EXTERNAL DEBT AND ADJUSTMENT IN
CARIBBEAN COUNTRIES

BY

C. BOURNE
Professor of Economics
University of the West Indies
St. Augustine

AND

R. OUMADE SINGH
National Institute of Higher Education
(Research, Science and Technology)

INTRODUCTION

The foreign debt problems of the Commonwealth Caribbean countries have become quite severe in recent times. These problems are due in part to weaknesses in domestic economic performance and to changes in the international environment including, _inter alia,_ changes in the international exchange rates and in the access of some countries to multilateral financial institutions. The debt situation contributes to the slowdown in economic growth and to the deterioration in the balance of payments. An urgent policy issue for Commonwealth Caribbean countries is how to cope with a foreign debt situation that is considerably less favourable now than previously.

This paper addressed this issue by first indicating briefly the extent of the debt problem including its short run outlook. The paper then proceeds to examine three (3) matters that are central to the main concern. First, the sustainability of foreign debt, second, the fiscal ability of Caribbean Governments to deal with the debt crunch and third, the potential of export growth as a method of adjustment. Because of data limitations these matters are not analysed with the same degree of empirical detail for all the countries. In fact, the information is more complete for Barbados, Jamaica, Guyana, and Trinidad and Tobago than for the others.

THE DEBT PROBLEM

External debt outstanding of the Commonwealth Caribbean countries increased greatly between 1975 and 1985 as a consequence of several factors, notably the more easy availability of international commercial bank credit on the basis of OPEC dollar surpluses, the

increased access of newly independent countries to the financial resources of multilateral institutions and the expanded demand for balance of payments support by oil importing countries. The actual levels of debt outstanding for the countries are presented in Table 1. As can be seen from the data in the table, the debt outstanding of these countries have become quite large, for example, the debt of Trinidad and Tobago has moved from US$417.5 million in 1978 to US$1087.4 million of the end of 1985. Over the period 1978 to 1984 the Jamaican debt has increased from US$ 1050.6 to US$2174.7.

There is evidence that there has been a slowdown if debt flows in recent years. This slowdown is not due to any demand restraint on the part of the region but to limitations or changes on the supply side. The more important of these supply side constraints include the growth of public sector deficits in the OECD countries. This growth in public sector deficits has its corollary in greater bond financing much of which has augmented global demand for long term finance. Second, international credit demands by corporate enterprises have been increasing in response to new corporate ventures and expansion stimulated by technological progress and lower energy prices. Third, the integration of financial markets among the OECD countries which has expanded the scope for utilization of financial surpluses within the OECD sub-systems of the international economy. Fourth, financial innovations are reducing the significance of exchange rate risks, illiquidity and non-marketability as barriers to greater absorption of financial surpluses within the OECD sub-system. Fifth, regulatory agencies and commercial banks have modified accounting rules and prudential practices with respect to

TABLE 1

PUBLIC AND PUBLICLY GUARANTEED LONG TERM DEBT OUTSTANDING

(US$ MILLIONS)

	1975	1978	1980	1982	1983	1984	1985
Trinidad & Tobago	159.4	417.5	622.9	765.5	886.1	915.0	1,087.4
Jamaica*	695.4	1,050.6	1,396.3	1,854.4	2,001.6	2,174.7	..
Barbados	26.6	64.2	97.9	222.6	278.8	301.8	352.1
Guyana	295.5	447.9	565.5	678.9	691.9	681.4	721.1
St. Vincent	3.4	5.0	10.3	19.0	21.5	21.4	23.2
Belize	4.8	22.6	46.9	62.3	75.4	76.0	94.3
Grenada	9.4	14.6	22.2	46.7	44.4	39.9	..

..   not available

*   data exclude the long term liabilities of the Bank of Jamaica for which detailed information is unavailable.

SOURCE: World Bank: World Debt Tables 1985/86 and Supplements.

LDC debt. The more important of these modifications include greater capital and loan loss provisioning of LDC debt.

Moreover, because of per capita income levels some countries have `graduated´ or are being `graduated´ from access to all or some of the credit facilities by multilateral financing institutions.

Debt terms: Debt has become a lot more expensive, much of the bank lending of international financial institutions is on the basis of floating interest rates which have increased considerably reflecting the growth in fiscal deficits of OECD countries especially the US as well as higher risk premia to account for the substantially higher levels of delinquency and default of soverEign borrowers.

The maturity of international debt has also decreased. For instance, the average maturity on new debt commitments for Barbados decreased from 21 years in 1984 to 7.7 years in 1985. In Belize it decreased from 23 years to 18 years and for St. Vincent from 32.9 years to 3.1 years over the same period.

Overall, foreign public debt is being provided on less concessionary terms. The grant element has decreased from 57.9% to 29.3% for St. Vincent and from 11.4% to 4.8% for Trinidad and Tobago over the same period 1984 to 1985. For Barbados the grant element has moved from 12.0% to 5.0% over the same period.

The burden of debt payments is now quite high. Two rough indicators of the burden is the debt service ratio which indicates

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the proportion of export earnings that go towards debt repayment, and
the ratio of total debt service to fiscal revenues, which indicates
the proportion of fiscal revenues that are consumed by debt service
payments. Data on these two ratios are given in Table 2. For some
countries the ratios were quite high. For example Jamaica had an
average debt service ratio of 19.2% and a debt service/fiscal revenue
ratio of 36.8%.

On the basis of information on some countries it appears that
there is a problem of the bunching of debt service obligations, and
that this problem even assumes greater significance in the future.
One also has to be mindful that the published information on debt is
typically not complete with respect to coverage of all debt
obligations and tends to be somewhat dated. This means that there is
the likelihood that the discussion in this paper under estimated the
severity of the debt problem.

SUSTAINABILITY

Granted that the problem is of serious proportions the issues we
now address is the sustainability of the debt. There are at least,
two aspects to the concept of the problem of sustainability. One is
the ability to honour commitments i.e. the matter of debt bearing
capacity. The other is the ability to refinance debt. The paper
has indicated in an earlier section that the prospects for
refinancing are not good. Consequently this aspect is not pursued
further. Instead, attention is focussed on the first aspect (i.e.
debt bearing capacity).

TABLE 2

DEBT BURDEN INDICATORS (%)

Country	TDS/XGS[1]	TDS/FISCREV[2]
Trinidad and Tobago	4.8	2.9
Jamaica	19.2	36.8
Barbados	3.3	9.4
Guyana	18.1	19.0
Antigua	9.1	26.2
Dominica	9.8	14.5
Grenada	7.1	23.6
St. Kitts/Nevis	2.6	33.7
St. Lucia	2.3	4.5
St. Vincent	2.2	6.5

1. Total Debt Service/Exports ratio, average for 1980-84

2. Total Debt Service/Fiscal Revenue ratio, 1985.

Sustainability in the sense of debt bearing capacity turns out to be a particularly not precise notion. In principle what is required is that "the consumption plans of a country do not violate its intertemporal budget constraint. One might also add the requirement that servicing the debt do not result in consumption below subsistence level". (D. Mc Donald, 1982, p. 603). It is necessary to recognise however, that fulfillment of debt servicing obligations itself has an important bearing on future external resource inflows and therefore on future levels of welfare.

Given the wide range of uses to which external debt can be put, it is difficult to construct any analytically derived formula or quantitative economic model of debt bearing capacity that is applicable for all countries. Consequently several external debt ratios and other economic indicators have been used in efforts to empirically identify circumstances under which countries experience debt servicing difficulties. These indicators are also used by creditors in the assessment of the creditworthiness of countries. Thus, these indicators are of particular importance to Caribbean countries.

In the attempt to evaluate the debt bearing capacity of the Caribbean countries three (3) approaches were used. These approaches should not be regarded as alternative, rather they should be seen as complementary.

The approaches used can be termed:

    (a)   a judgemental approach;

    (b)   trend/instability approach;

    (c)   scenario approach.

For convenience each of these approaches are applied individually.

Judgemental Approach

The evaluation of debt bearing capacity for any country require the extensive use of subjective judgement, primarily because of the number of imponderables which have to be considered. Perhaps one can even identify a judgemental approach to debt bearing capacity. In the words of Dr. Avramiovic et al (1964, pp7-8), "the appraisal of creditworthiness of a country is a mixture of facts and judgements".

The judgemental approach is essentially a simple one. The values of the common subset of indicators are examined for a specific year or over a period of years and compared to "critical values" or "threshold levels" for each ratio. If the actual values for most or all of the ratios examined are equal to or greater than the critical value, then this is taken to mean that there is a high probability that the country will experience debt servicing difficulties in the very near future. J. Calverly (1985) and E. Meyer (1975) provides examples of this approach. A specific criticism which can be levelled against this approach to debt bearing capacity is that there is no scientific basis for the setting of the critical limits. Consequently, the limits are arbitrarily determined with no established criteria used for the choice of limits.

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Numerous studies [e.g. Frank and Cline (1977).; Feder and Just (1977); Taffler and Abassi (1984)] have suggested a lengthy list of economic indicators which are considered to be important in assessing debt bearing capacity of a country. From these studies one can identify a common subset of economic indicators which most researchers agree are important indicators of debt bearing/servicing capacity. The studies by Frank and CLine, and Feder and Just, have added empirical validity to the use of this common subset of ratios.

In the application of the judgemental approach to debt bearing capacity of the Caribbean countries four (4) ratios were considered. These are the ratio of total debt service to exports (i.e. the debt service ratio); the ratio of international reserves to imports; the ratio of debt service to fiscal reserves; and the growth rate of GDP.

The rationale for the use of the debt service ratio is that an increase in the debt service ratio indicates vulnerability to foreign exchange crises. The debt service ratio by itself, is not a very good indicator of a country's ability or lack of ability to pay its debt [Frank and Cline (1977)]. The debt service ratio is merely an indication of the proportion of foreign exchange earnings which are free to purchase imports. If exchange earnings are high relative to import demand, a higher debt service ratio can be maintained. Also, a country with a good credit standing in international money markets may be able to finance a high debt service ratio, for a time at least through a high level of borrowing. Moreover, the debt service ratio follows the borrowing cycle, that is as debt initially rises the ratio rises but only slowly. It is only after a few years when

amortization builds up that the ratio grows rapidly. The debt service ratio accounts for current debt service payments only. Thus, it may be a poor indicator of what payments will fall due in the near future [P. Dhonte (1982)]. Finally, the debt service ratio bears no direct link with the allocative efficiency of the economy [D. McDonald (1982)]. The critical level is normally set at 15 percent for the debt service ratio (DSR).

International Reserves to imports : As a balance against fluctuations, that are caused by factors beyond the control of the economy, one can consider flexible elements in the balance of payments that are controlled by the government within some limits. Foreign exchange reserves serve as a buffer against exchange earnings fluctuations. In order to have some measure of comparability among countries a reserve to imports (or imports to reserves) ratio is commonly considered. With a large ratio of reserve to imports, one expects a higher debt servicing capacity. A critical threshold of three months is usually set for the reserve/imports ratio.

The ratio of debt service to fiscal revenues gives an indication of the proportion of tax revenues that goes towards servicing the debt. There is no established "critical limit" for this ratio. Presumably, a country with a high ratio will have difficulties in servicing its debt.

The growth of GDP is also considered to be an important element in debt bearing capacity. The assumption here is that the process of growth is such that export capacity is increased both through

expansion of the traditional exports sector and by developing new industries producing marketable goods which can be redirected into export channels. Hence, one would expect improving debt servicing capacity.

Data on the debt service ratios and the debt service/fiscal revenue ratios are already given in Table 2. Data on the growth rate of GDP and the reserves to imports ratio are presented in Table 3. It can be observed that the debt service ratios are above critical values for Guyana and Jamaica. The statistic for Trinidad and Tobago is not truly indicative of the current situation. The ratio officially estimated for 1986 is 12.0 percent. Preliminary indications are that it is now substantially greater. For those countries for which it is available, the data on the reserves to imports ratio indicates that, with the exception of Trinidad and Tobago, they are below the critical value of 3 months. Again the data presented is not indicative of the current situation in Trinidad and Tobago and indications are that the value is below the critical limit. The burden of debt service on fiscal revenues are clearly large. Finally, the growth rate of real GDP has been slow for most countries. For Jamaica and Belize it has averaged zero over the last five years and for Trinidad and Jamaica there was negative growth.

