lead to higher sugar exports. Factors affecting production are discussed in Chapter Three. The more important ones are: industrial disputes, labour shortage for harvesting and domestic and international market conditions.

Despite their limitations the results are satisfactory for a primary commodity. They compare favourably with those reported by Gafar (1980) for Jamaica, if one takes into account the relative decline of sugar in Guyana, and that this study investigated a more recent period than Gafar conducted for Jamaica. Moreover, sugar prices declined more rapidly in the period investigated than in the period studied by Gafar. This may contribute to explaining the low response of sugar to price and other factors.

Rice

The analysis of rice exports reveals that the partial adjustment process is effective in providing explanations for the behaviour of exports. The results are presented in Table 5-R2. In this model, the price variable is positive but statistically insignificant. The adjustment coefficient is statistically significant in all the

estimates, and it suggests that exports have a lagged or delayed response to variables like price, exchange rate and current production. The speed of adjustment indicates that a significant proportion of the difference between the desired and actual quantity of exports is achieved in each period (about 40 percent). Besides price, the exchange rate, current production and a time trend appear relevant. But the inclusion of these variables in the analysis did not improve the fits, nor the performance of the price variable. The exchange rate yields better results in the absence of the price variable. It becomes statistically insignificant when a time trend is introduced, suggesting the presence of collinearity between these two variables.

These estimates are exploratory, and provide possible explanations for rice exports, originating from an industry emerging from self-consumption and subsistence conditions. The analysis suggests that the partial adjustment process is strong, and that the exchange rate is more important than price in explaining rice exports. The response of price is positive but its impact is weak. Bourne (1971) reported similar estimates for rice production in Guyana. The inelastic response of rice exports to price does not provide sufficient evidence to assume that exporters are economically irrational. The fact is that the effect is positive but weak, and that other variables like the exchange rate and current production are more important than price. Another interesting feature is the relatively high speed of adjustment in rice. Shaw and da Costa (1985) reported positive and strong response of output to the use of inputs such as chemical fertilisers and use of mechanical equipment. Also where irrigation is available, it has minimised the risks associated with adverse

weather. The adoption of modern techniques, equipment and inputs into rice production has shortened the length of the lag response. But the reliability of the estimates may be improved were other explanatory variables such as labour costs and relative prices introduced in the analysis. Information on these variables was unavailable.

Bauxite

The analysis of bauxite reveals that the partial adjustment/adaptive expectations model is effective in providing a satisfactory explanation for the behaviour of exports. The demand for bauxite is a derived one, determined by the demand for aluminium, which in turn depends on its own price, a substitute, or a related variable. Here it is the cost of energy and the industrial index of the consuming country. Thus the price variable is the price of aluminium, and the ratio of the aluminium price to oil price.

The adjustment term is statistically significant, while the aluminium price impact is positive, but statistically weak. This provides us with inconclusive arguments about the degree of impact that changes in aluminium prices may exert on bauxite exports. The short run elasticity is low, but improves in the long run. The relative price variable, the ratio of aluminium price to oil price, improves the reliability of the estimation. Although the short run price elasticity is low, in the long run the price response improves. Other explanatory variables are also important. Both labour cost and a dummy variable report negative signs. The latter variable represents the decline in technological capability in the industry after its nationalisation. Because the industry is capital intensive, it

requires frequent upgrading of its equipment. Since nationalisation, capital replacement was slow because of the shortage of foreign exchange. The negative sign of labour costs indicates that increases in wages in this sector will decrease the competitive edge of its exports. The lagged USA industrial index is positive, suggesting that industrial growth in consuming countries in the previous period will stimulate exports in the current period. Elasticity estimates for bauxite variables are relatively high.

These results reveal that the ratio of aluminium price to oil price, and the USA industrial index provide better estimates than the own price in the case of bauxite exports. However, labour costs, a time trend and a dummy appear relevant also.

