EFFECTS OF DEVALUATION IN A SMALL OPEN ECONOMY WITH APPLICATION TO JAMAICA

by

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ABSTRACT

This dissertation advances a model which assumes extreme openness characterised by the absence of non-tradables. The pivotal relative price is the real wage which is of central importance in the analysis of devaluation. The model incorporates a simple supply function on the basis that the supply response to a devaluation cannot be taken for granted because of structural factors and unstable expectations characteristic of the transitional period following a devaluation. The effects of devaluation depend on a combination of factors among which are highlighted capitalists' expectations of future stability and the constraints on disabsorption. Our analysis underlines the need for financial assistance to sustain the adjustments associated with devaluation episodes. An econometric application of this model to Jamaica finds devaluation to be adverse both with respect to output growth and the trade balance.

RESUME

Dans cette thèse, on présente un modèle qui suppose une ouverture extrême marquée par l'absence d'éléments non commercialisables. Le prix relatif pivot est le salaire réel lequel revêt une importance primordiale dans toute analyse de la dévaluation. Le modèle comporte une fonction d'offre simple, la réponse de l'offre à la dévaluation ne pouvant être tenue pour acquise en raison des facteurs structurels, d'une part et des attentes instables caractérisant la période de transition qui suit la dévaluation, d'autre part. Les effets de dévaluation dépendent d'une combinaison de facteurs parmi lesquels sont soulignés les espérances capitalistes d'une stabilité à l'avenir et les contraintes sur la désabsorption. Notre analyse souligne le besoin de l'assistance financière pour soutenir les rajustements associés aux épisodes de dévaluation. L'application économétrique de ce modèle à la Jamaïque permet de conclure à la répercussion négative de la dévaluation tant sur le plan de la croissance de la production que sur celui de la balance commerciale.

PREFACE

After a period of relative stability in their external accounts prior to the 1970s, countries in the Caribbean have encountered a time of disconcerting external imbalances and exchange-rate instability. Guyana, Jamaica and Trinidad and Tobago have introduced substantial devaluations in the 1970s and 1980s and face the prospect of further devaluations. The experiences of Caribbean countries are not isolated as economic instability has been a widespread feature of the last two decades and the problems of stability and adjustment have dominated economic discussions. These developments bring into focus the constraints facing small countries and the question of the policy options for achieving developmental objectives within the context of these constraints.

The recent experiences of Caribbean countries also underline the relevance of the study of the effects of devaluation in a small country at this time. This dissertation attempts to make a contribution in this area by isolating theoretically the implications of devaluation for output growth and the trade balance in a comparative static framework. Its original contribution relates to the assumption of the absence of non-tradable goods as an extreme way of modelling openness, and the simple supply function

employed. The assumptions used cause a particularly sharp focus to be turned on the issues of supply and absorption that lie at the centre of the analysis of devaluation. The theoretical discussion is presented against the background of a review of experiences with stabilization and adjustment in the Caribbean and elsewhere in the 1970s and 1980s.

In the completion of this dissertation, an enormous debt is owed to a large number of people who provided invaluable assistance at various stages. The International Development Research Centre (IDRC) provided critical financial support without which it would not have been possible to reach completion without interruption with respect to lecturing commitments at the University of the West Indies. Particular mention should be made of Dr. P. Buttedahl and Mrs. A. Guay for their constant attention to matters connected with this undertaking. Dr. J.E. Greene and the Institute for Social and Economic Research, U.W.I., of which he is the Director were a constant resource. Mr. Wilberne Persaud, Head of the Department of Economics, U.W.I. (Mona Campus), was a constant source of assistance and encouragement. For assistance with respect to computer facilities, I thank Mr. W. Persaud, Dr. M. John and the Department of Biochemistry, U.W.I., Messrs. L. Wilson and R. Bailey who facilitated my access to power in the difficult period following Hurricane Gilbert, and the people in the computer facility, Faculty of Arts, McGill. Many people facilitated access to data and among them I wish to mention Mrs. A. McKenzie and Miss. M. Bartlet of The Statistical Institute of Jamaica and Mr. C. Bullock and Mrs. E. Birch of

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Last but not least, I express appreciation to my wife, Sharon, and son, Julien, who have shared in the frustrations and triumphs of this undertaking every step of the way and have been constant sources of inspiration. I dedicate this dissertation to them.

TABLE OF CONTENTS

TABLES

FIGURES

Abbreviations

BOJ: [Central] Bank of Jamaica.

ESSJ: Economic and Social Survey of Jamaica.