Trend/Instability Approach:

An important consideration is in fact that even when the basic situation might be manageable, the economy may be subject to fluctuations in critical variables affecting debt servicing ability.

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TABLE 3

DEBT CAPACITY INDICATORS

Country	Constant Price GDP[1]	Reserves/Imports (months) [2]
Trinidad and Tobago	-3.5	5.2
Jamaica	0.0	0.6
Barbados	0.06	2.0
Guyana	-2.8	0.2
St. Vincent	5.4	0.8
Belize	0.0	..
Grenada	2.0	..
Antigua	4.4	..
Dominica	4.1	..
Montserrat	2.0	..
St. Kitts/Nevis	2.5	..
St. Lucia	2.8	..

1. Means percentage growth rates of GDP, 1980 - 1985

2. Data is for 1984 for Trinidad and Tobago, Jamaica and Barbados;
   for the other countries it is for 1983.

.. means not available.

It is therefore important to form some judgement about the degree of instability in those variables.

For a country to have a high level of debt bearing/servicing capacity, the time paths of certain crucial economic varibles, viz. exports, GNP, international reserves and interest rates, should be fairly stable. If they are unstable then the ability or affordability to service the debt could be frustrated. The higher the degree of instability of the variables, the greater will be the risk associated with lending to the country and the smaller the possibility that the country will be able to make interest and amortization payments in its debt.

Wide variability of the variables also mean that calculations of the economic indicators or ratios of debt bearing capacity discussed earlier, which involved their use would result in values that vary significantly from year to year. For example, a debt-service ratio which may be considered safe in one year can move to an unacceptable one the following year simply because of the variability of export earnings.

The variability of exports is an important issue in estimating deby/servicing capacity. External loans are contracted in foreign currency, and service and amortization payments are required to be made in foreign currency. The ability of a country to service its debt is therefore clearly dependent on its ability to earn foreign exchange. Since exports are usually the major source of foreign inflows in developing countries, it is important for such countries

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to attempt to maintain stable levels of export earnings to prevent
balance of payment crises and debt repayment difficulties.
Situations of wide and/or unpredictable swings in export earnings can
effectively reduce the level of debt a country can sustain.
Sustainability, in this context, refers to a situation where a
country can honour the terms of its loan agreements without imposing
restrictive policies on its economy, such as drastic cuts in imports.

Since the mid 1970's there has been increasing privatisation of
the debt portfolio of several Commonwealth Caribbean countries. Many
commercial loans, are contracted at variable interest rates based on
the London Inter-Bank Offer Rate (LIBOR). This means that as LIBOR
changed the interest payments on these loans also change in the same
direction. If LIBOR fluctuates widely then interest payments would
also be unstable. Instability in interest payments makes it
difficult to service high levels of debt precisely because of the
erratic nature of these payments and the uncertainty involved. If
most of a country's loan portfolio is comprised of loans at variable
rates of interest, then such a country will be seriously affected by
fluctuations in international interest rates. Fluctuations in the
base rate at which loans are contracted are therefore, an important
criterion in the determination of debt bearing capacity. If the base
rate follows a stable trend, there is no cause for concern. However,
when the rate shows wide swings it becomes critical in the assessment
of debt bearing capacity.

In order to assess the debt bearing capacity of the Caribbean countries using the trend or instability approach, instability coefficients were estimated for exports and interest rate (LIBOR). Data for the period 1975 to 1985 for exports and 1971 to 1985 for LIBOR were regressed against time and measures of instability were calculated. The coefficient of instability used is the ratio of the standard error of estimates from the logarithmic trend regression divided by the logarithmic mean value of the variable of interest. The variability coefficients for exports for the countries are presented in Table 4. The coefficients ranged from 2.57 percent for Barbados to 47.56 percent for Montserrat. For most countries the coefficients were above 3 percent. The coefficient for the rate of interest was 14.68% percent.

The indexes of instability suggest that exports and interest rates have been subjected to high variability. This means that for a given level of debt, swings in these variables can move the countries from a safe or tolerable level of debt to one which may be unsustainable over a very short period.

Scenario Approach:

The development of scenarios require the identification of the parameters which significantly affect debt bearing capacity. The sustainability of the countries' debt policies depends to a large extent on what is expected to happen to exports, GNP, international reserves, interest rates, imports and outstanding debt.

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TABLE 4

VARIABILITY COEFFICIENT FOR EXPORTS

COUNTRY	COEFFICIENTS
Trinidad and Tobago	3.13
Jamaica	2.63
Barbados	2.57
Guyana	2.63
Antigua	12.60
Dominica	6.60
Grenada	4.11
Montserrat	47.56
St. Kitts/Nevis	3.93
St. Lucia	3.97
St. Vincent	3.38

75/85

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To develop the scenarios the variables listed above were forecasted until 1990. Confidence intervals were then estimated for the years 1986 to 1990. The actual, trend and forecasted values together with the confidence bands were plotted (See Appendix 1). It is expected that the countries would have higher levels of debt bearing capacity if they have relatively higher levels of GNP, exports and reserves and lower levels of imports, outstanding debt and interest. Thus, the upper limits of the confidence intervals for GNP, exports and reserves and the lower limits of outstanding debt, imports and interest can be used to compute ratios for the best case scenario. The opposite would hold for the worst case scenario.

For present purposes it is not necessary to work out the individual ratios for each country, instead, it is sufficient to look at the projected trends and the confidence intervals for the critical variables. It can be observed that for all the countries except Barbados, the confidence bands for all the variables were quite wide. This indicates that the ratios for the worse case scenarios would be above the critical limits, and therefore suggests that the sustainability of the debt policies of these countries would be constrained.

FISCAL CONSTRAINTS

In the past foreign debt inflows have substituted for fiscal revenues and domestic debt receipts in the financing of Caribbean Governments. Contractions in foreign debt inflows especially abrupt

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ones could create considerable budgetary difficulties for these Governments. Furthermore, debt service payments themselves impose fiscal demands. The extent to which an economy can cope with a foreign debt problem manifested either in the form of a contraction of debt flows or a rise in interest payments depends on the strength of its fiscal system.

Elasticity and Buoyancy of Tax Systems:

One aspect of the problem is the degree to which revenues and expenditures are income elastic or buoyant. The response of tax revenue to changes in income has often been singled out as an important criterion in the assessment of a tax system of a developing country [Choundry (1979), Mansfield (1972), Chelliah (1971)]. This response is measured by the concepts of tax elasticity and tax buoyancy. By tax elasticity we mean the automatic responsiveness of tax revenue to changes in income, that is to say, it is measured with reference to a given tax structure and as such the effects of discretionary change in the tax structure should be netted out. Tax buoyancy measures the total response of tax revenue to changes in income. In other words, in estimating the built-in elasticity of a tax system, historical revenue series must be adjusted to eliminate the effects on revenue of discretionary tax measures. If this is not done then what one really has is a measure of tax buoyancy.

A high income elasticity is said to be a particularly desirable attribute of a tax system as it allows growth in expenditure to be

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financed by raising tax revenues without the need for politically difficult decisions to raise taxes. However, major sources of government revenue may have a low elasticity in which case the fiscal authorities would have to seek additional revenue by introducing discretionary changes [Mansfield (1972)]. The growth in tax revenue then would not be through high elasticity but through high buoyancy.

In order to obtain the overall buoyancy of the tax system a log linear specification was used:

(1) $\quad$ Log T $\quad = \quad$ log $\alpha + \beta$ log Y

Where $\quad$ T $\quad = \quad$ tax revenue

$\quad$ Y $\quad = \quad$ gross domestic product

$\quad \beta \quad = \quad$ the buoyancy coefficient

This form of equation implies that the relation between revenue receipts and income is approximated by the function:

(2) $\quad$ T $\quad = \quad \alpha Y^{\beta}$

from which the double log function is derived.

Equation (1) was used to estimate the buoyancy coefficients for Trinidad, Barbados, Jamaica and Guyana. These coefficient are given in Table 5.

TABLE 5

Buoyancy Coefficients

Country	Coefficient[a]
Trinidad and Tobago	1.24
Jamaica	1.04
Barbados	1.09
Guyana	1.39
Antigua	1.59
Dominica	0.91
Montserrat	1.10
St. Kitts/Nevis	1.00
St. Lucia	1.38
St. Vincent	1.27

a. The coefficients are significant at a 95% level of confidence

b. Estimated by Howard (Ph.d Thesis, 1986).

Elasticity of Government Expenditure

The concept of expenditure elasticity measures the responsiveness of government expenditure to changes in Gross Domestic Product. To calculate the overall expenditure elasticities of the countries the following equation was used:

(2) $\log E_i = \log \alpha + \beta \log Y$

where E_i = Government expenditure of country i

Y = Gross Domestic Product

β = Elasticity Coefficient

The expenditure elasticity coefficients are presented in Table 6.

TABLE 6

Expenditure Coefficients

Country	Overall Expenditure
Trinidad and Tobago	1.316
Jamaica	1.09
Barbados	0.61a
Guyana	1.9
Antigua	1.44
Dominica	1.09
Montserrat	0.84
St. Kitts/Nevis	1.15
St. Lucia	1.72
St. Vincent	1.08

a. estimated by C. Holder

NOTE: The coefficients are significant at a 95% level of confidence.

It is significant to note that for most countries expenditure elasticity exceeded revenue buoyancy.

Tax Administration: The revenue buoyancy coefficients for the Caribbean countries have remained relatively low despite extensions in the range of taxes and increases in tax rates. This points to some problems of tax administration and tax compliance. The scope for fiscal adjustments to debt problems is therefore constrained by the efficiency of tax administration.

It is useful to recall that the debt problems are current in the context of a balance of payments problem. There is the tendency to address the balance of payments problem by restricting aggregate expenditures, in particular import expenditures. While this may be reasonable from a strictly balance of payment correction perspective it does weaken fiscal performance since receipts from expenditure taxes and import tariffs are a major component of total fiscal revenues. It should also be noted that the economic recession in some countries also undermines fiscal capacity.

While theoretically countries may attempt to cope with fiscal revenue short falls or the reduced foreign capital inflows by increased domestic deficit financing the practical scope for this depends upon the upper limit set by the structure of the economy and its fiscal system, and upon the degree to which deficit financing has already been employed. The really critical elements in the economic structure are the relationship betwen deficit financing and monetary

expansion and the effects of monetary expansion on domestic price
levels and the balance of payments. The operations of the financial
system outside of the commercial banking industry are not
particularly conducive to deficit financing by means of security
issue. Individuals and corporate investors as well as some types of
financial institutions exhibit weak preference for bonds and other
government securities.

With respect to the constraints placed by the existing levels of
government financing, the evidence is that fiscal deficits are
already a large proportion of GDP in Caribbean countries ranging
between 4.1% in Antigua to 39.6% in Guyana. Substantial increases in
these ratios would raise or aggravate problems of inflation and
crowding out of private expenditures.

Altogether, the analysis of the fiscal abilities of the
Caribbean countries leads to the conclusion that the fiscal ability
of these countries to adjust to severe external debt problems is
quite limited in the short run.

EXPORT GROWTH

A possible solution to the debt problem is adjustment through
through export growth. However, the exports of most if not all,
Caribbean countries suffer from high commodity and geographic
concentration. There is also a close relationship between commodity
concentration and geographic concentration of exports. If a country
specialises in a narrow range of exports; this forecloses certain

export markets with resulting inequalities in bargaining and economic power. The traditional exports of the Caribbean countries are agriculture, primary commodities and minerals. In many cases the demand prospects for these exports have not been good, either from the point of view of growth in demand or from the point of view of price trends.

Export performance is also vitiated by weak industrial country growth, increasing protectionism and production weaknesses. The development or the use of an export adjustment solution therefore requires considerable improvement in export performance. This would require not only better production and marketing in traditional industries but also development of new export commodities and new export markets. The latter especially are not short term matters, so that the export approach is really a medium to longer term one.

CONCLUSION

The debt problem has manifested itself in the Commonwealth Caribbean countries. This is indicated by high levels of outstanding debt, a slowdown in new flows, and a tightening of debt terms.

