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ADJUSTMENT POLICIES IN SMALL OPEN ECONOMIES

DeLisle Worrell

Visiting Fellow

Yale University

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## ABSTRACT

Looking at the economic fortunes of the English-speaking Caribbean over the last fifteen years, we find that countries with the greatest promise have had a record of chronic instability. This paper tries to discriminate between the impact of unsettled world economic conditions and of domestic economic policies on the outcome for individual countries. We measure the impact of oil crises, world stagflation, interest rate variability and exchange rate uncertainty. We find that the performance of the world economy curtailed growth prospects everywhere in the Caribbean and increased the difficulty of economic management for all countries. Though the impact of world conditions varied greatly from country to country, that external influence does not account for the variety of performance. The extent of economic deterioration seems more closely related to the policies governments undertook in reaction to the changed external circumstances. In general, less adventurous policies seemed to have been more helpful or less damaging.

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## Introduction

Although the economic performance of all English-speaking Caribbean economies<sup>1</sup> in the 1970s and 1980s was below expectations, the most striking feature of the period was the fact that countries which seemed to have the greatest promise in 1970 suffered the most serious relapses. The years after 1970 did turn out to be much more troublesome than anyone had conceived, with bewildering exchange rate fluctuations, sudden oil price increases, stagflation in industrial countries and a deep recession in the 1980s. These developments destabilized all Caribbean economies, even that of Trinidad and Tobago, which stood to gain from oil price increases. Terms of trade became highly variable, with losses for the post-1970 period as a whole in almost all cases; export markets weakened and all countries were subject to inflationary pressure through imports. The challenge of attaining growth with economic stability was more formidable than expected.

However, it was the policies adopted in the light of these circumstances that distinguished countries remaining in tolerable shape from those that regressed economically. Those countries that adopted fairly conservative demand management policies seem to have fared rather better than the less cautious. In particular, careful fiscal policies were a feature of the more stable economies, while fiscal excesses were hardly ever corrected for, although some valiant efforts were made. Other demand management tools such as monetary variables and the

exchange rate appear to have had less powerful effects, and their impact was never sufficient to compensate if the government budget deficit was too large.

It is a disappointment that Caribbean economies cannot boast of much success in stimulating the supply of output, a stated goal of most adjustment programmes. Adjustment is less painful if the country increases the supply of goods and services at the same time that people are being called upon to spend relatively less on tradeables. Supply seems to respond very sluggishly to changes in relative prices, which are the principal lever available to government. Moreover, it can be difficult to achieve changes in relative prices in the open economy. In Jamaica, which went much further than any other Caribbean country in its attempt to alter relative prices, severe currency devaluation was necessary before results were noticeable. The argument about the nature of supply responses is not resolved. Everyone agrees that they take a long time to emerge, and those who pin their faith on supply responses to relative price changes maintain that sufficiently large movements are of recent vintage, and it is too early to enter a judgement. On the other hand, if the obstacles to increased supply are institutional, price changes will not suffice.

Although the impact of developments in the industrial world varied from country to country, all experienced periods of economic adversity brought on by weakening export markets, worsening terms of trade, high interest rates on international

financial markets and variations in exchange rates among the currencies of industrial nations. The harsher circumstances of the 1970s and 1980s precluded gains in per capita income such as the Caribbean had witnessed in the 1960s and eliminated whatever chances there might have been of bettering troublesome levels of unemployment characteristic of the region. Jamaica suffered most severely from these outside forces; Guyana had one episode of good fortune, a second of very bad; Trinidad and Tobago's oil industry gave it an advantage from the price increase, but sowed the seeds of disequilibrium which emerged when the oil market softened. However, differences in the external impact are not sufficient to explain differences in performance, nor does the deterioration in major economic indicators date from the time of the most severe external pressure. Economies which failed to restore external payments balance soon after the initial shock found themselves defenceless in the face of subsequent disturbances, which, in general, had greater potential to do damage, and were more prolonged.

The present paper aims to amplify and demonstrate this interpretation of the recent experience of English speaking Caribbean countries. We begin with a view of the economies as they must have appeared around 1970, matching their subsequent performance against the prospects that might have been projected from that year. Because economic events in the world outside the Caribbean took such an unexpected course, our next section analyses the effects on the region of such factors as terms of trade movements, stagflation in industrial countries, floating

exchange rates and volatile interest rates. The economic policies used to cope with the unforeseen turn of events are reported in the next section, and this is followed by an assessment of their efficacy. We offer some concluding observations on the lessons to be drawn.

#### The Contrast between Expectations and Performance

Although they both had serious problems of unemployment and uneven distribution of resources, Jamaica and Guyana were the countries with greatest promise in 1970. Each country had a good record of recent growth, encouraging market prospects for its exports, unexploited natural resources, and some of the skills needed for the development process. These proved to be the countries turning in the worst performance, with real income per head in 1984 falling below that for 1970, by a considerable amount in Guyana's case. Trinidad and Tobago, which was not expected to do particularly well, enjoyed a period of immense prosperity following the first oil price rise, but output tailed off in the 1980s. Barbados and the Bahamas did a little better than was expected; the remaining countries offered no surprises, although some experienced occasional growth phases. No country could claim to have adjusted successfully. Unemployment remained high everywhere - higher than in 1970, for most countries - and there was little success in promoting a strong upward trend in exports. Judging from the rate of accumulation of bank deposits and other financial instruments, domestic savings potential was high, but investment remained sluggish.

In 1970, output in Jamaica was expanding, the rate of inflation was modest and external payments were in balance. The outlook was good for two of Jamaica's major foreign exchange earnings sectors: there was strong, growing demand for bauxite and alumina and for Jamaica's tourist services. However, in the sugar industry, third in importance as a source of foreign exchange, prices were unremunerative at current production costs, and output had begun to falter. The domestic savings rate was adequate and investment strong. However, economic growth had not been sufficiently buoyant to cut down on a high rate of unemployment, particularly in view of the low labour requirements of the fastest growing sectors.

The economy continued to do reasonably well until 1973, but in 1974 a very large balance of payments deficit and a fall in real output marked the start of a period of continuing economic difficulty for the Jamaican economy. A series of economic programmes failed to restore external balance, output did not recover and investors began to lose confidence in the country's prospects. The 1980s recession in the industrial world found the Jamaican economy still in disequilibrium; with the additional loss in output the recession imposed, it proved impossible to correct the external position. Balance of payments losses were increasingly severe, output contracted year after year, prices rose more quickly and unemployment reached nearly one-third of the labour force by 1984.



Guyana's economic prospects in 1970 seemed just as promising as Jamaica's. The economy was growing, inflation was low and external payments were in balance. Guyana shared with Jamaica the problem of high unemployment. The country was well endowed with natural resources - agricultural land, minerals, timber and hydro-electric potential - although they were all expensive to exploit. Guyana produced bauxite, and in 1970 was the only exporter of calcined bauxite, a special product used in the making of steel. The Guyanese were more competitive than their Caribbean neighbours in the production of sugar, and were able to break even at 1970 prices. Output of rice was falling in 1970, but there were a number of other activities - forestry, fishing, cattle, light manufacturing - which seemed to offer scope for expansion. The major question marks were social and political. There had been allegations of widespread irregularities in the elections which consolidated Mr. Forbes Burnham's majority in parliament, and politics and society were divided along racial lines, between Guyanese of African and Indian descent.

The Guyanese economy did rather well up to 1976. Output contracted a little in 1972 and 1973, the rate of inflation moved upwards and a surge in imports caused the balance of payments to be in deficit. But the economy recovered strongly, thanks to the rise in export prices in 1974 and 1975. In 1976 sugar prices collapsed, curtailing the growth of national income and depressing tax revenues with government caught midway in a large expansion programme. The Bank of Guyana was required to provide

considerable financing for government, and the resulting expenditure on imports produced a large balance of payments deficit. At the same time, output began to fall, partly because of reorganisation following the nationalization of large segments of the economy. By means of tight expenditure policies, the government was able to secure a gradual improvement in the balance of payments between 1978 and 1980, though at the expense of a reduction in real income. However, the second oil shock caused the balance of payments to slide once more, and income continued to decline.

In 1970 Trinidad and Tobago's oil industry was giving cause for concern. Crude oil production was on the decline and new refineries were being located elsewhere in the Caribbean. There was no other export sector with the capacity to make up for lost oil revenue. However, for the moment the national income was still growing in real terms, price increases were not excessively rapid and the external position was not fundamentally out of balance. Unemployment was at 10%; although this was the lowest rate to be found in the English-speaking Caribbean, there remained a permanent segment of the labour force for whom no jobs could be provided.

The increase in international oil prices in 1973 marked a turning point in the Trinidad-Tobago economy. It coincided with the opening of a new oil field, and an uptrend in crude oil production. The interval from 1973 to 1978 was one of prosperity, with rising real income, very large balance of

payments surpluses and falling unemployment. However, prices rose very quickly, pushing up domestic costs to such an extent that production of tradable goods, such as sugar, other agricultural exports and manufacturing, declined, since they could no longer be supplied at competitive prices. Between 1979 and 1984 difficulties emerged as national expenditure gained increasing momentum and payments for imports overtook receipts of foreign exchange. The external disequilibrium was only temporarily alleviated by the second big oil price increase, in 1979. World oil markets weakened immediately afterwards, while Trinidad's production of crude oil declined. Output growth slowed and balance of payments deficits sharply reduced the stock of foreign exchange reserves built up during the 1970s.

The Barbados economy was growing in 1970, but more slowly than it had in the late 1960s. The prospects remained fair for tourism, which had grown to be the most important source of foreign exchange, and there was some development in the re-export of cut garments stitched in Barbados. However, sugar production had fallen and farmers were making losses at current export prices. Barbados had not set up a central bank in 1970; although private banks might have financed balance of payment deficits there seemed no tendency to do so, and the external accounts remained balanced. Price increases were moderate, but the country shared the general unemployment problem of the Caribbean.