CARICOM: Caribbean Community.

ISER: Institute of Social and Economic Research.

JLP: Jamaica Labour Party.

NIP: National Income and Product.

PIOJ: Planning Institute of Jamaica.

PNP: Peoples National Party.

STATIN: Statistical Institute of Jamaica.

Greek Symbols Used

α : alpha

β : beta

ϕ : phi

δ : delta

Θ : theta.

Chapter 1

1.INTRODUCTION

The issue which this dissertation attempts to address is the economic effects of a devaluation in the conditions of a 'small, open' economy. We shall focus, in particular, on the effects of a devaluation on output growth and the trade balance. In concentrating on the trade balance in preference to the whole of the current account, we are following a number of analyses in this area.[1] However, the theoretical arguments are applicable, in principle, to larger categories of the balance of payments. For example, in the context of Jamaica, arguments have been put forward for analysing the tourism account along with the trade balance.[2] In the empirical application which is a part of this study, the formulation by which exports are represented allows for an easy

[1]Examples of works which have focussed on the trade balance include: Carlos F. Diaz-Alejandro, "A Note on the Impact of Devaluation and the Redistribution Effect," Journal of Political Economy (1963), Rudiger Dornbusch, "Devaluation, Money and Non-traded Goods," American Economic Review (1975), Idem, Open Economy Macroeconomics (New York: Basic Books, 1980), Manuel Guitian, "The Effects of Changes in the Exchange Rate on Output, Prices and the Balance of Payments," Journal of International Economics (1976), Albert O. Hirschman, "Devaluation and the Trade Balance: A Note," Review of Economics and Statistics (1949) and Ronald Jones and W. Max Corden, "Devaluation, Non-flexible Prices and the Trade Balance for a Small Country," Canadian Journal of Economics (1976).

[2]See, for example, Carl Stone "Mystification and Distortion," Daily Gleaner, January 11, 1988, p. 8.

incorporation of tourist expenditure.

It is also clearly recognized that external problems have several important dimensions, of which the capital balance is a primary example. The focus on the trade balance is a justifiable attempt to analyse an important part of the overall balance of payments. With respect to Jamaica, for example, net capital inflows have been significant in their role as a source of accommodation for current account deficits. Their availability may also have promoted current account deficits. Prior to 1970, the accommodating capital flows were predominantly private in nature. Subsequently, with the reduction in net private inflows, the overwhelming proportion of capital inflows are obtained through official channels.[3] In this light, an improvement in the trade balance can have desirable repercussions with respect to the capital account and debt and may, moreover, be an indication of a sounder economy.

The analysis of the effects of devaluation is very relevant at this time as indicated by the proliferation of articles on the subject since the early 1970s. In the 1980s, the debt crisis, which burst onto the headlines in 1982, has precipitated increased pressure for stabilization of external accounts. As is shown in chapters three and four, devaluation is almost invariably a prescribed ingredient of these stabilization efforts in the Caribbean and elsewhere.

The main claims to originality of this dissertation relate to its theoretical analysis. In this connection, there are two aspects that should be highlighted. Firstly, the central thrust of the theoretical analysis is to examine the real-wage implications of a

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[3]This point is expanded upon in chapter six. See also, Adlith Brown, "Economic Policy and the IMF in Jamaica," Social and Economic Studies (1981).

devaluation. Recent models have tended to focus on the allocation of resources and the switching of demand between tradables and non-tradables as a result of a devaluation and the consequences of these changes for the trade balance and output growth. While it is acknowledged that a decline in the real wage is a necessary condition for devaluation to be effective in improving the trade balance, the real-wage implications are relatively neglected.

Secondly, this dissertation takes the structuralist position that an adequate supply response to the stimuli of a devaluation cannot be taken for granted. It therefore incorporates an explicit specification of supply as a major aspect of the analytical framework. The dissertation also incorporates an empirical chapter composed of an application of an econometric model based on our theoretical model to the case of Jamaica.

The analysis of the effects on output growth is worth noting because it is not always considered. There exist approaches, as we shall see in chapter two, which assume that full employment prevails and therefore the question of output effects is not an issue. Other models, also dealt with in chapter two, have highlighted the importance of investigating output effects, arguing that, under conditions that are relevant with respect to developing countries, a devaluation may affect output adversely. At any rate, it is important to consider devaluation in the context of under-employment which is a condition applicable to many countries.