Alumina

The analysis of alumina suggests, that the partial adjustment/adaptive expectations model provides an effective explanation for the behaviour of exports. The aluminium price is positive. Other variables such as bauxite production and the oil and copper prices are also important. Since the major input into the production of alumina is energy, an increase in the oil price will lead to higher production costs, thereby reducing the competitiveness of exports.

The results for the bauxite/alumina industry may be compared with previous studies for other Caribbean countries. In the case of Jamaica and Suriname Hojman (1984) reported that the price response was perverse for the former, but positive for the latter. Suriname's

estimate is more consistent with that obtained for this study. Bauxite in Guyana declined faster than in Jamaica, but the functional relationships of the industry in Guyana to the international bauxite industry remained the same, that is, a supplier of ore to manufacturers of aluminium. The size of the operations contracted after 1977, and the local industry was unable to exert any influence on either demand or price. Jamaica applied a levy on bauxite exports, but in Guyana, the industry was unable to apply any tax on exports, since it had to compete with other producers in the international market. The price was not merely a transfer price as in Jamaica, but a price between a small producing firm and a large multinational corporation. The relationship suggests that the price is given, and consistent with the relative low elasticity estimates for primary products from less developed countries.

Inflation and the Exchange Rate

External influences are more dominant than domestic factors in explaining inflation. The transmission of international inflation accounts for a significant portion of the rise in domestic prices. The sum of international inflation plus the exchange rate is also important. This does not exclude local factors, such as the wage rate, excess market demand and the growth in the money supply. But international prices are more dominant than other factors in the generation of inflation. The wage rate variable has a low level of significance, suggesting that the impact of increased wages on inflation is not strong enough to support the Keynesian view of a direct link between the price level and the wage rate. The results point to the presence of such a link, but its effects are not as strong

as one would have expected. Also, the lagged dependent variable is significant in all equations, and suggests the presence of a partial adjustment process.

The model provides satisfactory evidence on the factors influencing inflation. The results are somewhat similar to those obtained by Holder and Worrell (1985). Their conclusions that foreign trade factors, such as international prices and exchange rate movements impact positively on domestic prices, coincide with the results obtained in this study.

The analysis of the exchange rate fails to link domestic and international inflation with the balance of payments. The signs of the variables are as expected, but the results are insignificant. This failure to link inflation and the balance of payments with the exchange rate indicates that the Central Bank pursued a policy of running down international reserves, and a deferral of debt repayment. In least developed countries, the opportunity cost of holding reserves may be high. They may pursue a policy of draining reserves, once adequate sources of financial assistance are available.

The examination of exports, inflation and the exchange rate, suggests that the problems confronting the economy can be explained and resolved by economic policies. The relevance of the IMF approach to resolving economic instability is assessed below. This study provides important information on the behaviour of some economic variables. The results are useful in the study of balance of payments stability. They are consistent with those obtained for economies specialising in primary commodity exports, and help to evaluate the IMF stabilisation and structural adjustment programmes in Guyana.

CONCLUDING REMARKS

The IMF is often termed a monetarist institution by its critics, because of the austerity measures it recommends to bring about stabilisation and structural adjustment in least developed countries. The evidence from this study, suggests that the IMF may be more concerned with maintaining the effectiveness of market forces to allocate scarce resources. If the IMF perceives that market forces are distorted, then its first task is to ensure that obstacles to the efficient functioning of the price mechanism are removed. This is the fundamental principle of all IMF programmes. It pursues either monetary or structural, or a combination of both approaches to correct balance of payment disequilibrium. The particular strategy will depend on the specific problems and characteristics of the country concerned. A discussion of a programme supported by the IMF should focus on the appropriateness or the relevance of policies to correct balance of payment deficits. The issue is whether to finance the deficit, or to correct the imbalance in trade by pursuing appropriate balance of payment adjustment policies. A decision to finance the deficit would depend on the amount of finance needed, and the length of time required to effect the adjustment. This is particularly important for Guyana, since the current account deficit is persistent. If the strategy is to pursue structural adjustment policies, then the question is whether such policies should focus on a demand or supply approach, or a combination of both.