An analysis of the debt bearing capacity of the countries indicated that in foreign debt policies may not be sustainable. Moreover, the analysis of the fiscal abilities of the Caribbean countries suggested that the fiscal abilities of these economies to adjust to severe external debt problems is quite limited in the short run. A possible solution to the debt problem is adjustment through export growth. Moreover the export approach is really a medium term

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to longer term one. The harsh reality is that there may be no full solution to the debt problem in the short run. Refinancing still remains a possibility and it is a possibility that is actually being pursued by a number of developing countries.

However, the terms of refinancing are themselves becoming onerous and could contribute further to the problem.

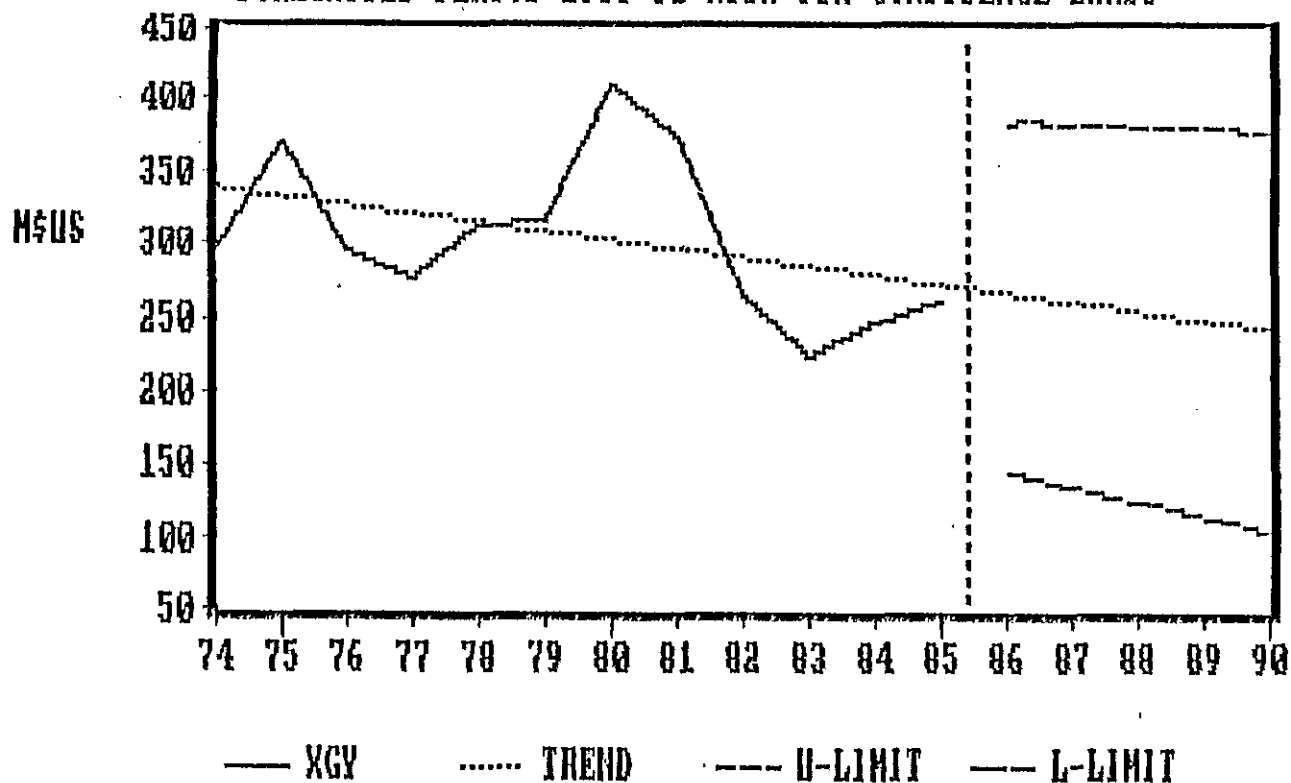Actual, tends and forecasted values and confidence bands for the critical variables used in the scenarios approach.

TRINIDAD & TOBAGO - EXPORTS OF GOODS & SERVICES(US$)
FORECASTED PERIOD 1987-90 WITH 95% CONFIDENCE BANDS

M US$

6000
5000
4000
3000
2000
1000

74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90

—— XTT   ⋯⋯ TREND   ---- L-LIMIT   —— U-LIMIT
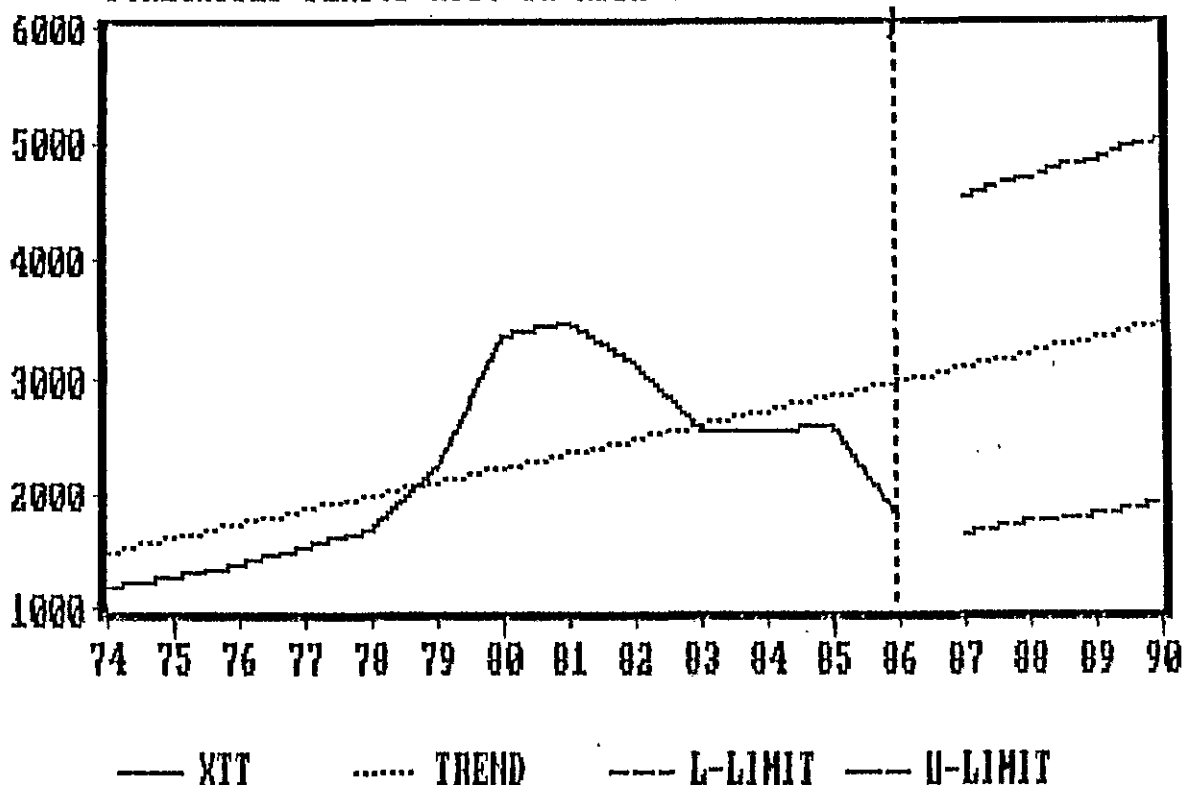
JAMAICA - EXPORTS OF GOODS & SERVICES- ACTUAL AGAINST FITTED VALUES
FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

M$US

2000
1750
1500
1250
1000
750

74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90

—— XJA   ⋯⋯ TREND   ---- U-LIMIT   —— L-LIMIT
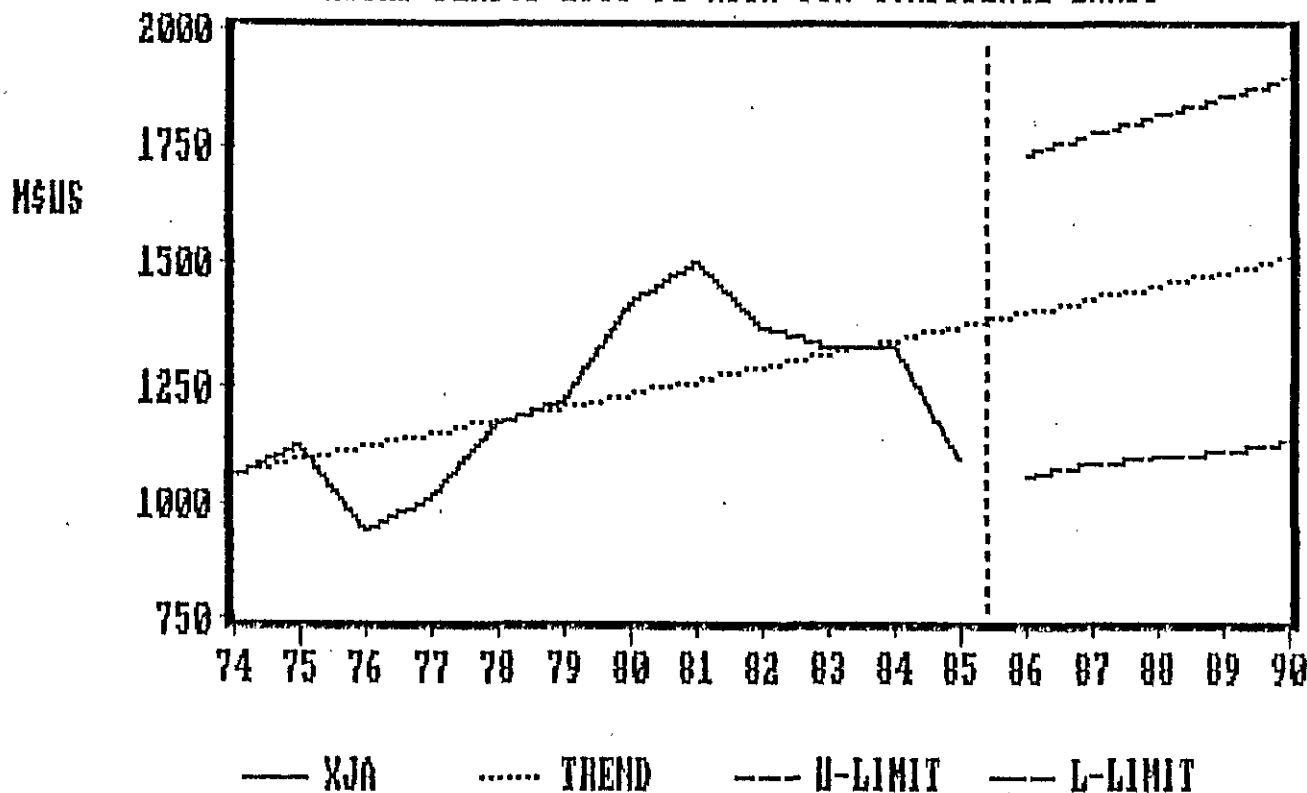
GUYANA – EXPORTS OF GOODS AND SERVICES – ACTUAL AGAINST FITTED VALUES
FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