The economy was jolted in 1973 and 1974, when output fell, a large deficit emerged on the external payments accounts, jobs

were lost and the rate of inflation reached record levels. However, in the subsequent recovery, which lasted until 1980, these tendencies were all reversed. A new and much more severe recession struck in 1981; prices rose once more, though they soon abated as the US and UK brought their inflation under control. The balance of payments, with a record deficit in 1981, was brought into balance by tightening expenditure. The fall in output was arrested only in 1984, and unemployment at the end of the period was higher than in 1970.

In 1970 the Bahamas seemed to have a promising economic future, based on continuing growth of tourism; the major problem was the economy's extreme dependence on the US business cycle. Belize had agricultural, tourism and forestry potential, but very little of the infrastructure needed to exploit them. The country was also under threat from Guatemala, which claimed sovereignty over its entire territory. Agriculture in the islands of the East Caribbean was in decline, partly because of prices but largely because of neglected maintenance and low investment in technology and agronomy. The islands had some potential for tourism, but the required investment in transport systems, public utilities and communications was large in comparison with national financial resources.

The Bahamas, Belize and the East Caribbean all suffered setbacks in the early 1970s, with the impact of rising prices for their imports, fluctuating prices for exports and a fall in North American tourist travel. Expenditures adjusted as incomes fell,

with little attempt to finance excess spending. (None of these countries had a central bank in 1970, and they were not yet members of the World Bank or IMF; their only sources of short-term financing were through bilateral government agreements and the efforts of private banks.) It appears that those countries that produced sugar (Belize, St. Kitts) and those that had developed tourism (Bahamas, Antigua, Montserrat, St. Lucia) recovered some ground in the late 1970s. (Prior to the mid-1970s, macroeconomic data on most countries is limited to trade, output of one or two major commodities and some banking statistics.) The remaining countries, exporting bananas for the most part, did not do as well. The recession in the industrial world had serious effects on all these economies, beginning around 1980 with rapid inflation. Some balance of payments financing was now available, and several countries borrowed from the IMF and World Bank. Except for Belize and the Bahamas, governments were strictly limited in their ability to borrow from the monetary authority, and runaway fiscal spending was not possible. The Bahamas government kept its deficit within tolerable bounds, but the deficit/GDP ratio in Belize rose sharply in the 1980s. Tourism once again helped some countries to a partial recovery, but in general output remained sluggish and incomes depressed in 1984.

#### The Effects of Economic Conditions outside the Caribbean

Conditions in the outside world provoked balance of payments disequilibria, generated inflation and retarded output

growth everywhere in the Caribbean. Foreign exchange receipts were adversely affected by the downtrend in the demand for bauxite and alumina, while tourism was subject to cycles in demand which mirrored the ups and downs of real income in the industrial world. (For other commodities demand was infinitely large in comparison with Caribbean output.) The terms of trade moved against the Caribbean<sup>2</sup>, with a succession of high annual import price increases in the 1970s. The prices of Caribbean exports also rose, sometimes very quickly, but the increases were seldom sustained over many years. Only the prices of bauxite and oil kept up with increases in wholesale prices in the US and the UK, and with the prices of exports. (The wholesale and export prices are the best indicators we have of price trends at the main sources of Caribbean imports.) Among the main commodities exported from the Caribbean, bauxite prices held up in the 1970s, but fell in 1980; the price of sugar fell in real terms (i.e. deflated by an index of foreign prices, based on the US and UK), even for sales under the agreement with the EEC. The price of rice rose steadily up to 1975, but fell thereafter and was significantly down in real terms over the period as a whole. Banana prices improved on returns experienced in the 1960s, but their prices too were down in real terms. The volatility of export prices created special problems, with sudden windfalls alternating with longer periods of comparatively low returns. The price instability also affected the outcome of negotiations for the Lomé agreement (between the EEC and the African-Caribbean Pacific group of countries), in particular the size of sugar

quotas; Lomé was concluded at a time when the sugar market was very confused, and old-established marketing arrangements had been thrust aside. Since the agreement was based on the prevailing distribution of sugar sales, countries which had attempted to sell to new markets were left with short quotas.

In the 1970-84 period most Caribbean countries recorded smaller investment inflows than in the 1960s, which had witnessed investment for mining, hotels and manufacturing. The 1970s saw commercial banks emerge as the main conduit for financial flows from industrial countries to LDCs. The commercial banks seldom made loans with maturities beyond the medium-term; when they replaced investors as the dominant source of international flows, borrowers were faced with shortening maturities and heavier immediate amortisation burdens. In addition, bank lending broke the link between debt service and economic performance; loans must be serviced whether the investment they finance is performing well or not, whereas returns to direct investment depend on the surpluses earned by the project financed. The investment slowdown curtailed the supply of foreign exchange, while the changes in lending instruments meant that borrowers enjoyed a smaller measure of security from holding a given stock of foreign exchange reserves.

Very high real interest rates in international financial markets in the 1980s imposed severe foreign exchange losses on countries which had borrowed heavily abroad in their efforts to balance external receipts and payments during the 1970s. Barbados, Guyana and many of the island states of the East Caribbean

were affected, but it was in Jamaica that the interest charges absorbed the most sizeable portion of the national savings. If the average payments on the external debt had been no higher than the rate of increase in the index of foreign prices, Jamaica might have saved substantial foreign exchange between 1981 and 1984<sup>3</sup>. Because of high interest rates, a level of external borrowing which seemed prudent in the 1970s became insupportable in the 1980s.

Sustained increases in foreign prices boosted inflation rates in the Caribbean during the 1970s, with relief coming only in the 1980s. The pressure from abroad was particularly fierce between 1973 and 1975 and in 1979, but throughout the decade foreign prices were increasing at more than five percent a year, much faster than for the 1950s and 1960s. They drove up the prices of final consumer goods imported, the costs of imported raw materials and capital goods and, eventually, wage costs as well. Once workers began to expect high rates of price increase from year to year they adjusted wage demands to defend incomes against erosion in their real value.

The potential for growth in national income was much lower than for the 1960s, in all cases except for Trinidad and Tobago. For the majority it would have been difficult to improve the observed output trends significantly, given the weaknesses of many export markets and export prices. The other disturbances from the outside - foreign price increases, high interest rates, variation in exchange rates - had little effect on output, though they were all uncomfortable in other ways.



The balance of payments disequilibria, inflationary pressures and loss of growth potential created decision problems of two kinds. First, the already troublesome unemployment problem became more intractable; not only were there few jobs being created in the tradable sector, surpluses for transfer to the non-tradable sector (notably government) were low, denying the possibility of job creation in labour-intensive non-tradable activity. Second, more skillful and active policy making was needed to cope with the swiftly changing environment. All the policy making institutions in the Caribbean are quite young, in contrast to those in industrial countries, and their capabilities were put to an early, rigorous and unforgiving test.

(a) Jamaica

Jamaica's net foreign exchange earnings were curtailed by terms of trade losses, slack demand for bauxite and tourism, and the costs of debt servicing in later years. There were terms of trade losses continuously from 1971 to 1977 and again in 1979. The world demand for bauxite slackened in the 1970s and fell sharply in the 1980s, following trends in world aluminium production. Production slowed and then declined in the largest exporting countries, Australia and Guinea, although Jamaica did worse than average because of domestic policies affecting the bauxite industry. (In particular, a levy on production introduced unilaterally in 1974 invited retaliation by producing

companies.) The demand for Jamaica's tourist services followed the economic cycle in North America; downturns in 1974/75 and between 1979 and 1983 were reflected in fewer tourist arrivals and low levels of hotel occupancy. All Caribbean destinations were affected, but once again events in Jamaica made for a worse slump than was to be found in other tourist destinations.<sup>4</sup>

The decline in foreign investment in LDCs by industrial countries was only one of a number of factors which made for a major contraction in the volume of foreign investment in Jamaica. The bauxite-alumina industry was just past its growth phase, and the heavy foreign investment needed to bring production to the 1970s level would not be repeated. The levy on bauxite production evidently caused companies to try to reduce their investment exposure in Jamaica, and in general the government was less sympathetic to foreign investors. In addition, social upheaval undermined the country's reputation for stability, a factor which plays a large role in the choice of plant location by multinational firms. There was some divestment by foreigners, and government bought a number of hotels from overseas firms which had decided to close operations in Jamaica. Even if Jamaica had retained its attraction to foreign investors the inflow of funds would have failed to match that for the 1960s, in real terms; however, most of the loss of foreign inflows was a result of Jamaica's own policies.

The cost of debt servicing threatened to keep Jamaica in permanent balance of payments disequilibrium in the 1980s; a

considerable portion of declining real income was devoted to interest payments. Even with heroic efforts to reduce national expenditure, the surpluses for saving were badly impaired. These circumstances were partly due to domestic policies; if the macroeconomic policies of the late 1970s had been more successful, Jamaica's external debt would not have been so large nor the interest payments so crippling. However, at the time it was contracted the debt was thought manageable, not only by the Jamaicans, but by lenders, including the IMF, under whose auspices most of the borrowing arrangements were contracted.

In contrast to the implications for the balance of payments, which were severe from 1971 onwards, external forces depressed Jamaica's economic growth only in the 1980s. During most of the 1970s the country would not have been able to improve significantly on observed economic performance (if policies had remained the same) had the terms of trade and the demand for bauxite and tourism followed the trends of the 1960s. However, in the 1960s the economy seems to have been driven well below that potential.