A decision to finance the balance of payment deficit implies running down domestically held international reserves, and increasing international borrowing. After the fall in commodity prices in 1975,

the widening of the gap in the current account of the balance of payment was perceived as being transitory. Consequently, the policy was to finance the deficit, largely by utilising reserves previously accumulated, and using foreign loans and commercial credit. But reserves were very low totalling only US$ 27.28 and US$ 22.98 million in 1977 and 1978. This increased the reliance on foreign loans and commercial credit, and a build up of the external debt. With such a fragile balance of payment position, financial assistance was sought from the IMF. On two prior occasions before 1978, Guyana received financial help by drawing on the first credit tranche and then under the Compensatory Financing Facility. Despite these financial flows, the deficit on the current account persisted. This led in 1978 to the direct involvement of the IMF, through a Stand-By Agreement, thereby indicating a shift in policy from one of financing the deficit to one of stabilisation and structural adjustment. The deficit in the balance of payments was then considered non-transitory, requiring adjustment policies to correct the disequilibrium. This leads our discussion to focus on the suitability of stabilisation and adjustment policies attempted to restore economic stability.

To correct a balance of payment deficit requires an increase in receipts, or a reduction in payments, to obtain equality between payments and receipts. The reduction in payments requires a reduction in domestic absorption relative to the production of goods, if real production cannot be increased in the short run. This involves a reduction in domestic expenditure.

There are two policies which may help to reduce domestic expenditure: expenditure switching policies and expenditure reducing

policies. Expenditure reducing policies emphasise contractional monetary and fiscal policies to cut expenditure on both traded and non tradeable goods. This policy will reduce demand for imports and provoke a fall in the price of domestically produced goods, leading to a switch in domestic and foreign expenditure from foreign output to domestic goods. Expenditure switching involves the transfer of expenditure from residents to foreigners. It influences residents to switch their preferences from foreign to local goods, by changing the price of domestic goods relative to imported goods. These two policies were evident in the IMF agreements.

Expenditure reducing policies not only cut domestic expenditure, but also reduced imports. Production in the export sector was heavily dependent on imported inputs. A reduction in imports restricted the supply of exportable commodities, and also led to a rise in the price of exports. Expenditure switching policies assumed that the additional demand for exports and import substitutes were to be met by utilising unemployed resources. However, in Guyana increased utilisation of underemployed resources also meant additional inputs which had to be met by imports.

Evidence from Chapter Six suggests, that inflation is cost-push, more than demand-pull. Inflation is affected by world prices more than domestic factors. This suggests that increased production (to satisfy the extra demand for import substitutes and exports) that depends on raw material imports may result in higher inflation. Further, it is unlikely that the foreign price of imports can be influenced, because Guyana's demand for imports represents only a small fraction of total world demand.

A principal instrument of expenditure switching is devaluation of the domestic currency. Its objective is to lower the domestic consumption of imports, raise the domestic consumption and production of import substitutes and increase the supply and demand of exports. Where exports are also consumed locally, the aim is to decrease their local consumption and increase exports. In Guyana, the production of import substitutes is inefficient compared to industrial countries. It may be quite difficult to suppress the demand for imports of raw material and capital goods without adversely affecting export supply.

Guyana exports only a small proportion of the total world supply of any of the commodities it produces. Therefore, a devaluation will tend to raise the price of exports in domestic currency. The foreign currency export price may not change, because this price is determined largely by international market forces. The results in Chapter Five imply that price is either not important, or that the price elasticity is low. For agricultural products, particularly rice, the exchange rate elasticity is approximately unity in the long run, suggesting that exchange rate changes will affect exports positively. However, the total increase in income in domestic currency for an export commodity which is also consumed locally may not automatically be passed on to the producers. For rice, the Guyana Rice Board determined the price which the farmer received. This price was lower than the export price. Therefore, the benefits of the devaluation did not directly affect the individual producer, and encouraged farmers either to engage in other activities or to reduce production.