Legend: —— XGY ······ TREND –––– U-LIMIT —— L-LIMIT

BARBADOS – EXPORTS OF GOODS & SERVICES-ACTUAL AGAINST FITTED VALUES
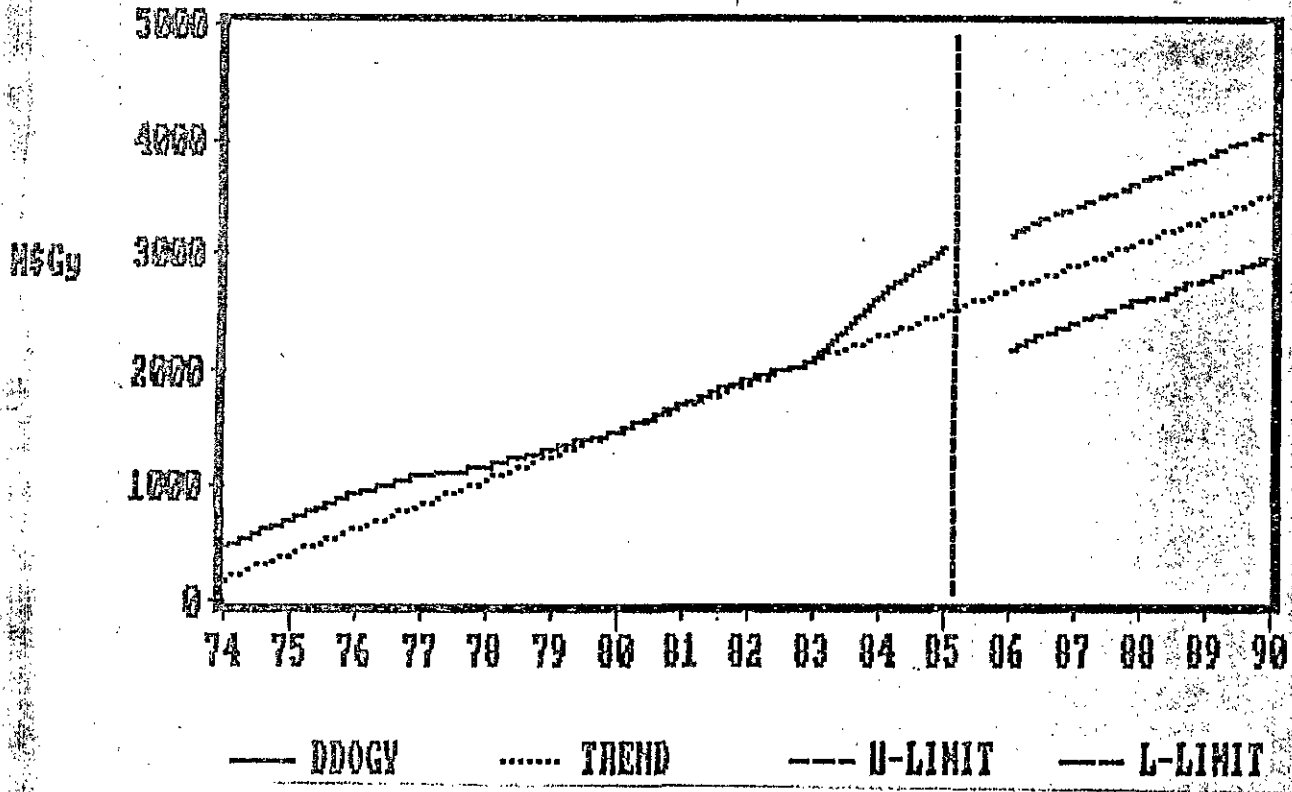## FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

Legend: —— XBD ······ TREND –––– U-LIMIT —— L-LIMIT
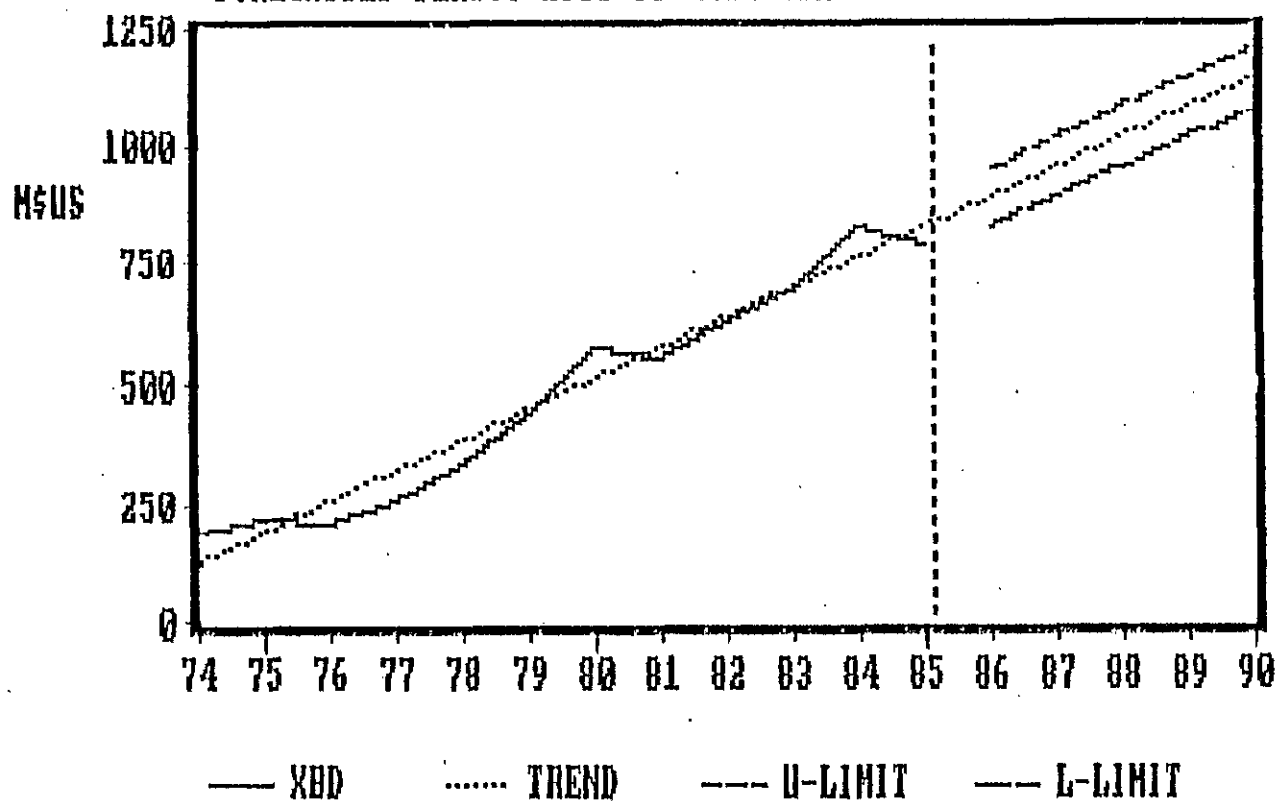
TRINIDAD & TOBAGO - IMPORTS OF GOODS AND SERVICES(US$)
FORECASTED PERIOD 1987-90 WITH 95% CONFIDENCE BANDS

M US$

—— MTT ······ TREND ——— U-LIMIT ——— L-LIMIT
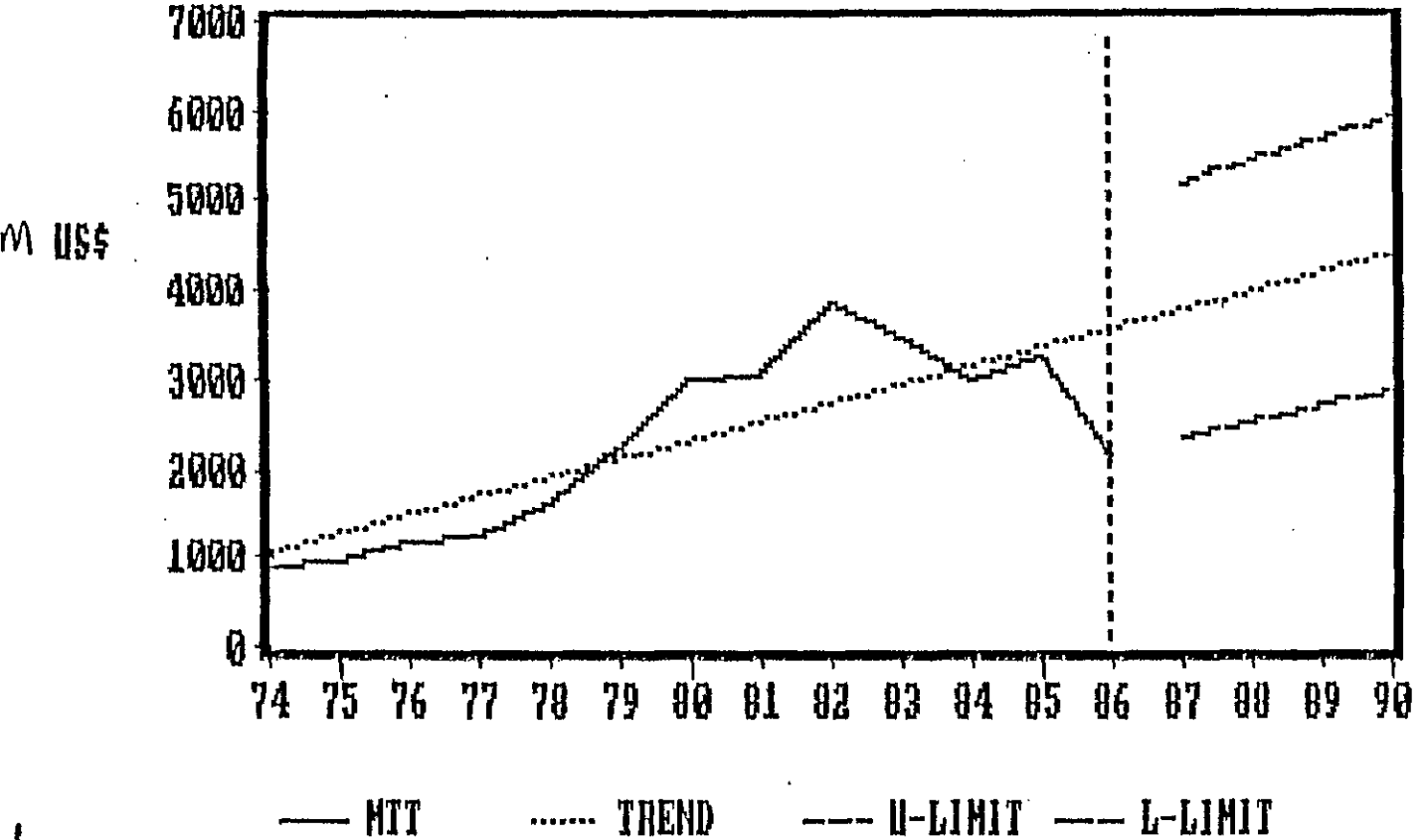
JAMAICA-IMPORTS OF GOODS & SERVICES - ACTUAL AGAINST FITTED VALUES
FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

M$US

—— MJA ······ TREND ——— U-LIMIT ——— L-LIMIT
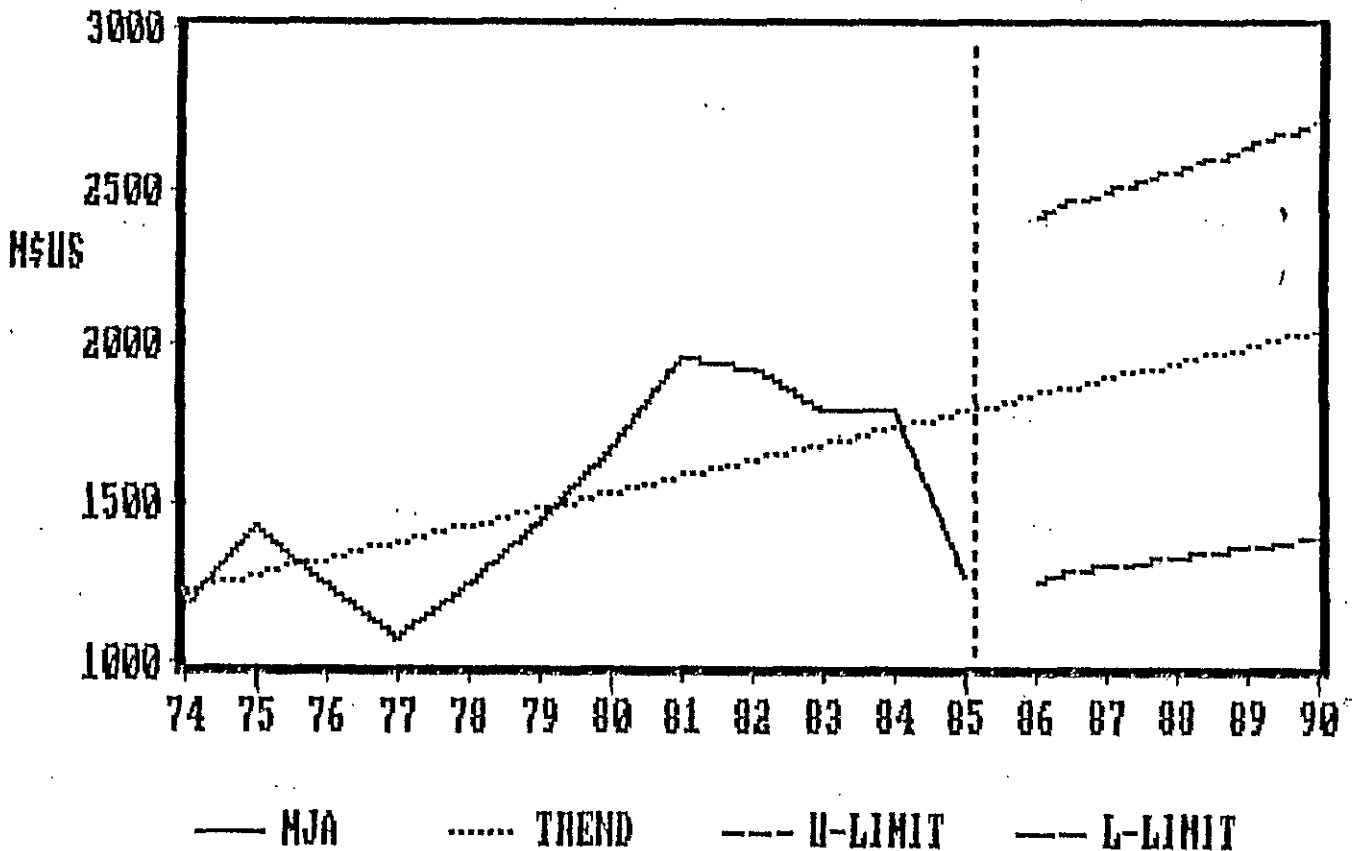
GUYANA - IMPORTS OF GOODS & SERVICES-ACTUAL AGAINST FITTED VALUES FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