There were two periods, 1973-76 and 1980-84, when external influences created balance of payments problems for Jamaica; the first was also characterized by strong inflationary pressure from abroad, while output was seriously depressed in the second instance. The earlier episode was precipitated by volatile terms of trade, slackening demand for some exports and a fall in foreign investment. The balance of payments crisis could only have been corrected by a sacrifice of real output, even with

appropriate adjustment policies. There was insufficient finance available with maturities long enough to allow for stabilisation with growth. In the 1980s the losses on export markets were much greater. In addition, external payments were already in disequilibrium because of failure of adjustment policies in the 1970s. Under the circumstances the available finance did not permit of any adjustment programme that did not involve a harsh reduction in real output, particularly in view of the high cost of finance.<sup>5</sup>

(b) Guyana

In Guyana, there is a contrast between 1972-77, when the impact of economic developments in the wider world boosted foreign exchange receipts and speeded up the growth of income, and the 1978-84 period, when both terms of trade and external demand worked against the economy's prospects for growth and balance of payments equilibrium. The favourable influences of the first period arose from the fact that Guyanese sugar production was relatively high at the time when sugar prices peaked, and Guyana made very large foreign exchange gains. Furthermore increases in the price of rice boosted earnings up to 1975 and bauxite prices stayed firm during the 1970s. The turnaround in external influences was signalled by the fall in sugar prices in 1976, and by the stagnation of prices for rice at about the same time. Bauxite prices fell in the 1980s, along with the demand for the product.

The full effect of import prices on inflation in the Guyanese economy does not show in the price index because of extensive controls on official prices. Nevertheless, a significant impact appears on official prices. The controls probably exaggerated the inflationary effects of foreign prices beyond what they otherwise have been, by creating artificial shortages and hoarding and by diverting a large proportion of consumer demand to unofficial markets.

Foreign exchange inflows during the first part of the 1970s afforded Guyana the opportunity to increase savings and invest in ventures to exploit the nation's untapped resources. That opportunity was not taken, and spending on current items increased to absorb most of the additional income. Even if more had been saved, the economy would still have been in great difficulty in the late 1970s and in the 1980s, because of the magnitude of the external impact, and the fact that few investments would have borne fruit so soon. The country's potential output was reduced during this period and balance of payments disequilibria could have been avoided only by cutting back real income.

#### (c) Barbados

For Barbados there were two periods when events abroad went against the economy, interspersed with a few years when they were of benefit. In the years from 1973 to 1977 the demand for tourist services stagnated and then fell, while there was a very

-rapid increase in import prices. The price of sugar rose to very high levels, but soon fell. These developments helped to create a short-lived balance of payments deficit, and contributed to the contraction of output in 1974 and 1975. The import price rise was the principal cause of the virulent inflation recorded in 1973 and 1974. During the period 1978-80 import price increases abated, the demand for tourism picked up and national output grew, with considerable moderation of inflation. The eighties opened with another bout of import inflation, but that soon subsided. It was followed by a slump in tourism. Balance of payments deficits were recorded and output contracted, but inflation rates fell to the region of five percent.

(d) Other Countries

Output in other Caribbean countries is driven by one major export - bananas, sugar, tourism, and, for Trinidad and Tobago, petroleum products. The price of bananas increased throughout the period, with big jumps in 1975 and in the period 1978-80. The Windward islands reaped some benefit, but in Jamaica, the other English speaking Caribbean producer, output fell to very low levels.

Sugar producing countries made gains and then suffered losses from the price fluctuations already discussed, while countries with an important tourism sector experienced two periods of slack demand. In most cases national expenditure fell as output and foreign exchange contracted. By and large,

domestic inflation followed import price trends. These factors made for an erratic growth path, even for the few countries where real output seems to have been higher at the end of the period than it was for the earliest year when we can estimate it (this varies from country to country).

In Trinidad and Tobago external influences in the form of oil price increases proved highly inflationary and domestic costs rose so quickly that many non-oil exportables were no longer competitive. Inflation was also stimulated also by an excess demand for non-tradeables, largely the result of financial inflows from oil. A further inflationary factor arising from the same source was congestion at the seaport, which led to excess demand for imports. With the decline in oil prices in the 1980s, the balance of payments went into substantial deficit.

#### Economic Policies

The economic policies of all the English Caribbean countries were quite similar from 1970 to about 1973. Their governments all faced comparable circumstances, with some continuing growth of output, but a need to reduce unemployment and to control newly emerging deficits on the balance of payments. In one or two cases the rate of inflation had begun to speed up. Most countries tried to dampen expenditure, by ensuring budget deficits of modest proportion and by placing restrictions on the availability of credit to the private sector, when there was the mechanism to do so.

The effect of stagflation in the industrial world and rising oil prices was to induce very high inflation and large balance of payments deficits, followed in almost all cases, by windfall gains from the short-lived rise in commodity prices. Reaction to these circumstances varied greatly from country to country. The Guyana and Jamaica governments utilized windfall gains to expand current national expenditure, while Barbados and Trinidad and Tobago attempted to sterilize some of the proceeds for later investment. Other countries were limited in their capacity for active fiscal policy because, except for the Bahamas and Belize, they had no monetary authority that could be used to accommodate government borrowing. None of them took active steps to neutralize foreign gains and their economies seem to have fluctuated in accordance with the variations in foreign exchange receipts.

As the economic fortunes of Caribbean countries diverged from 1976 onwards, their economic policies grew apart as well. To some extent this was a result of the need to address different problems: Guyana and Jamaica needed policies to achieve foreign exchange balance, a problem which did not confront other countries at that time. However, differences in the philosophy of economic management began to emerge as well. Guyana adopted a strategy based on state control and central direction of major economic activity in all areas of production and distribution. The system featured a wide panoply of controls on consumption and the disposition of resources. Other countries continued to rely



on the adjustment of prices and the use of inducements and directives designed to influence the behaviour of agents in the private sector, although there was some state ownership of enterprise everywhere.

The individual government's policy stance was often motivated by the country's economic circumstances. Trinidad and Tobago, with large foreign exchange surpluses, embarked on a programme which boosted national expenditure, reversing earlier policies which contributed to increased savings. The Barbados government's policy was mildly restrictive, with growing fiscal saving on the current account and some credit restrictions as the main levers. The Jamaican government made attempts to contain national expenditure and to divert it from foreign to domestic goods, using adjustments to the government budget, exchange rate changes, credit restrictions and directives on the disposition of foreign exchange. The mix of policies depended on the size of the balance of payments deficit that had to be reduced or eliminated and the underlying trend in output. Countries with most serious balance of payments tended to rely more heavily on exchange and import controls; where the economy was contracting year after year we are more likely to observe exchange rate adjustment. Fiscal policies featured prominently in every case, and there were a variety of measures designed to influence money and credit. Exchange controls played a central role in Guyana, Jamaica and (very recently) Trinidad and Tobago, but they were not applied very stringently in the other countries. Jamaica made active use of exchange rate adjustment, and Guyana also

devalued the currency on occasion, but other countries largely eschewed this instrument. Jamaica's policies, which owed something to IMF influence (adjustment was carried out under programmes agreed with the IMF between 1977 and 1979 and from 1981 onwards), were a hybrid of fiscal changes, price adjustment and direct controls, with external financing. The Barbados programme tended to focus on fiscal adjustment, mild credit restriction and external financing.

All countries shared in the economic difficulties of the 1980s, and they were all obliged to take measures to reduce spending. The instruments preferred did not change much, though they had to be applied in different directions (in the case of Trinidad and Tobago) and with greater intensity. Guyana maintained the command economy, though government showed signs of willingness to relax its hold as all indicators of economic performance steadily worsened. In Jamaica a new administration, elected in 1980, dismantled some quantitative restrictions on imports but the content of the programme was little changed in other respects. However, fiscal contraction was far more severe than it had been under the previous regime. Both Barbados and Trinidad-Tobago sought to achieve adjustment largely by trimming government budgets; the Trinidad-Tobago authorities also determined on highly restrictive import and exchange controls after local manufacturers had priced themselves out of domestic and regional markets.

(a) Jamaica

The Jamaican economy expanded in the early 1970s, but there were repeated balance of payments deficits and prices tended to rise more quickly each year. The authorities introduced measures to contain expenditure between 1972 and the first half of 1974. They included import restrictions, increases in the reserves the Bank of Jamaica required commercial banks to hold, increases in some tax rates and a penal discount rate for Bank of Jamaica advances to commercial banks. In mid-1974 the Jamaica government replaced the system of taxing bauxite companies with a new levy on production which was so large as to increase fiscal revenues in that year by 50%. Commodity prices rose in 1974, and the economic outlook seemed to have improved. Government determined on an expansionary programme, abruptly reversing the previous measures to hold down expenditure. A very considerable government expenditure programme was launched, involving large outlays to create new jobs to be paid out of the current account. The expansion absorbed the additional proceeds of the bauxite levy in the first year.

Economic output turned downwards almost immediately, however. Production problems were experienced in the sugar industry, overseas travel by American tourists was down and foreign investment had begun to slow down. Eventually bauxite companies cut back production in Jamaica in favour of other

producers, though there was little evidence of this in the first few years after the bauxite levy was introduced. National expenditure remained very high, fuelled in part by fiscal spending. National output fell, the external payments were in deficit and inflation quickened. Government responded with relatively mild policy: tighter import controls, tax incentives to producers and price controls.