Elasticity estimates in Chapter Five suggest that supply response is low in the short run, but elastic in the long run for most variables

except price. For sugar, the response to wage rate and exchange rate movements is low, but the production response is approximately unity. The response to exchange rate and production movements is elastic for rice exports. Bauxite price elasticity is low, but the wage and industrial activity in the consuming country are high. For alumina, the elasticity of response to copper price and bauxite production is high, while an inelastic response is observed for the aluminium price and the oil price.

These estimates suggest that an increase in the foreign currency price for exports may not be accompanied by higher export levels in the short run, supporting the view that adjustment is likely to be achieved by adopting a supply approach. The justification of this approach rests on the inelastic response of exports to price. Exports are primary products, sold to geographically concentrated markets. The income elasticity of demand for these products is normally low. Therefore a slow growth of income in these markets will lead to a deterioration in the balance of payments. Further, attempts to effect structural adjustment may be constrained by low mobility of factors of production. A supply approach emphasising institutional reorganisation, removal of quantitative restrictions on trade, effective management of the exchange and interest rates and an expansion in productive activities may lead to higher growth and structural adjustment.

Diversification of economic activities should emphasise export promotion against import substitution. Such diversification should be selective, involving the exploitation of either an abundant natural resource, or the production of a commodity for which the economy has

a comparative advantage. The traditional exports of sugar, bauxite and particularly rice can be made more efficient once production difficulties are resolved. The techniques of rice production are well known to farmers, but the pricing and export marketing policies need revision.

Diversification should be limited only to a few commodities, so resources are not diverted away from the production of the traditional export commodities. The policy of export promotion is consistent with adjustment policies of the IMF and the World Bank. Successfully implementing such a policy depends on Guyana regaining the confidence of the international financial system. The fact that reserves are at their lowest level and debt servicing is accumulating, make the international financial market unwilling to finance any form of structural adjustment. This leaves the IMF as the only alternative source of foreign capital.

CHAPTER SEVEN: REFERENCES

Bourne, C. (1971), Supply Behaviour in the Rice Industry, 1950-1969. A Preliminary Analysis, Proceedings of the Sixth West Indian Agricultural Economic Conference, University of the West Indies.

Gafar, J. (1980), Price Responsiveness of Tropical Agricultural Exports: A Case Study of Jamaica, 1954-72. The Developing Economies, Vol.18.

Hojman, D.E. (1984), The Economics of Bauxite and Aluminium, Distributed Lags and New Econometric Estimates, Resources Policy, September.

Holder, C. and Worrell, D. (1985), A Model of Price Formation for Small Economies. Three Caribbean Examples, Journal of Development Economics, vol.18.

Shaw, A.B. and da Costa, R.C. (1985), Differential Levels of Technology Adoption and Returns to Scale in the Guyana Rice Industry, Canadian Journal of Agricultural Economics, Vol.33.

APPENDIX A: LIST OF ESTIMATED EQUATIONS

The following notation is observed:

(1) A Represents the constant term;

(2) M Represents the coefficient of endogenous variables;

(3) N Represents the coefficient of exogeneous variables;

(4) E Represents the error term;

(5) The subscript (t) is suppressed from all variables. For current variables, Y_t is expressed as Y, while lagged variables, Y_{t-1} is expressed with small numerals, Y_{-1}

(6) Capital letters denote an absolute quantity or an index, while rates of change are expressed in lower case letters.