—— MGY ······ TREND ——— U-LIMIT —— L-LIMIT
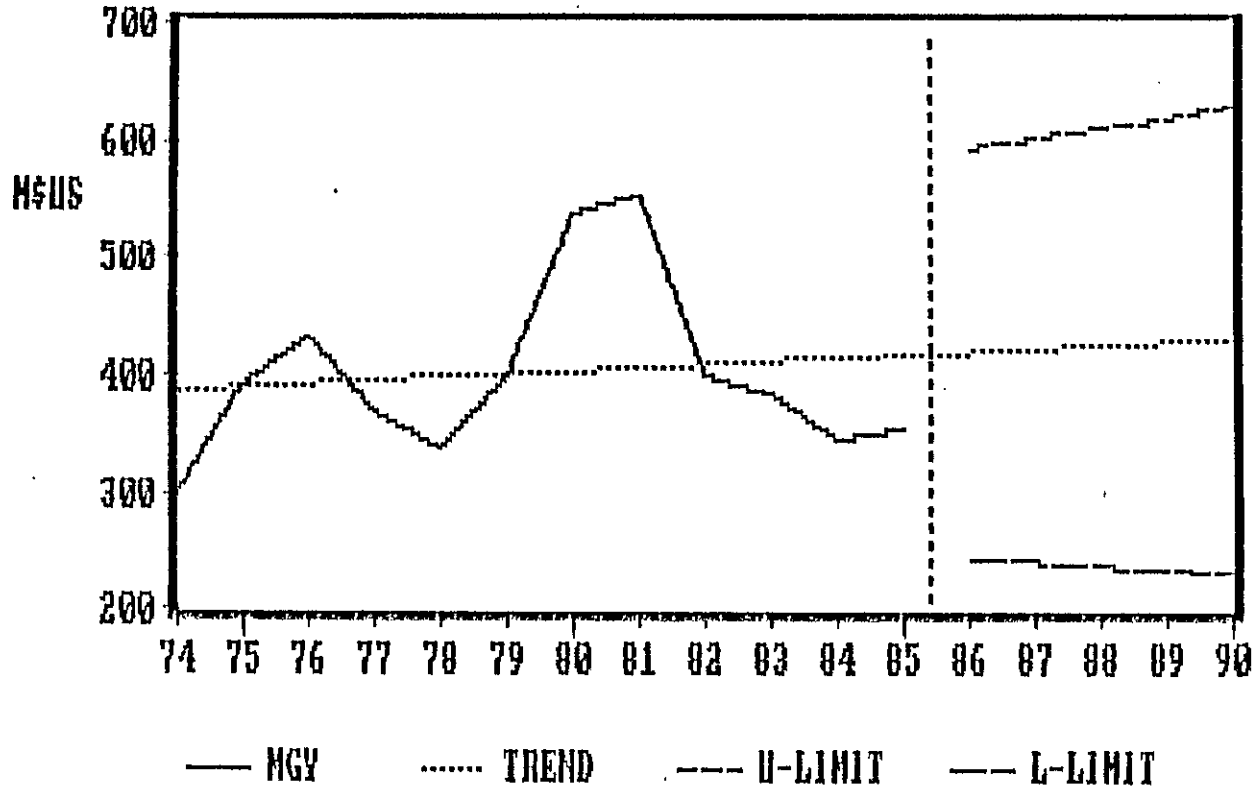
BARBADOS - IMPORTS OF GOODS & SERVICES-ACTUAL AGAINST FITTED VALUES FORECASTED PERIOD 1986-90 WITH 95% CONFIDENCE BANDS

—— MBD ······ TREND ——— U-LIMIT —— L-LIMIT
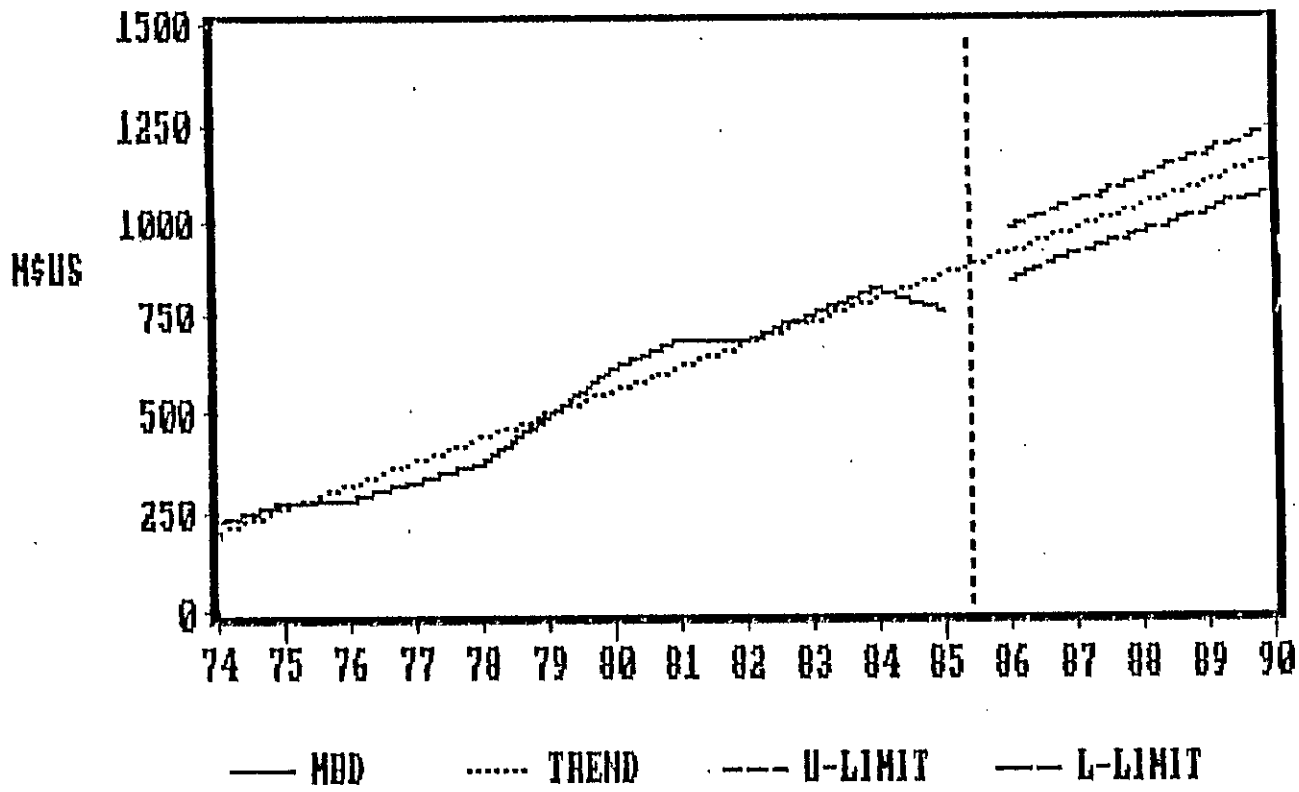
DISBURSED DEBT OUTSTANDING: ACTUAL AND FITTED(FORECASTED) VALUES.
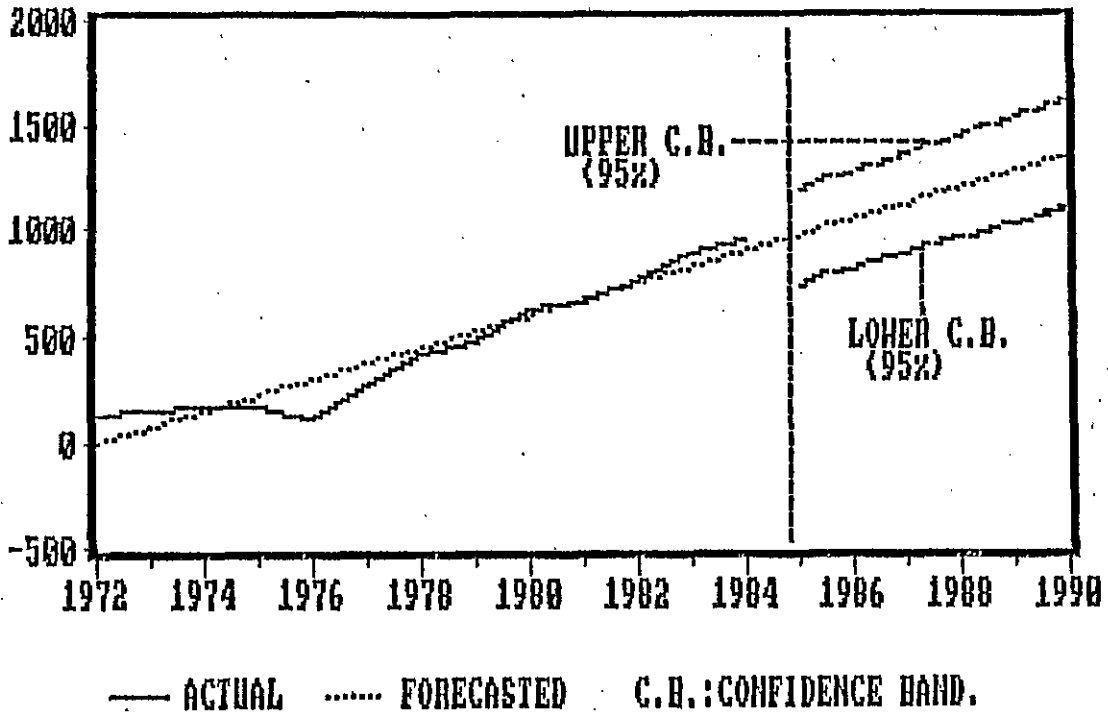
— ACTUAL   ······ FORECASTED   C.B.:CONFIDENCE BAND.