There was a little improvement in the indicators of economic performance and by 1977 it was clear that firmer measures would be necessary. Over the next three years the authorities devalued the currency, introduced multiple exchange rates and, a crawling peg for a short period, announced budgets for the use of foreign exchange (to be managed by the Bank of Jamaica), revised exchange controls, imposed additional quantitative restrictions on imports and promulgated price and wage guidelines. In most cases the measures were undertaken in association with an IMF loan agreement, and they were supported by large amounts of medium-term financing (3-5 years) from international institutions and commercial banks. Economic performance fell consistently below expectations. Each of three IMF programmes was suspended because agreed targets were not attained; output stagnated while repeated balance of payments deficits eliminated foreign exchange reserves and reduced the country's credit-worthiness. A new round of adverse

shocks from abroad, beginning in 1979, aggravated the crisis. After a period of inertia in the closing months of the Manley administration, the Seaga government introduced new packages, beginning in 1981. The instruments used were much the same, with greater emphasis on fiscal contraction, more frequent exchange rate changes, and a reduction in the number and scope of quantitative restrictions. A willingness to tolerate very high interest rates was the only major distinction between the policies of the late 1970s and those of the 1980s. The programme was supported by additional borrowing. Whatever its merits, prospects for successful adjustment were diminished by a marked decline in the demand for bauxite and alumina and by the effects of the U.S. recession on tourism.

(b) Barbados

In Barbados no central bank existed in 1970, and the country shared its currency with seven other islands in the East Caribbean. Government's ability to sustain deficits depended on its success in competing with private firms and individuals for bank credit and on its credit-worthiness abroad. There were no provisions for influencing credit, and exchange rate changes and exchange controls proved difficult to implement because of the need to secure agreement among the eight governments participating in the currency arrangements.

The economic displacement which occurred in Barbados in 1973-74 was largely self-correcting, thanks to the increase in

sugar prices, the revival of tourism (in 1976) and an abatement in import price increases. Government arranged some foreign borrowing to finance the 1973 deficit on the balance of payments, and no further adjustment proved necessary. Very high sugar prices produced windfall increases in foreign exchange in 1974, part of which was taxed away for later investment. Controls on selected areas of credit were introduced in 1977, remaining in place for the rest of the period, but there were no other policy developments of significance in the 1970s. Fiscal policy was neither particularly restrictive or expansionary and adjustments to monetary instruments and the exchange rate were minor and infrequent.

The second disturbance to the Barbadian economy, in the 1980s, was met with active policies for adjustment. Government tried briefly to expand expenditure, in 1981, but reversed the policy the next year, imposing spending limits for each of the next two years. The controls on the use of bank credit were revised, but their impact remained selective rather than general. Interest rates were raised and a penal rate was imposed for central bank discounts. The programme was supported by medium-term financing, from commercial banks and the IMF.

#### (c) Trinidad-Tobago

In the years prior to the oil price increase, Trinidad and Tobago maintained some controls on consumer credit, but there was

not much else by way of efforts to influence economic fluctuations. With the advent of oil wealth, the government determined to set aside a fraction of additional revenues for investment in new industry. This strategy was adhered to for about two years, but thereafter very rapid increases in government spending eventually eliminated savings on current account, and aggravated inflationary pressures by adding to already booming private expenditure. With declines in oil price and output, disequilibrium between income and spending emerged in the 1980s, and foreign exchange reserves plunged. Government responded in the first instance with tighter exchange controls and more quantitative restrictions. Only in 1984, as the loss of reserves continued without let, did government decide to trim the fiscal programme.

#### (d) Guyana

At the outset of the 1970s decade credit controls were the only economic policy measure taken by the Guyana government. At the first impact of external disturbances in 1973, there was a brief episode of fiscal expansion as government tried to sustain demand. However, this policy was reversed in the following year and controls were placed on foreign exchange transactions. Although it was inflationary, the first external shock provided Guyana with windfall foreign receipts, which were partly taxed away by government. Government then used the proceeds to purchase most of the major foreign-owned companies operation in Guyana, absorbing all the accumulated foreign exchange in the

process. Once the sugar windfall ended it became necessary to trim expenditure; the exchange controls were retained, price and wage controls were imposed and government spending was cut, first by abandoning government capital projects and then by freezing wages in the civil service. Some external financing was secured from the IMF and through government-to-government arrangements. The second external shock widened the balance of payments deficit and provoked even sterner fiscal retrenchment. Output faltered, partly because of scarcity of foreign exchange, and the state corporations made heavy losses which added to the fiscal deficit. The measures taken failed to avert defaults on the majority of Guyana's foreign obligations and a massive build-up of payments arrears.

#### (e) Other Countries

Of the remaining countries the Bahamas and Belize had the greatest freedom in choosing economic policies. They both had independent currencies and central banks were established during the period. The other countries shared a currency and a monetary institution whose statutes allowed only limited finance of official deficits. Monetary and exchange rate policies proved difficult to execute because of the need to secure unanimous decisions. In practice, none of these countries went much beyond the use of the government budget as a policy tool. Fiscal deficits were not allowed to persist for long; in the case of East Caribbean countries, the limit was set by the rules of the monetary authority and by financing available from abroad. Some



countries negotiated IMF programmes in the 1980s which allowed more time for expenditure to adjust to foreign exchange losses, but in the earlier period, rapid adjustment was forced upon them. The Bahamas and Belize, which might have tried to influence the adjustment path, did little towards this end; government expenditures seem to follow trends of revenue and overall economic performance, much as private expenditures did.

### An Assessment of Economic Policies

The two periods which called for an active policy response to displacement from outside the Caribbean to output, foreign exchange receipts and inflation were roughly 1973-75 and 1979-83. The responses and their outcomes suggest the potential and limitations of economic policy making in the Caribbean. In this section we combine inferences drawn from a comparison of policies and economic performance with the insights to be derived from an econometric model which was tested for Barbados, Jamaica and Trinidad and Tobago. The model indicates the probable effects of different policies; using its results one may form an opinion about the impact of various policy packages (Table 2).

Before 1973 Caribbean economies were expanding and no sustained balance of payment deficits were recorded; although unemployment remained high and there were some early signs of inflation, authorities were under no pressure for active macroeconomic policies. That picture changed, for the worse in most cases, in 1973, when very large balance of payments

deficits emerged and output leveled off. If nothing were done a foreign exchange crunch threatened to produce economic reversals. Trinidad and Tobago had the problem of managing a sudden increase in wealth which was inflationary, boosting expenditures to exceed the country's capacity to produce and distribute the goods demanded. For some countries, terms of trade gains in 1974 and 1975 rectified the balance of payments, with little policy intervention. These countries temporarily shared Trinidad-Tobago's problem of managing the windfall in a non-inflationary way.

The second, more serious and prolonged bout of internationally-induced problems began with the oil price increase in 1979 and intensified with the North American recession of 1981-83. It caused a turnaround in economies which had begun to recover from the earlier event and it further destabilized those that had not found a way out of earlier difficulties. All were forced to apply defensive measures.

Economies seem to have fared better where the authorities concentrated on moderating expenditure in line with the trend in output, which was governed largely by performance in the tradable goods sectors. Attempts to make up for the slowdown in the tradable sectors - usually via expansion of government spending - ran into difficulty because of the foreign exchange losses brought on by the additional non-tradable activity. Countries that were cautious about fiscal expansion include the Bahamas, Trinidad and Tobago in 1973 and 1974 and Barbados, from 1981 to

1983. Their economic performance compares favourably with three conspicuous examples of fiscal expansion: Jamaica (1974-76), Guyana in 1976 and Trinidad and Tobago from 1976 to 1981.

Fiscal policy has been the cornerstone of programmes that maintained economic stability, and the downfall of those that aggravated disequilibria. Where a policy package restored balance of payments equilibrium (Barbados, 1981-83) or came close to doing so (Guyana, 1978-80), tight fiscal policy was the predominant feature. The fiscal programme has its most powerful effect via the direct injections into the spending stream that come from expanded government activity and the increase in disposable income achieved by lower tax rates. The effects of government financing, operating through the financial system, are much less influential. Because of the large import content of expenditure, any injection into the income stream has an immediate effect on the balance of payments. That impact is aggravated when there is no corresponding increase in output in the short-run; the balance of payments deterioration is more severe for government expenditure on transfers and wage payments than it is for increases of the same magnitude in government services. The relative potency of fiscal policy, in contrast to monetary policy, is something theory would have led us to expect. The economies remain very open to trade and finance despite the widespread use of exchange controls. It is therefore difficult to isolate the local money and credit markets so that their behaviour can be dictated by the central bank. (Table 2 summarizes

some effects of official policies, for Barbados, Jamaica and Trinidad and Tobago).

Exchange rate policy seems to operate on the level of expenditure rather than on the composition of the expenditure basket. One reason many advocate exchange rate changes in preference to other policies is that exchange rate movements are expected to alter the relative prices of domestic and foreign goods, saving foreign exchange by switching some spending from foreign to home goods. The reduction in overall spending needed to secure balance in external payments then need not be so great. There was a general reluctance in the Caribbean to experiment with exchange rate policy, so we do not have a great deal of evidence on its effects. The experience in Jamaica was that little expenditure switching took place. It was difficult to achieve a noticable change in relative prices; domestic prices contain too large an import element and wages were highly sensitive to increases in import prices. Furthermore, empirical tests indicate very sluggish effects of changes in relative prices on the allocation of expenditure between imports and non-tradable goods.<sup>6</sup> Insofar as it had an impact the exchange rate seems to have reduced the level of expenditure by generating inflation and cutting real income.