EXPORT EQUATIONS

Sugar Export Equations

5-1-1 $$Xsu = A_1 + N_1Xsu_{-1} + N_2Psu_{-1} + N_3PROsu - N_4LCsu - N_5DUM + E_1$$

5-1-2 $$Xsu = A_2 + N_6Psu_{-1} + N_7PROsu - N_8LCsu - N_9DUM + N_{10}T + E_2$$

5-1-3 $$Xsu = A_3 + N_{11}Psu_{-1} + N_{12}PROsu - N_{13}LCsu - N_{14}DUM + N_{15}T - M_1ER + E_3$$

5-1-4 $Xsu = A_4 + N_{16}Psu_{-1} + N_{17}PROsu - N_{18}LC - N_{19}DUM + E_4$

5-1-5 $Xsu = A_5 + N_{20}Psu_{-1} + N_{21}PROsu - N_{22DUM} + N_{23}T + M_2ER + E_5$

Rice Export Equations

5-2-1 $Xri = A_6 + N_{24}Xri_{-1}\ N_{25}Pri_{-1} + M_3ER + N_{26}PROri + E_6$

5-2-2 $Xri = A_7 + N_{27}Xri_{-1} + M_4ER + N_{28}PROri + E_7$

5-2-3 $Xri = A_8 + N_{29}Xri_{-1} + N_{30}Pri_{-1} + N_{31}PROri - N_{32}T + E_8$

5-2-4 $Xri = A_9 + N_{33}Xri_{-1} + N_{34}Pri_{-1} + M_5ER + N_{35}PROri + E_9$

Bauxite Export Equations

5-3-1 $Xba = A_{10} + N_{36}Xba_{-1} - N_{37}LCba - N_{38}DUM + N_{39}Ius_{-1} + E_{10}$

5-3-2 $Xba = A_{11} + N_{40}Xba_{-1} + N_{41}Pal - N_{42}T + E_{11}$

5-3-3 $Xba = A_{12} + N_{43}Xba_{-1} + N_{44}(Pal \mid Poi) - N_{45}LCba + N_{46}Ius_{-1} + E_{12}$

5-3-4 $Xba = A_{13} + N_{47}Xba_{-1} + N_{48}(Pal/Poi) - N_{49}LCba + N_{50}Ius_{-1} + E_{13}$

5-3-5 $Xba = A_{14} + N_{51}Xba_{-1} + N_{52}(Pal/Poi) - N_{53}T + N_{54}Ius_{-1} + E_{14}$

Alumina Export Equations

5-4-1 $Xal = A_{15} + N_{55}Xal_{-1} - N_{56}Poi + N_{57}Pco + E_{15}$

5-4-2 $Xal = A_{16} + N_{58}Xal_{-1} - N_{59}Poi + N_{60}Pco + N_{61}PROba + E_{16}$

5-4-3 $Xal = A_{17} + N_{62}Xal_{-1} + N_{63}Pco + N_{64}PROba + N_{65}Pal - N_{66}T + E_{17}$

INFLATION AND EXCHANGE RATE EQUATIONS

6-1 $i = a_{19} + n_{72}i_{-1} + n_{73}i^{*} + n_{74}wr + n_{75}pl + n_{76}ed + e_{19}$

6-2 $i = a_{20} + n_{77}i_{-1} + n_{78}ed + n_{79}(i^{*}+er) + n_{80}(wr+pl) + E_{20}$

6-3 $i = a_{21} + n_{81}i_{-1} + n_{82}ed + n_{83}(i^{*}+er) + e_{21}$

6-4 $i = a_{22} + n_{84}i_{-1} + n_{85}i^{*} + n_{86}wr + e_{22}$

6-5 $ER = A_{23} + M_{6}I - N_{87}I^{*} - N_{88}BOP + N_{89}T + E_{23}$

6-6 $ER = A_{24} + N_{90}ER_{-1} + M_{7}I - N_{91}I^{*} - N_{92}BOP + N_{93}T + E_{24}$

6-7 $ER = A_{25} + N_{94}ER_{-1} + M_{8}I - N_{95}BOP + N_{96}T + E_{25}$

6-8 $ER = A_{26} + N_{97}ER_{-1} + M_{9}I - N_{98}BOP + E_{26}$

DEFINITION OF VARIABLES

BOP is balance of payments.

DUM is dummy variable.