DISBURSED DEBT OUTSTANDING(J's)-ACTUAL AGAINST FITTED 1974-84 FORECASTED PERIOD 1985-90 WITH 5% CONFIDENCE INTERVAL BANDS

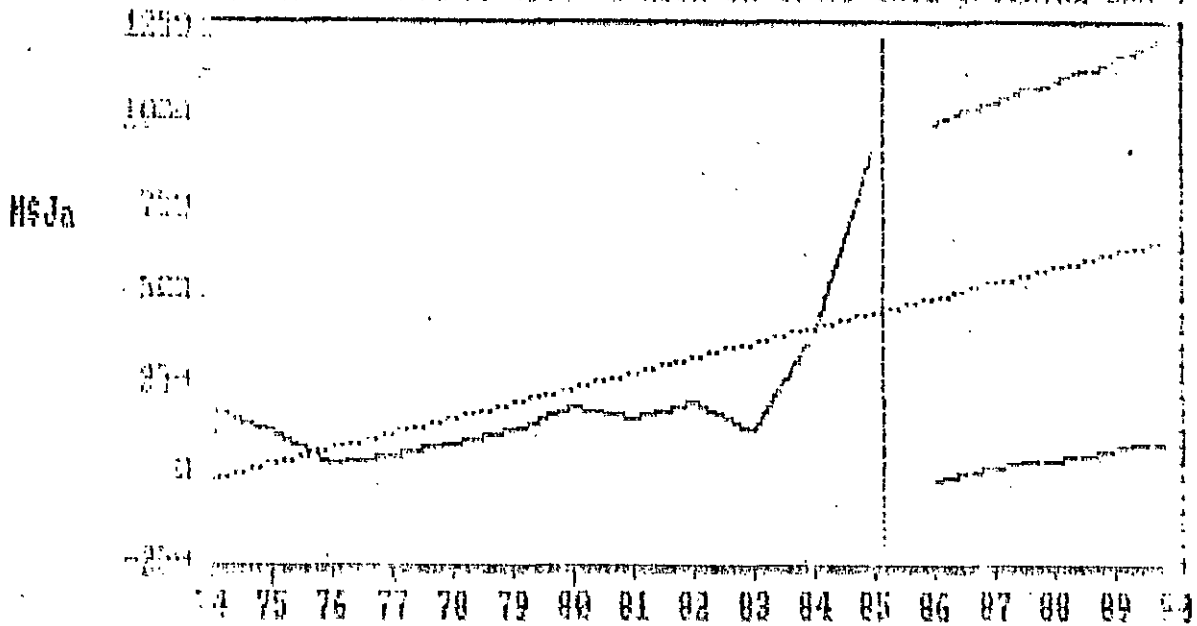— DDOJA   ······ TREND   ---- U-LIMIT   ---- L-LIMIT
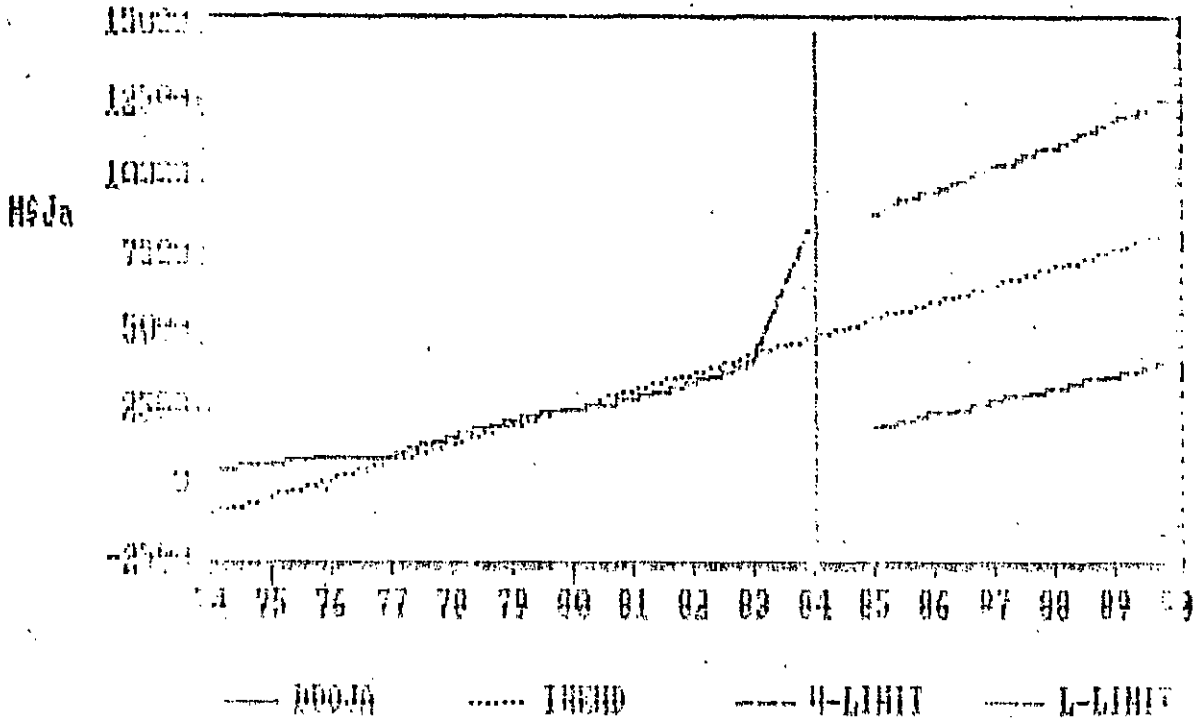
DISHURSED DEBT OUTSTANDING(GUYANA)-ACTUAL AGAINST FITTED 1974-85 FORECASTED PERIOD 1986-90 WITH 5% CONFIDENCE INTERVAL BANDS

- DDOGY   ...... TREND   ---- U-LIMIT   —— L-LIMIT

DISHURSED DEBT OUTSTANDING-H'DOS-ACTUAL AGAINST FITTED 1974-84 FORECASTED PERIOD 1985-90 WITH 5% CONFIDENCE INTERVAL BANDS

- DDOHD   ...... TREND   ---- U-LIMIT   —— L-LIMIT

33
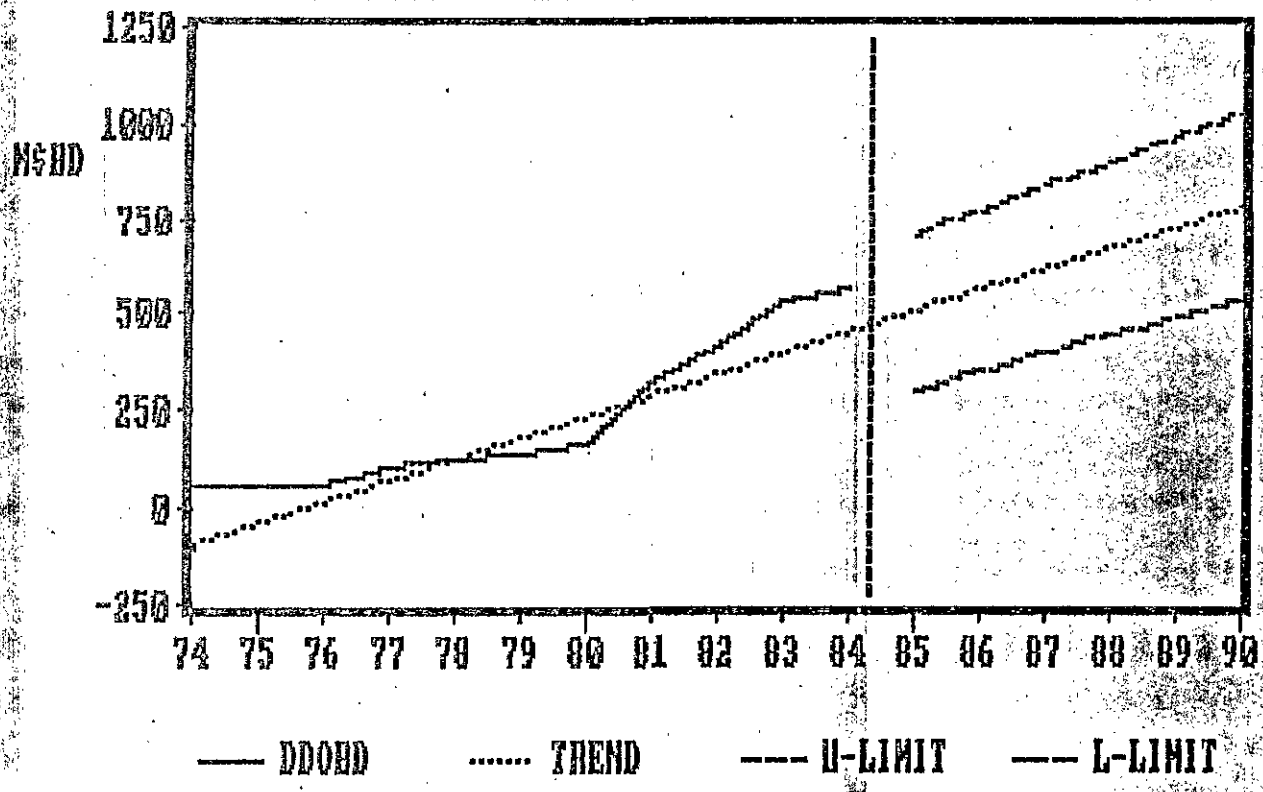
RESERVES: ACTUAL AND FITTED(FORECASTED) VALUES.
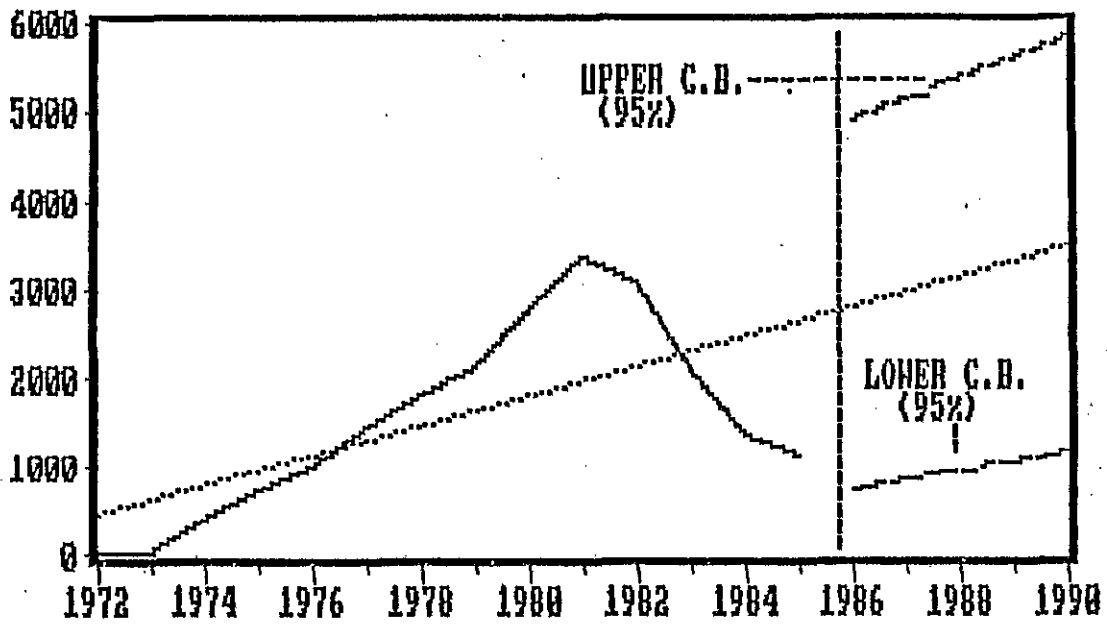
— ACTUAL ······ FORECASTED C.B.:CONFIDENCE BAND.