Monetary policy suffered from a scarcity of effective tools of implementation. Jamaica used a variety of monetary measures in the late 1970s and in the 1980s; elsewhere some credit restrictions were imposed at various times by everyone except the

East Caribbean countries that were members of the joint currency area (the ECCB). Barbados and Belize raised interest rates in the 1980s, and very occasional increases in reserve requirements were the only other monetary changes in these countries. The main elements of Jamaican monetary policy from 1977 onwards were changes in the reserve requirements, interest rate manipulation and global restrictions on bank credit for the private sector. The credit restrictions created fertile soil for the growth of near-banks in the 1970s as devices to evade controls. Apart from evasion, there may be argument about the effect of credit controls on spending. There is a statistically significant association between credit and expenditure in the three countries for which we performed tests (Barbados, Jamaica and Trinidad-Tobago), but we believe the correct interpretation is that this reflects the effect of expenditure on the demand for credit. Increases in reserve requirements were sufficiently large to mop up excess liquidity only on one occasion, for Jamaica. In that case, banks recorded surplus liquidity after a very short interval. The reserve requirement therefore never had an effect on the level of credit. Empirical tests for the three countries mentioned above indicate that changes in reserve requirements will have little effect on the cost of credit, even where there is no excess liquidity. Unless the cost of credit increases substantially, neither output nor expenditure is much affected.<sup>7</sup>

We do not yet have measures of the impact of interest rate changes in Belize, Barbados and Jamaica in the 1980s. The

available estimates are dominated by relationships in earlier years when interest rate changes were quite small, and consequently the coefficients measuring their influence on credit, output, and spending are negligible. However, in Barbados casual observation suggests some short-term speculation by firms and individuals holding deposits or making financing transactions in Barbados and abroad, depending on the differential between local and foreign rates. In Jamaica, interest rates also provided an incentive to repatriate funds from abroad, but the increased costs of finance appear to have made firms that depend on bank credit less competitive in the production of tradables and more expensive in the production of non-tradables. These observations are based only on the claims of the firms concerned, since we have not empirically separated these effects from the effects of exchange rate changes, wages and other factors currently affecting prices and output. The interest rate increases in Belize are of very recent vintage, and their impact is still to be clarified.

The experiences highlight the shortcomings of monetary instruments. Reserve requirements bite only when they eliminate excess reserves. Their effect depends on the ability to predict commercial bank reactions in an oligopolistic system, something which economists in the Caribbean are still attempting to explain. The reserve requirements must be supported by controls on the banks' recourse to foreign borrowing and the central bank must be prepared to close the discount window, so as to deny access to alternative sources of funds. Furthermore, there is a tendency

for near-banks to expand their activities as credit becomes scarce, and they substitute for the credit which banks may no longer supply. The non-banks also tend to frustrate direct credit restriction.

If credit restrictions do have an effect, they are more likely to cause cost inflation than to reduce expenditure because supply functions seem to be more sensitive to the resulting increase in finance costs than are spending functions. The increase in the costs of financing may force firms to cut back output, but it is less likely to deter consumers. Moreover, the production of tradables goods is more likely to be depressed than the output of non-tradables; the producers of non-tradables may raise their prices to compensate for the increased finance costs, but the producers of tradables face prices which are determined on world markets, and some of them may no longer be able to compete.

Raising central bank discount rates, purchase and sale of government securities from the central bank's portfolio and directives about interest rate levels are other means by which the monetary authority may try to influence output and spending. If they have an impact, it is through induced changes in the cost of credit, and the results are subject to the qualifications mentioned above. An increase in discount rates is effective only if reserve requirements are raised to mop up all excess liquidity and banks' access to foreign funds is limited. Under these circumstances banks are forced to finance an excess of credit

demand over new deposits by discounting at the higher rate, and they will pass on the increased cost to the borrower. If government wishes to sell securities from its portfolio to commercial banks it must raise their effective yield to compete credit away from the private sector, unless banks have excess liquidity. If there is excess liquidity the sale has no effect; otherwise it tends to drive up loan rates. These effects are not only uncertain. They depend heavily on the central banks' willingness to shut off discounts or to impose a penal discount rate in circumstances where the banks are deprived of sources of funding other than the central bank. This procedure carries a high risk of jeopardizing commercial bank solvency, and no monetary authority in the Caribbean was prepared to adopt such draconian measures.

The central bank's ability to support an independent interest rate structure is circumscribed by the pattern of foreign interest rates. If domestic rates are allowed to diverge too far from comparable foreign rates, finance flows inward or outward, irrespective of exchange controls. If the discrepancies between local and foreign rates are not too large (we estimate about three points between comparable rates, for the countries we have tested) the flows will be confined to trade credits and the disposition of investment income, which allows legitimate discretion in the placement of funds at home or abroad. If the discrepancies become very large, there will be increasing resort to illegal transactions. The scope for independent interest rate setting is limited to a corridor around the ruling rate on



international financial markets where the costs of transferring funds outweighs the potential interest gain, a margin we estimate at one or two points.

The Caribbean countries all imposed some limits on foreign exchange transactions, but Guyana (from 1973 onwards), Jamaica (from 1976) and Trinidad and Tobago (from 1982) were the only ones to rely on them to control spending. Foreign exchange allocation was seen as an alternative way of switching expenditure from foreign to locally produced goods and services, but it was not at all successful in this role. It became profitable to set up machinery to evade exchange controls, and a large proportion of foreign exchange business was transacted on unofficial markets, which were inefficient and inflationary. The controls served to reduce expenditure, rather than to divert demand to stimulate domestic output. The profits of illegal foreign exchange dealers absorbed some of the funds diverted from imports, and the inflation generated by the reduced efficiency of foreign exchange trading reduced real spending power somewhat. Furthermore, it proved impossible to expand the supply of home-produced goods, largely because of the impact of exchange controls on the supply of raw materials. In the three countries where controls were extensively used the central bank's budgeted foreign exchange allocations were exceeded on every occasion, except for one instance in Jamaica (in 1978). Even then, an unexpected decline in real income appears to be the reason for the reduction, not the foreign exchange budget.

The governments of Guyana, Jamaica and Trinidad and Tobago all tried at some time to control the general price level. In other countries only a small selection of items was subject to price control. There is little evidence to suggest that general price controls were useful; officially recorded price increases were rather higher for countries with general controls than for those without, and increases were not noticeably smaller when controls were in effect, compared with periods when they were not. Furthermore, comprehensive controls always provided scope for the growth of unofficial markets, where prices were much higher than those recorded officially.

There is no reason to expect price controls to be effective in the open economies of the Caribbean. The prices of imports place a lower bound on the rate of domestic price increase. Inflation beyond that derives from institutional arrangements (distribution systems, customary markups and the degree of monopoly) and from the level of intended spending by the population. Price controls may sometimes be used to reduce margins if the power of monopolistic firms can be overcome, but this will be a once for all shift which will not affect subsequent trends in inflation. It is futile to try to repress prices when intended expenditures exceed the supply of goods and services; business will be forced on to unofficial markets which feature higher prices, because consumers have the spending power to pay in excess of the official price. In these circumstances, policies for expenditure reduction must be introduced; once they take effect price controls become redundant.

The Guyana government's strategy for stabilizing the economy and promoting growth was to replace private sector initiative in major areas by a state owned, centrally planned economic system. The performance of the Guyanese economy since the main elements of that system were introduced in 1976 suggests that it has been a failure. The Guyana government lacked sufficient experience and highly skilled personnel, did not have the required administrative arrangements and was inadequately provided with information systems needed for such a complex undertaking. By 1985 the Guyana government was once again seeking private sector participation in major economic enterprises.

The most disappointing feature of adjustment policies in the Caribbean has been the poor response of the supply of output. Although real output was higher at the end of the period for a few countries, none showed a vigorous and sustained growth in new capacity. The composition of exports was little changed, with output subject to fluctuations as at the beginning of the period. The adjustment process did not achieve any changes in the composition of exports that might help to cushion future shocks from abroad. Guyana tried to achieve some diversification by direct state investment, but none of government's new ventures in manufacturing and agriculture was a success. The Trinidad and Tobago government also invested in new industry, geared for export markets; the new enterprises all had distinctly unpromising starts, but for the moment they may be given the benefit of doubts about their viability. Jamaica tried state

ownership in the mid-1970s, before retreating from government controlled investment as the driving force in new production at the time of the first IMF programme in 1977. From that time on Jamaica used a variety of market-oriented policies - including exchange rate and interest rate adjustment and wage guidelines - in attempts to stimulate output. Barbados placed emphasis on institutional support for exporters - as did Jamaica - with little by way of supply oriented macro-policies. All countries provided protection for domestic industry. The principal element was the Caricom (Caribbean Economic Community) external tariff, applied uniformly by Barbados, Guyana, Jamaica and Trinidad and Tobago. It provided tariff protection at rates ranging from 30-60% for manufacturing destined for the regional market. In addition, investors in all Caricom countries were offered a harmonized system of fiscal incentives. Above this, individual countries imposed quantitative restrictions which varied greatly between countries in content and use.

The government investments must be judged on their individual merits, while the institutional supports will take effect only after a lapse of time; consequently, most attention focuses on the effects of macroeconomic policies such as exchange rates, interest rates and protection.

Although Jamaica and Guyana were the only countries to undertake active exchange rate manipulation, the constantly changing relationship between the exchange rates of industrial countries means that a fixed peg in terms of any one implies

variation with respect to all others. In this sense there was exchange rate variation everywhere. Its probable effects may be inferred by the way supply responds to price changes, as measured by tests on an econometric model. The inferences may not be valid for exchange rates which are not thought credible, and the analysis does not take account of unofficial markets. Because of the pervasiveness of unofficial markets in Guyana we are hesitant to draw conclusions from that country's experience, but elsewhere unofficial markets accounted for a small portion of transactions.

Exchange rate policy stimulates output if it increases the prices of tradables relative to those of non-tradables, presuming that it increases their costs of production to much the same extent. Demand for tradables is infinitely elastic, so if it proves more profitable to produce, output can expand. Estimates for Barbados, Jamaica and Trinidad and Tobago indicate there should be increases of the order of 6%, 1% and 5%, respectively, in the prices of non-tradables, for a 10% devaluation in the national currency. In practice, this gain was obscured in Jamaica, where there was very little change in relative prices over the 1977-83 period. (Evidence for the effects of the most recent round of exchange rate changes, beginning in 1983, is not yet available.) Even where a change of relative prices does appear, estimates from the model indicate that the supply of output sometimes responds very sluggishly. The elasticities for Barbados, and Trinidad and Tobago indicate the output of tradables is not affected, while output of tradables in Jamaica appears to fall when their price rise. The

demand for non-tradables does not increase, although their prices tend to increase.<sup>8</sup>

Of countries around the world with open electoral systems, only a handful are able to implement nationally agreed policies on wage increases. Even these tend to break down in times of adversity. It is not difficult to understand why this might be. While all reasonable citizens may be convinced about the magnitude of the general wage increase, not everyone will agree that their relative remuneration on the day of implementation should be immutable. The Jamaican government tried on two occasions to implement national wage guidelines. In both cases parallel targets for price increases were set at the same time and workers regarded their acquiescence to wage guidelines as conditional on the price targets. This prejudiced chances of success, since government has limited control of domestic prices, given the high import content of local production and final consumption. The first set of guidelines, introduced in 1978, was adhered to, with an increasing number of exceptions, for a little less than one year. It was then abandoned. No further attempt was made until 1984, when the guidelines came under pressure almost immediately. Guyana was able to come close to a national wage policy by virtue of the extent of state ownership. Wages for a majority of workers were frozen between 1978 and 1980, and they have risen much more slowly than the increase of prices during the 1980s. Guyana has gained in competitiveness because of the fall in real labour costs, though this is yet to have any effect on national output.

National wage guidelines are unlikely to hold up for long enough to secure more than a temporary gain in competitiveness, at best. (The state controlled economy is an exception.) It seems more fruitful to explore the wage determination process, which describes how workers react to economic circumstances and how negotiations between themselves and employers result in observed wage levels. The authorities may then try to influence the factors that play an important role in wage determination. Several studies of the process are now underway (McClean and Downes [1982], Boamah [1984]). One result that seems robust is the delayed effect of inflation on wages.<sup>9</sup> The authorities may do most to contain wage increases by ensuring that there are no domestic pressures to aggravate the impact of import price increases, which is the best they can expect to achieve by way of anti-inflationary policies.

Interest rate policy is frustrated by the fact that commercial bank rates have no measurable effects on the amount of finance the public makes available to firms. In the three countries for which econometric tests have been performed there is no evidence to suggest that people switch from spending to financial accumulation as interest rates change.<sup>10</sup> Neither the growth of financial liabilities nor national expenditure shows any sensitivity to interest rates. Interest rates may determine whether the public holds local deposits or financial instruments abroad, given foreign interest rates, but they do not affect the rate of financial accumulation. Furthermore, there is no

evidence to suggest that the rate of investment is affected by interest rates. There is not much evidence of an effect on levels of output either, and for fairly small interest rate changes the effect may be too small to matter. However, it is plausible to expect that large shifts in interest rate will have a noticeable effect on cost functions, influencing the output of tradables and the price and output of tradables. If this effect should prove significant - and it did not, up to the time of the very large increase in Jamaican interest rates in 1984 - there is a case for a policy maintaining the lowest interest rate levels that are feasible, given foreign interest rate levels.

Measures for industrial protection were adopted during the period by Guyana, Jamaica and Trinidad and Tobago, in some instances to conserve foreign exchange, and in others to shield domestic producers from regional competition. The two instruments which contributed almost all the industrial protection in the Caribbean were tariffs and quantitative restrictions. Fiscal incentives, interest rate concessions and subsidies added very little extra protection. Customs tariffs remained largely unchanged after countries implemented the 1973 Caricom agreement for a common external tariff. (It set up two tariff regimes, one for Barbados, Guyana, Jamaica and Trinidad and Tobago, and another for all other Caricom members.) It is the manipulation of quantitative restrictions which marks the divergence in protective policies. In Barbados quantitative restrictions were few, imposed on a limited number of items and



sometimes only for limited periods. Guyana, on the other hand, imposed comprehensive quotas and proscriptions of imports in 1974, and they remained in force for the remainder of the period. Jamaica introduced comprehensive quantitative restrictions in 1976, and they remained in place for the remainder of the decade. The majority were removed in the 1980s. Until 1983 Trinidad and Tobago had only selective quantitative controls on imports, but in that year the net was cast very widely. This was the only instance where the stated objective was to protect local manufacturing which could not compete with imports from the rest of the region. Jamaica and Guyana were primarily motivated by a desire to conserve foreign exchange.

As a result of individualistic policies on quantitative restrictions, the degree of protection varied from country to country and among industries within particular countries. In general Guyana offered its producers the highest levels of protection, followed in the 1970s by Jamaica, and in the 1980s by Trinidad and Tobago. The common external tariff seems to have stimulated the production and trade of labour intensive light manufacturing such as clothing, processed foods and cosmetics. Trade within the region grew significantly in the second half of the 1970s, boosting manufacturing output in the larger countries of the region. However, these advances were lost with the imposition of quantitative restrictions and regional trade declined in the 1980s. The quantitative restrictions led to gross overprotection of some industry, and permitted some highly inefficient producers to remain in business.

On the whole, policies to increase output in the Caribbean have not served the purpose. Industrial protection made a contribution to the growth of manufacturing, but it was taken too far, ultimately supporting fragmentation and inefficiency. Provisions for new institutions to promote and support production and exports are thought to be in the right directions, but are yet to bear tangible fruit. Exchange rate changes have fuelled inflation, without doing much to stimulate output. Interest rates appear to have had little significant effect in the 1970s, though we suspect they may prove stagflationary in the 1980s, inhibiting the output of tradables and inflating the price of non-tradables. Wage guidelines have not been successfully implemented. Policy-makers were afforded a narrow scope for affecting the production of tradables, which are the engine that drives the economy. The output of bauxite, alumina and oil owes little to domestic cost variation, while sugar production was inhibited by a number of factors apart from price. Government policies were left to operate on non-sugar agriculture, manufacturing and tourism. Moreover, though government policies may affect output, the degree of protection is the only factor which seems to influence investment decisions.

Only two adjustment packages seem to have been helpful, in the limited sense that the country survived a period of externally-induced stress in no worse condition than before the shock (see the scorecard in exhibit 1). The two were the Bahamas and Barbados, for the period 1981-83. Trinidad and Tobago's 1973-74 programme might qualify on grounds that it provided

surpluses for investment which came to fruition in the 1980s, while Guyana's 1978-80 adjustment policies came close to satisfying the criterion. In the cases of Guyana in 1966-67 and Jamaica between 1974 and 1976 policies proved distinctly harmful, creating a balance of payments crisis out of what might have been temporary disequilibrium. In these two countries, subsequent policies (Guyana, 1980-84 and Jamaica, 1977-84) appear to have failed, but they seem to have been in the right direction, until very recently. In a number of other cases disequilibria proved self-correcting, while in others no verdict can be entered, either because adjustment was involuntary (there was no instrument for discretionary policy) or because the policy regime is of very recent vintage.

The characteristics of the most useful policy regimes include a fiscal programme featuring modest increases in government spending, a small deficit in relation to GDP and a low public sector borrowing requirement. Monetary measures included manipulation of the discount rate, changes in the reserve requirement and credit restrictions. Discounts remained freely available and banks usually had some excess liquidity, so the credit restrictions alone would have been effective. In these programmes there was no active exchange rate change, and controls on foreign trade and finance were liberally administered. Industrial protection was limited to the effect of tariffs, with quantitative restrictions covering a negligible proportion of inputs. Adjustment was achieved by restraining expenditure during the downturn in the tradable sectors and waiting for

external forces to stimulate new growth. In the case of Trinidad and Tobago, expenditure was contained in the presence of a rapid expansion of income.

The worst episodes were characterized by fiscal expansion, large deficits in relation to GDP and a high ratio of public sector borrowing to domestic credit. Monetary policies were not much different from those in force where adjustment was more helpful. Exchange rate adjustment was more active, with a variety of schemes for depreciating the rate. Tight, comprehensive controls were imposed on foreign transactions and sizeable unofficial currency markets developed.

#### Lessons From The Experience

The Caribbean experience suggests that fiscal policy is at once the most influential and the one with greatest potential to harm. The world being an uncertain place, conservative fiscal policies seem to be best, to temper spending when output slips and to increase government savings on current account if there is a windfall. If the downturn proves of shorter duration than anticipated or the upturn more robust, a government will have accumulated reserves which may be applied to investment; if events turn out worse than expected, the reserves allow time to take properly thought out measures to avert a crisis.

Governments have not proven very adept at stimulating additional supplies of goods and services. However, they have the capacity to do great damage, should they fail to correct external payments disequilibria. Supply responds strongly to stimuli which government may not influence, such as export market possibilities, social conditions and technology, and only weakly to price-cost margins, which may be subject to official manipulation. Moreover, official control of price-cost margins has not followed predictable patterns.

Government cannot transcend the limits set by external markets and by investors' autonomous decisions about the rate of creation of new capacity. Government's task is largely to maintain national expenditure within the limits set by capacity and output growth. In the 1970s and 1980s this meant accepting reduced economic prospects, compared with what seemed possible in 1970, and postponing hopes of reducing the outstanding chronic unemployment.

The list of effective macroeconomic policies available to managers in small open economies is not long. Fiscal policy is both powerful and reasonably certain as to the outcome. Exchange rate changes and limited restrictions on credit, imports and foreign exchange may be helpful, though their outcomes are not so predictable, and they are accompanied by undesirable side effects, particularly increased inflation. If restrictions are pressed too far they become ineffective and damaging as evasion becomes widespread and inefficient black markets develop. Interest

rate policies and changes in reserve requirements do not seem to help much.