GROSS RESERVES(JAMAICA)-ACTUAL AGAINST FITTED VALUES 1974-85
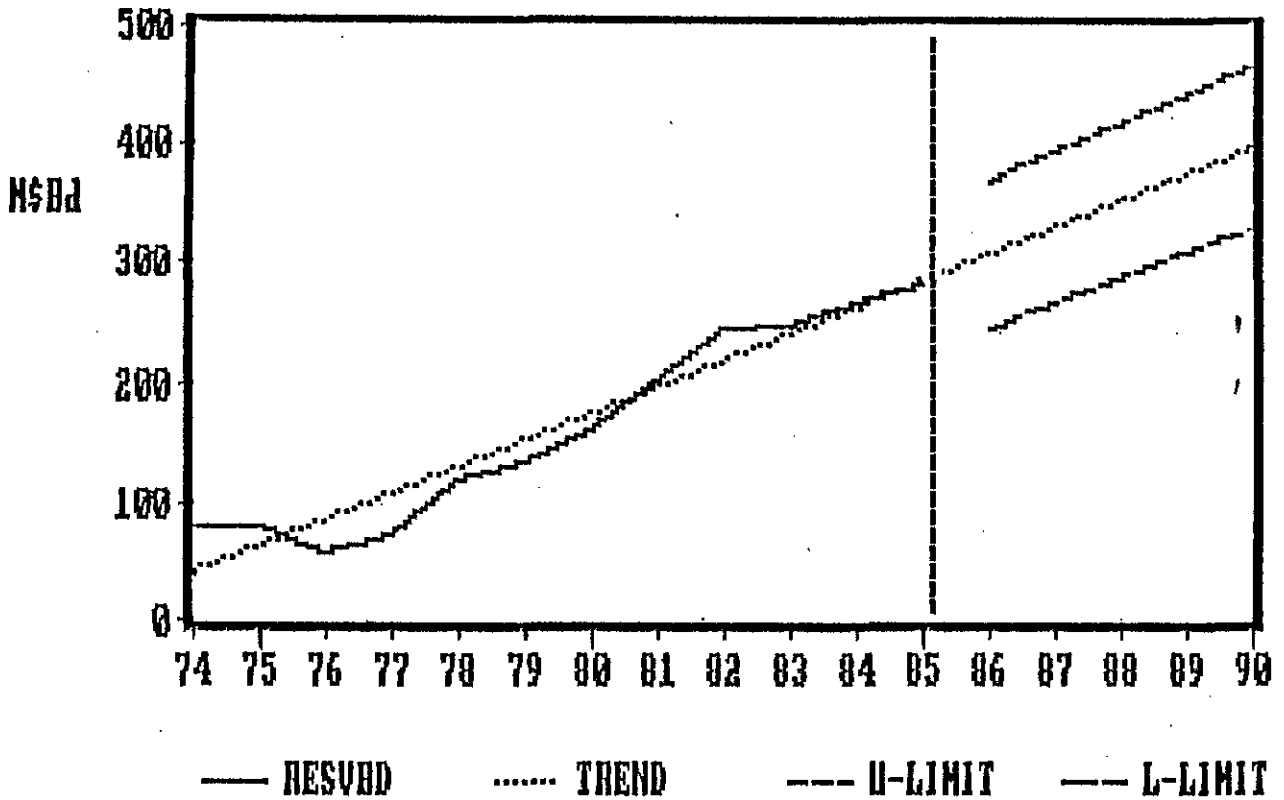FORECASTED PERIOD 1986-90 WITH 5% CONFIDENCE INTERVAL BANDS

—— RES$Ja ······ TREND ——— U-LIMIT ——— L-LIMIT

GROSS RESERVES(GUYANA)-ACTUAL AGAINST FITTED VALUES 1974-85
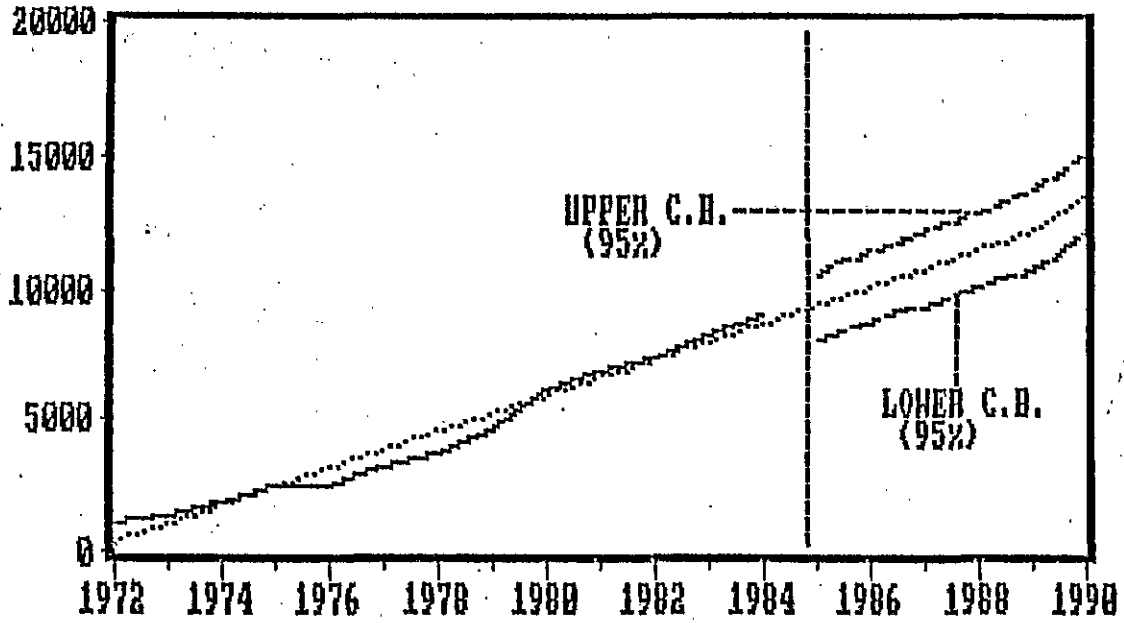## FORECASTED PERIOD 1986-90 WITH 5% CONFIDENCE INTERVAL BANDS

——— RESVGY   ······· TREND   ——— U-LIMIT   ——— L-LIMIT
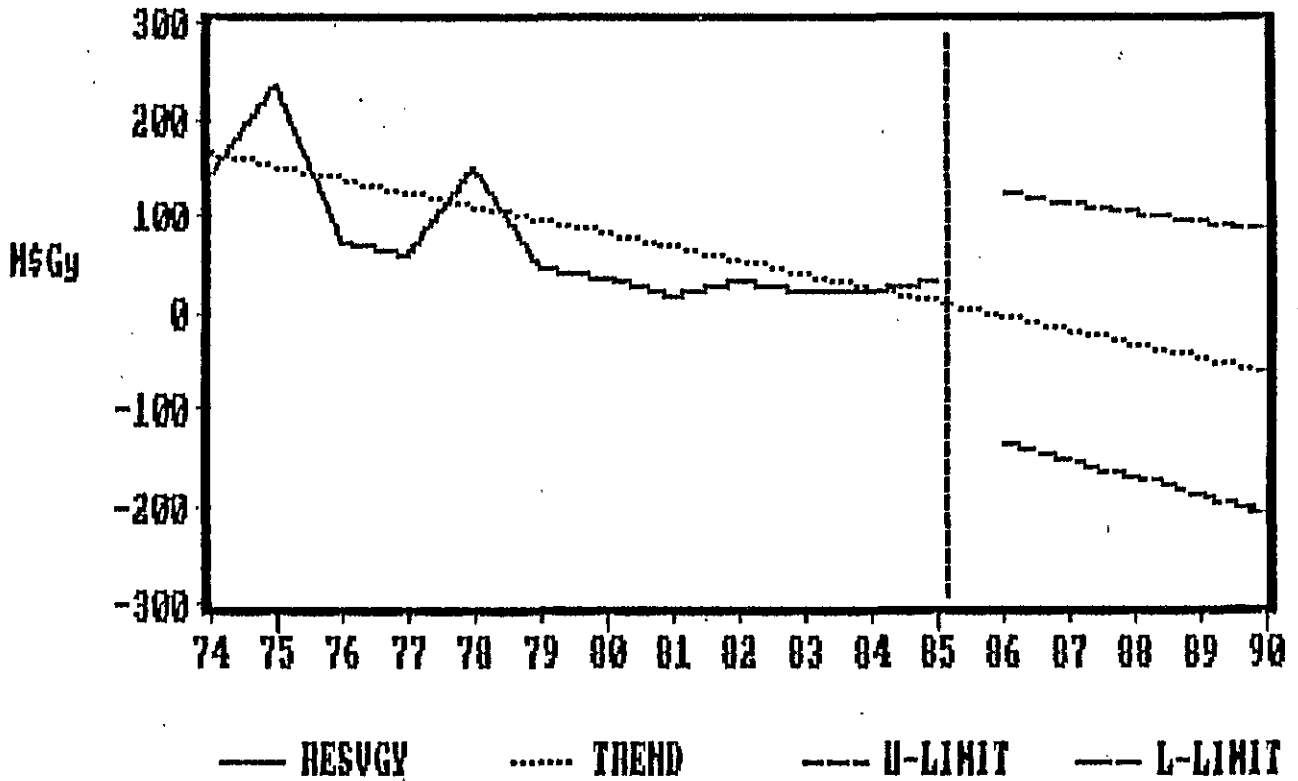
GROSS RESERVES(BARBADOS)-ACTUAL AGAINST FITTED VALUES 1974-85
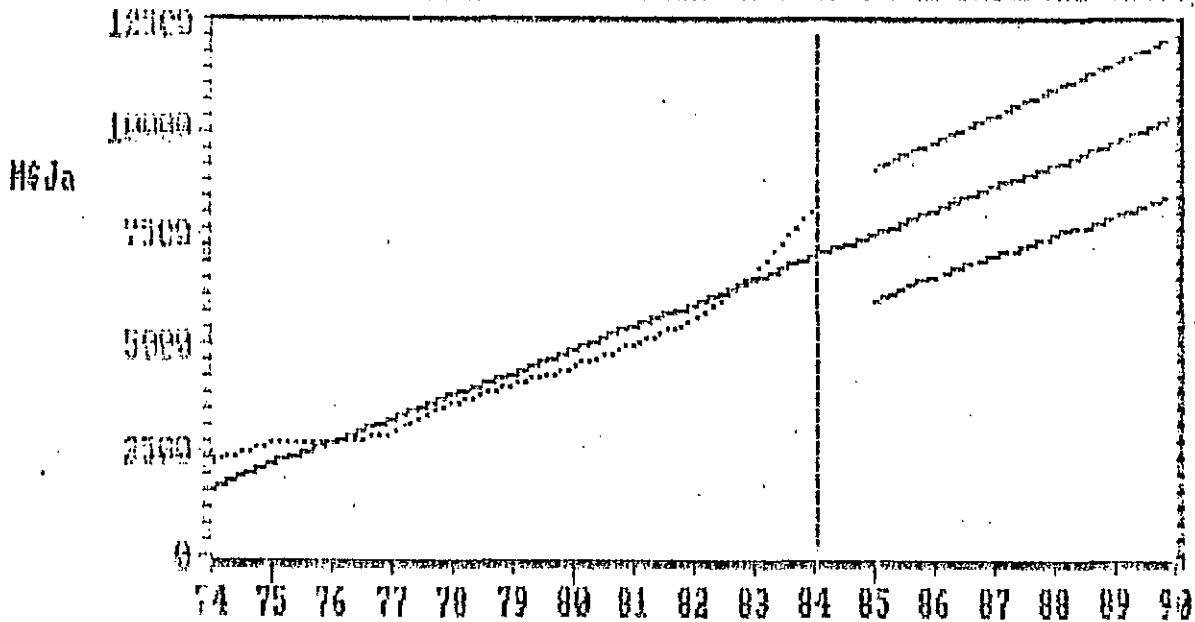## FORECASTED PERIOD 1986-90 WITH 5% CONFIDENCE INTERVAL BANDS