If they are to do well, policy makers must pay attention to institutional strengths and management capabilities in the public service. Before embarking on a new course of action they should provide themselves the means of judging whether there exists the ability to execute it. The unrelieved failures of Guyana's nationalised industries are the Caribbean's most emphatic demonstration of this point. Moreover, the effectiveness with which existing policies are being implemented is in need of frequent re-examination.

Economists and policy makers alike need to accept the limits to policy making inherent in social and economic processes. The economy is no more than a summary way of representing what are thought to be central tendencies in the evolution of certain kinds of contracts and exchanges. These transactions are being undertaken continuously by thousands of actors, and it is impossible to direct their behaviour in any determinate sense. Successful policy depends on understanding the interactions and finding ways of influencing them, and is most effective when it convinces the agents to alter their course of action. Agents may be forced off-target to some degree, if the nuisance is not great and they are not fervently attached to their objectives. But attempts to push beyond the limits they will tolerate will be frustrated by one means to another. To identify the limits is the policy makers's essential challenge.

The English speaking Caribbean may have wished for a better deal from the rest of the world during the 1970s and 1980s. These countries were asked to shoulder a large burden of adjustment, with choices which stunted economic growth, whatever the policy chosen. The prospect of providing adequate standards of living for the population as a whole receded during the last fifteen years, and every country was forced, at one time or another, to take actions or to endure circumstances which reduced living standards and aggravated unemployment problems. Nevertheless, it remains true that the Caribbean as a whole should have fared better than it did, given the circumstances to which countries were exposed. Had policies been less adventurous, the fall in living standards for the largest proportion of the region's population would not have been so drastic, nor the current economic prospects so bleak.

## Footnotes

1. The countries examined are Antigua, the Bahamas, Barbados, Belize, Grenada, Guyana, Dominica, Jamaica, Monsterrat, St. Kitts, St. Lucia, St. Vincent and Trinidad-Tobago.
2. See Table 1.
3. In 1984, debt service payments (interest and amortisation) absorbed 30% of Jamaica's gross foreign exchange earnings. The comparison of interest rates and world price inflation in the 1980s is as follows:

|   | <u>1981</u> | <u>1982</u> | <u>1983</u> |
|---|-------------|-------------|-------------|
| Interest on public debt<br>(World Debt Tables 1985) | 11.0        | 7.9         | 7.0         |
| Price increase for<br>Tradable goods                | 5.9         | 1.0         | 0.2 (est)   |

4. The Jamaican capital, Kingston, was plagued by sporadic acts of violence and political clashes in the late 1970s. The lawlessness spread to the countryside and some visitors were hurt. The country acquired an unfavourable image in the travel industry, and matters were not improved by the government's leftist policies, which were interpreted as anti-western.
5. For an analysis of the potential of Barbados, Jamaica and Trinidad and Tobago under conditions similar to those prevailing in the 1960s (with respect to exports and the terms of trade), see appendix A.
6. The coefficient of the relative price term is insignificant in estimates of the import equation for Jamaica, as well in the estimate for expenditure on non-tradable goods (Worrell & Holder [1984], p. 249). Relative prices had negligible effects in Trinidad-Tobago as well. In Barbados, imports are sensitive to relative prices, but expenditure on non-tradables is not.
7. The cost of credit is included in equations for estimating the output of tradables, the expenditure on non-tradables and the supply of non-tradables; in no case did it have a significant effect (Worrell & Holder, pp. 243-250).
8. Worrell & Holder, pp. 243-250, equations (1) and (3) for each country.



9. Worrell & Holder report a significant effect of prices, lagged one period, on wages for Jamaica and Trinidad-Tobago, but not for Barbados (equation (10) - Trinidad - or (11); Boamah reports significant price effects for Barbados with a rather different specification (Boamah [1984], p. 268).
10. We may infer this from earlier evidence of the insensitivity of expenditure to interest rate changes. For deposits we test for the effect of differentials between domestic rates and rates abroad, with an allowance for small discrepancies between them; they were significant for Trinidad and Tobago, but not for Barbados and Jamaica.

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Table 1  
Effects of Change in External Variables on Balance of Trade  
(Millions of dollars, local currency)

| <u>Barbados</u>  |                   |                   |                                | <u>Guyana</u>    |                  |                   |  |        |
|------------------|-------------------|-------------------|--------------------------------|------------------|------------------|-------------------|--|--------|
| Import<br>Prices | Export<br>Prices* | Terms of<br>Trade | Demand<br>Factors<br>(Tourism) | Import<br>Prices | Export<br>Prices | Terms of<br>Trade | Demand<br>Factors<br>(Bauxite,<br>Alumina) |        |
| (1)              | (2)               | (2) -(1)          |                                |                  |                  |                   |  |        |
| 1967             | -10.9             | 0.5               | 11.4                           | 5.5              |                  |                   |  |        |
| 1968             | 10.4              | 8.1               | -2.3                           | 9.2              |                  |                   |  |        |
| 1969             | 15.0              | 3.1               | -11.9                          | 8.7              |                  |                   | 14.4                                       |        |
| 1970             | 8.3               | -4.8              | -13.1                          | 9.3              | 4.7              | 6.7               | 2.0  | 14.7   |
| 1971             | 14.5              | 2.9               | -11.6                          | 16.9             | -0.1             | 7.1               | 7.2  | -8.6   |
| 1972             | 18.1              | 5.3               | -12.8                          | 11.5             | 4.4              | 31.0              | 26.6                                       | -27.3  |
| 1973             | 56.9              | -2.2              | -59.1                          | 6.7              | 11.5             | 40.3              | 28.8                                       | 2.6    |
| 1974             | 117.3             | 17.6              | -99.7                          | 5.3              | 26.6             | 90.8              | 64.2                                       | -6.4   |
| 1975             | 57.0              | 144.4             | 87.4                           | -6.2             | 35.2             | 248.4             | 213.2                                      | 5.1    |
| 1976             | 60.9              | -96.9             | -157.8                         | 2.0              | 14.4             | 760.5             | 746.1                                      | -98.0  |
| 1977             | 55.7              | -0.8              | -56.5                          | 33.4             | -13.8            | -221.8            | -235.6                                     | 184.9  |
| 1978             | 32.5              | 1.2               | -31.3                          | 39.4             | -13.1            | -36.8             | -49.9                                      | 22.1   |
| 1979             | 55.1              | 29.6              | -25.5                          | 47.2             | 17.4             | 58.7              | 41.3                                       | -50.8  |
| 1980             | 43.4              | 96.0              | 52.6                           | -1.1             | 34.0             | 213.3             | 179.3                                      | 48.4   |
| 1981             | 62.9              | -16.8             | -79.7                          | -23.9            | 38.6             | 7.6               | -31.0                                      | -72.4  |
| 1982             | 15.1              | -6.8              | -21.9                          | -73.1            | n.a.             | -                 | n.a.                                       | -146.2 |

\*Excludes tourism

**Effects of Change in External Variables on Balance of Trade**  
(Millions of dollars, local currency)

|      | <u>Jamaica</u>   |                  |                   |                                       | <u>Trinidad and Tobago</u> |                               |                   |                            |
|------|------------------|------------------|-------------------|---------------------------------------|----------------------------|-------------------------------|-------------------|----------------------------|
|      | Import<br>Prices | Export<br>Prices | Terms of<br>Trade | Demand<br>Factors<br>(Bx,al,<br>tour) | Import<br>Prices**         | Export<br>Prices <sup>+</sup> | Terms of<br>Trade | Demand<br>Factors<br>(Oil) |
| 1961 | 6.7              | -1.3             | -8.0              | -21.8                                 |                            |                               |                   |                            |
| 1962 | 13.6             | 3.0              | -10.6             | -28.5                                 |                            |                               |                   |                            |
| 1963 | -                | 10.6             | 10.6              | -33.3                                 |                            |                               |                   |                            |
| 1964 | 6.6              | -4.0             | -10.6             | -3.1                                  |                            |                               |                   |                            |
| 1965 | 2.5              | -7.4             | -10.0             | -4.8                                  |                            |                               |                   |                            |
| 1966 | 8.1              | 3.4              | -4.7              | -18.5                                 |                            |                               |                   |                            |
| 1967 | 11.5             | 4.4              | -7.1              | -35.7                                 |                            |                               |                   |                            |
| 1968 | 14.7             | 26.1             | 11.5              | -34.3                                 |                            |                               |                   |                            |
| 1969 | 25.1             | 2.4              | -22.6             | -1.6                                  |                            |                               |                   |                            |
| 1970 | 11.4             | 29.0             | 17.5              | 23.3                                  | 14.7                       | 5.6                           | -9.1              | -43.1                      |
| 1971 | 39.1             | -2.1             | -41.1             | -18.5                                 | 41.1                       | 48.9                          | 7.9               | -17.6                      |
| 1972 | 20.8             | 0.4              | -20.4             | -3.8                                  | 32.8                       | 4.2                           | -28.6             | -16.1                      |
| 1973 | 192.7            | 55.0             | -137.6            | -33.5                                 | 61.7                       | 117.1                         | 55.3              | 216.4                      |
| 1974 | 294.8            | 183.2            | -111.6            | 2.4                                   | 753.7                      | 977.9                         | 224.2             | 1002.6                     |
| 1975 | 99.5             | 325.7            | 226.1             | -242.9                                | 218.1                      | 230.5                         | 12.3              | 968.2                      |
| 1976 | 55.8             | -50.4            | -106.2            | -356.1                                | 401.9                      | 352.5                         | -49.3             | 321.4                      |
| 1977 | 120.7            | 29.9             | -90.6             | 4.4                                   | 75.4                       | 231.2                         | 155.7             | 622.0                      |
| 1978 | 16.8             | 427.1            | 410.3             | 16.5                                  | 141.4                      | -6.7                          | -148.1            | -112.7                     |
| 1979 | 205.7            | 351.8            | 146.1             | -106.6                                | 397.3                      | 968.7                         | 571.4             | 1810.6                     |
| 1980 | 481.7            | 188.6            | -293.1            | -48.0                                 | 2432.6                     | 2898.0                        | 465.4             | 2210.8                     |
| 1981 | 123.6            | -7.2             | -130.8            | -44.0                                 | 909.2                      | 714.9                         | -194.3            | -631.2                     |
| 1982 | 26.7             | 42.6             | 15.9              | -358.0                                | 617.8                      | -450.9                        | -1068.7           | -1493.4                    |

\*\*Excluding imports of crude oil for refining

+Based on exports net of crude oil imports

Note: based on values in (t-1) times percentage changes in prices or output in (t).  
Sources: Central Bank of Barbados, Annual Statistical Digest and Balance of Payments; International Financial Statistics; UN Yearbook of International Trade Statistics; IMF Balance of Payments Yearbook (Details available on request).

Table 2  
Effects of Selected Policies

- (1) Approximate effects of fiscal programme to increase GDP by 1% (direct government activity)

|                            | Bdos | Ja   | T T       |
|----------------------------|------|------|-----------|
| Change in total GDP (%)    | 1.99 | 1    | 1         |
| Change in GDP deflator (%) | -    | -    | 0.96 Qn/y |
| Change in imports (%)      | 7.23 | 1.08 | 0.83      |

- (2) Approximate effects of an increase in gov't transfer payments which adds the equivalent of 1% of GDP to the expenditure stream, evenly distributed between additional spending on imports and on non-tradables.

|                       | Bdos | Ja  | T T       |
|-----------------------|------|-----|-----------|
| Change in GDP (%)     | 0.49 | -   | -         |
| Change in deflator    | -    | -   | 0.48 Qn/y |
| Change in imports (%) | 2.29 | 0.5 | 0.5       |

- (3) Approximate effects of tax increases that reduce disposable income by 1% of GDP

|                            | Bdos  | Ja    | T T       |
|----------------------------|-------|-------|-----------|
| Change in GDP (%)          | -0.99 | -     | -         |
| Change in GDP deflator (%) | -     | -     | 0.96 Qn/y |
| Change in imports (%)      | -7.23 | -1.08 | -0.83     |

- (4) Approximate measures of the impact of changes in monetary instruments; impact on cost of borrowing

|  | Bdos  | Ja | T T    |
|--|-------|----|--------|
| $\partial r / \partial Crp$ (Credit limits)      | -     | -  | 0.004  |
| $\partial r / \partial q$ (Reserve requirements) | -     | -  | 0.004D |
| $\partial r / \partial r_b$ (Discount rate)      | 0.057 | -  | -      |
| $\partial r / \partial rg$ (Gov't note rate)     | -     | -  | -      |

D: bank deposits

Table 2 continued....

(5) The effects of changes in the cost of borrowing.

| Effect on (elasticity)  | Bdos | Ja   | T T |
|-------------------------|------|------|-----|
| Output of tradables     | -    | 0.87 | -   |
| Output of non-tradables | -    | -    | -   |
| Price of non-tradables  |      |      |     |

(6) The effects of a 10% currency devaluation

|  | Bdos | Ja    | T T  |
|--|------|-------|------|
| On the prices of tradables (%)         | 0.61 | 1.00  | 3.47 |
| On the demand for non-tradables (%)    | -    | -     | -    |
| On the demand for imports (%)          | 1.71 | -1.33 | -    |
| On national output (%)                 | 0.67 | -1.23 | -    |
| On the GDP deflation <sup>or</sup> (%) | 6.84 | 5.94  | 4.19 |

Note: Impact multipliers derived from estimates reported in Worrell and Holder [1984]

Exhibit 1  
Outcomes of Adjustment Policies

| <u>Helpful</u> | <u>Harmful</u> | <u>Failures</u> | <u>No Verdict</u> | <u>Automatic<br/>Adjustment</u> |
|----------------|----------------|-----------------|-------------------|---------------------------------|
| Bdos, 81-83    | Guy, 76,77     | Guy, 79-84      | TT, 82+           | Bdos, 73-75                     |
| Bah, 81-83     | Jca, 74-76     | Jca, 77-84      | Dom, 80+          | Guy, 73-75                      |
| TT, 73-74      |                |                 | St K., 80+        | St. L., 80+                     |
| Guy, 78-80?    |                |                 | Ant., 80+         | Mont, 80+                       |
|                |                |                 | Blze, 80+         |                                 |
|                |                |                 | St. V., 80+       |                                 |
|                |                |                 | Gren., 80+        |                                 |

Note: "Helpful" policies served to cushion external shock and leave the country no weaker than before. "Harmful" policies were worse than "failures" because they aggravated the consequences of the shock, where failed policies simply were of no assistance. No verdict can be entered when policies are quite recent or data for full analysis of their impact is limited.

## Appendix

### A Methodology for Simulating the Effects of External Shocks

Begin by solving the price-output relationships of the Worrell-Holder [1984] model to give national income as a function of exports, export prices and import prices. The model is modified to disaggregate the price of tradables into export and import prices. Between 80% and 90% of tradable output is exported, for all the countries so far tested; we approximate by equating the production of exports and the output of tradables. Writing all relationships in rates of change, we have

$$(A1) \quad x = a_0 + a_1 P_x + a_2 P_m + a_3 S + a_4 r$$

$$(A2) \quad Q_n = b_0 + b_1 y + b_2 (P_m - P_x) + b_3 Q_n(-1)$$

$$(A3) \quad P_n = C_0 + C_1 Q_n + C_2 P_m + C_3 S + C_4 r$$

$$(A4) \quad y = a_x x + a_n Q_n$$

$$(A5) \quad P_t = \beta_x P_x + \beta_m P_m$$

The variables are (reading across):

$x$  : exports

$P$  : price indices; the GDP deflator (below) has no subscript;

other prices are indicated by subscripts

$m$  : imports

$s$  : a measure of unit labour costs

$r$  : the cost of bank finance

$Q$  : output; subscript indicates which sector

$n$  : non-tradables

$y$  : national income

$t$  : tradables

$a_i, b_i, c_i$  : estimated coefficients

$a_x, a_n$  : share of  $x$  and  $Q_n$  in  $y$

$\beta_x, \beta_m$  : share of  $x$  and  $m$  in  $(x + m)$



All variables are in real terms. The first equation estimates the supply of exports, the second the demand for non-tradable goods as perceived by firms in that sector, and the third measures the supply price of non-tradables, once firms determine their response to the expected demand. These relationships may be solved for income as a function of exports and the terms of trade (the prices of exports and imports). The solution is of the form

$$(A6) \quad y = A_0 + A_1x + A_2P_m + A_3S + A_4r + A_5Q_n(-1)$$

where  $A_i$  are combinations of the estimated coefficients, the  $\alpha$ 's and the  $\beta$ 's.

The first exercise carried out was to determine the effects of weakness in the markets for those commodities (bauxite, alumina, oil, tourism) where output is not determined predominantly by supply factors. To do this, we adjusted the export series, replacing the actual exports of these commodities with values based on straight line projections of the trends of the 1960s. We then derive the growth of income which would have resulted, using (A6). This procedure depends on the notion that the export sector is the essential engine of growth. We test for the feasibility of the resulting income series by working out the implications for savings and investment and for the government budget.

The investment required to sustain the growth rate is derived from an incremental capital output ratio, based on observations averaged over the period of analysis. Some judgment is necessary to eliminate extreme values of the ICOR. The existence of spare capacity in all industries means that output can expand at any time (in theory) without additional

capital formation. However, we doubt this will be true over an extended period, because of the need for modernisation. (Also, the depreciation series are often deficient, and we need to use gross capital formation.) Private sector savings are derived using savings propensities culled from previous studies (for Barbados and Jamaica) and simple ratios elsewhere. Government's current consumption expenditure is taken at the observed levels, and revenues are derived from the function

$$(A7) \quad R_v = d_0 + d_1(P + y)$$

where  $P$  is the GDP deflator given by

$$(A8) \quad P = \alpha_x P_x + \alpha_n P_n$$

Assuming that government capital expenditure approximates government fixed capital formation (where it clearly does not, and current spending is classified in the capital budget, adjustments can be made) the current account (deflated by  $P$ ) provides a measure of government saving.

The remaining funds for the investment programme come from foreigners. Together with exports and imports they indicate what the impact on foreign exchange reserves will be. Imports are derived from

$$(A9) \quad m = e_0 + e_1 y + e_2(P_m - P_n)$$

The reserves derived from these calculations are compared with a reserves target. We chose a minimum reserve level of zero; it is easy to adjust the simulations for any other.

To keep reserves above target, the authorities may cut imports by increasing their relative prices or cut government consumption to increase official savings and reduce imports. Alternatively, the growth rate may slow down, either by deliberate policy or by the requirements of external balance. We may calculate the changes in each case which would be sufficient to allow for a feasible combination of income growth and foreign exchange use. The best feasible option (the one with the fastest rate of growth) is compared with the actual outcomes.

The whole exercise is then repeated for import and export prices, substituting for  $x$  from equation (A1) to obtain a replacement for equation (A6):

$$(A10) \quad y = B_0 + B_1 P_x + B_2 P_m + B_3 s + B_4 r + B_5 Q_n (-1)$$

where the  $B_i$  are combinations of the  $A_i$  and  $a_i$ .

In the accompanying charts the variables representing actual outcomes (Y, DR) have no number; simulations for alternative export demand patterns appear with a one (Y1, DR1) and those for the alternative terms of trade appear with a two.