——— RESVBD   ······· TREND   ——— U-LIMIT   ——— L-LIMIT

35

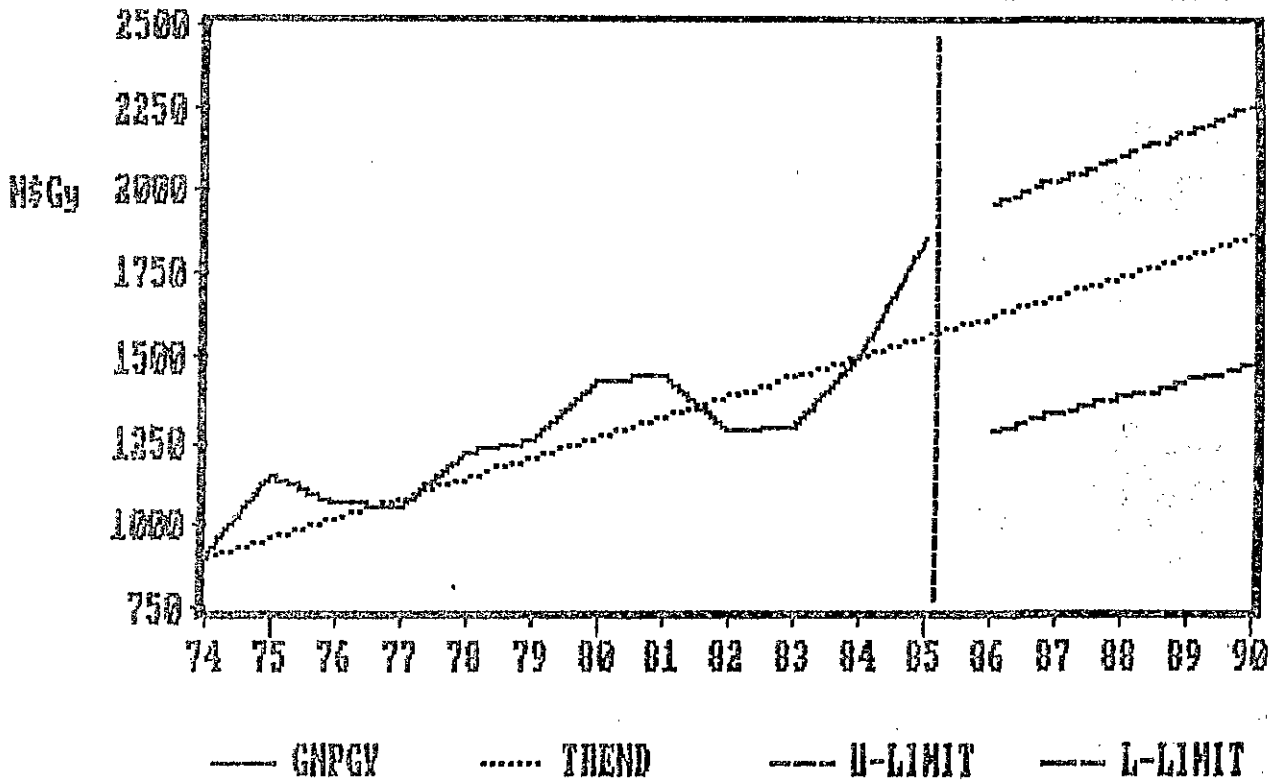## GROSS NATIONAL PRODUCT: ACTUAL AND FITTED(FORECASTED) VALUES.

— ACTUAL ······ FORECASTED C.B.:CONFIDENCE BAND.

## GNP(JAMAICA) -ACTUAL AGAINST FITTED VALUES 1974-84 FORECASTED PERIOD 1985-90 WITH 5% CONFIDENCE INTERVAL BANDS


— TREND ······ GNPJA ---- U-LIMIT — L-LIMIT

GNP(GUYANA)-ACTUAL AGAINST FITTED VALUES 1974-85
FORECAST PERIOD 1986-90 WITH 5% CONFIDENCE INTERVAL BANDS

Legend: — GNPGV ...... TREND — — U-LIMIT — — L-LIMIT

GNP(BARBADOS)-ACTUAL AGAINST FITTED VALUES 1974-84
FORECASTED PERIOD 1985-90 WITH 5% CONFIDENCE INTERVAL BANDS

Legend: — GNPBD ...... TREND — — U-LIMIT — — L-LIMIT

37
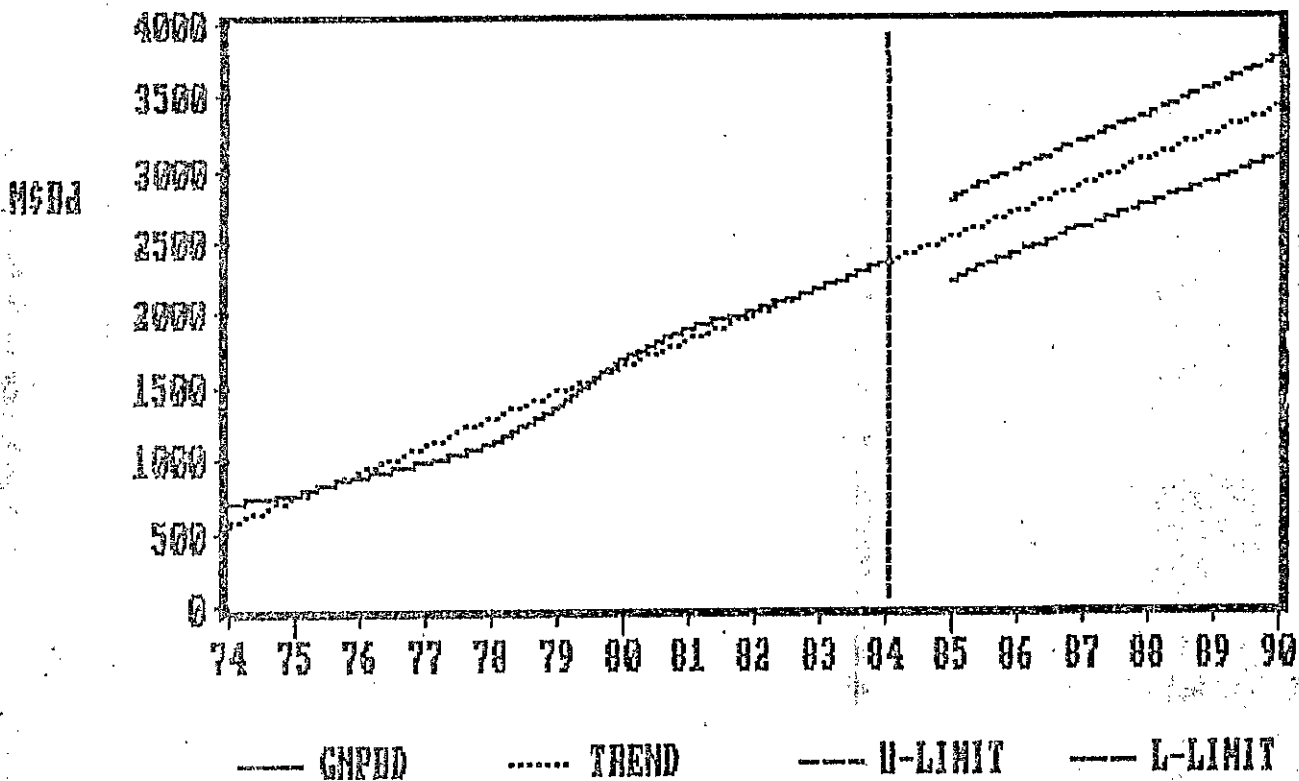
INTEREST RATE (LIBOR): ACTUAL AND
FITTED(FORECASTED) VALUES.
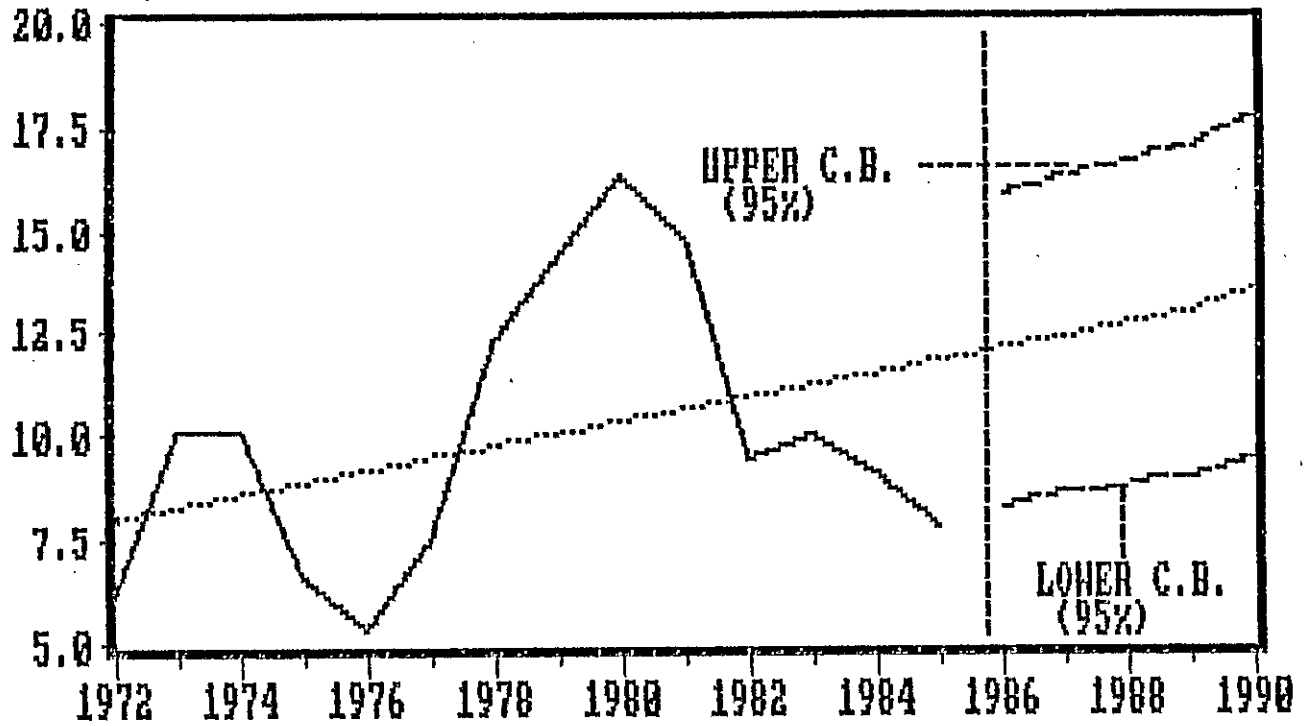
——— ACTUAL   ······· FORECASTED   C.B.:CONFIDENCE BAND.

BIBLIOGRAPHY

Avramovic, D, et. al., <u>Economic Growth and Extternal Debt</u>, Baltimore
John Hopkins Press, 1964.

Calverly, J., <u>Country Risk Analysis</u>, London, Butterworths, 1985.

Chelliah, R., Trends in Taxation in Developing Countries, <u>IMF Staff
Papers</u>, Vol. 18, 1971.

Chelliah, R., H.J. Baas and Mr. R. Kelly, "Tax Ratios and Tax Efforts
in Developing Countries, 1961-71", <u>IMF Staff Papers</u>, Vol.
26, 1975.

Choundry, N. M., "A Study of the Elasticity of the West Malaysian
Income Tax System, 1961-70", <u>IMF Staff Papers</u>, Vol. 26,
1979.

Dhonte, P., "Describing External Debt Situations: A Roll-Over
Approach", <u>IMF Staff Papers</u> Vol. 22, 1975.

Feder G. and R.E. Just, "A Study of Debt Servicing Applying Logit
Analysis". <u>Journal of Development Economics</u>, Vol. 4, 1977
pp 25-38.

Frank, C.R. and W.R. Cline, "Measurements of Debt Servicing Capacity:
An Application of Discriminant Analysis", <u>Journal of
International Economics</u>, Vol. 1, 1971, pp 327-44.

Hardy, C.S., "Commercial Bank Lending to Developing Countries:
Supply Constraints", <u>World Development</u>, Vol. 7, 1979,
pp 189-97.

Kharas, H., "The Long-Run Creditworthiness of Developing Countries: Theory and Practice". <u>Quarterly Jorunal of Economics</u>, 1984, pp 415-39.

Mansfield, C., "Elasticity and Buoyancy of a Tax System: A Method Applied to Paraguay: <u>IMF Staff Paper</u>, Vol. 19, 1972, pp 425-41.

Mayer, E., <u>"International Lending: Country Risk Analysis</u>, Reston Financial Services, 1985.

McDonald, D., "Debt Capacity and Developing Country Borrowing: A Survey of the Literature", <u>IMF Staff Paper</u>, Vol. 29, 1982, pp 603-46.

Taffler, R.J. and A. Abassi, "Country Risk: A Model for Predicting Debt Servicing Problems in Developing Countries", <u>Journal of the Royal Statistical Society</u>, Vol. 147, Part 4, 1984, pp 541-568.

Yeats, A., <u>Trade Barriers facing Developing Countries</u>, New York, St. Martins Press, 1970.