The theoretical analysis with respect to output effects is static and therefore does not address growth in a dynamic framework. However, conclusions with respect to output effects can be assumed to bear relevance with respect to growth. Some

considerations with respect to growth are touched on at different points of the thesis including the problems of devaluation being accompanied by over-restrictive monetary and fiscal policies and the important role identified for adequate financing to accompany a stabilization program.

Inflation is another matter that is important to consider in connection with devaluation. It will be argued that a devaluation is associated with an increase in prices in a small, open economy and this increase may give rise to inflationary expectations which undermine economic stability and lead to the likelihood that resort may have to be made to further devaluations. Another aspect emphasized in stabilization programs is fiscal balance. While the assumptions of the theoretical analysis abstract from the activities of government, these aspects receive some attention in the discourse on stabilization experiences.

The assumption of smallness plays a key role in the analysis and it is therefore important to use a clear and acceptable definition. For our purposes, it is not defined in geographical or demographical terms. Rather, a small economy will be defined as one which is a price-taker in international markets. It is not large enough to influence the prices of importables or exportables by a change in its sales or purchases but will conduct all trade on the basis of prevailing international prices.

Evidently, smallness defined in this way cannot be divorced from openness which is generally accepted to mean that a country is involved in international trade. Openness, however, is subject to degrees, depending on the extent to which international trade makes an impact on the domestic economy. In a small economy, it is reflected in the extent to which changes in domestic prices are determined by

changes in international prices. Taken to its extreme, a small, open economy will be one in which the prices of all goods are determined in relation to the international market. This assumption is the counterpart to the closed-economy assumption, which has been widely employed in economic theory, and will be a principal assumption of our analysis.

The definitions of smallness and openness presented above have a central importance in our analysis. By assuming away non-tradables, the focus is turned towards the real-wage implications of devaluation. The real wage takes on the role of relative prices around which the shifts in supply and demand revolve. Where models have tended to emphasize the expenditure switching effects between tradables and non-tradables, our model looks directly at the responses with respect to absorption and production.

Our definition of smallness obviates ambiguities inherent in definitions of size based on physical characteristics. Countries which qualify as small on the basis of geographic criteria may turn out to be large in demographic terms and vice versa. Moreover, in economic analyses, the size of the market is invariably a major consideration and such definitions may fail to encompass this aspect. Our definition can be applied to a wide variety of analyses, provided that it can be assumed that domestic prices are linked to international prices. However, it should be noted that, for the purposes of this dissertation, these assumptions were originally conceived bearing in mind the conditions of Commonwealth Caribbean countries.

Arguments will be put forward in defence of our strong assumption of openness, i.e., the assumption that all goods are tradables, to show that it is not a far-fetched

assumption. However, the validity of the assumption, as is often the case in economic theory, does not rest on its realism. A lot depends on whether the implications of the assumption can be described as nontrivial and interesting. The interest of this assumption lies primarily in the way it allows us to use the real wage as the fulcrum around which changes take place and to analyse its implications.

Apart from the disabsorption aspect, our model explores the key issue that a devaluation is supposed to be effective by reducing the real wage and thereby raising the rate of profit in the production of tradables. Small countries are typically highly dependent on imported intermediate goods, the domestic prices of which rise with a devaluation. This underlines the importance of a reduction in the real wage if the profit rate is to be increased. This mechanism is brought to the forefront and we investigate the possibility, on the production side, that the increased profit-rate is not successful in generating improved vitality in the expansion of output.

This brings us to the second aspect of our contribution which should be highlighted. It is the explicit specification of a supply function and the associated assumptions. Admittedly, the incorporation of a supply function into a balance-of-payments model is not without precedent. For example, one may refer to the analysis of Ahluwalia and Lysy who employ a CES production function in their model.[4] However, on the whole, balance-of-payments analyses have tended to emphasize the demand side.

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[4]Montek S. Ahluwalia and Frank J. Lysy, "Employment, Income Distribution and Programs to Remedy Balance-of-Payments Difficulties," in William R. Cline and Sidney Weintraub eds., Economic Stabilization in Developing Countries (Washington, D.C.: The Brookings Institution, 1981).

Our theoretical model is designed to demonstrate the usefulness of integrating supply and demand considerations into an analysis of devaluation. In reality, there are many factors which can frustrate the expansion of tradable output which is a dimension of central importance to the analysis of devaluation. This is especially true in the context of LDCs where production bottlenecks and problems of factor immobility may have to be overcome. Consequently, it may be mistaken to take supply for granted. In addition, it would seem more theoretically appropriate in a small-country context to assume the absence of a demand constraint, i.e., that all exports can be sold at the prevailing international price level, and to investigate the implications of supply bottlenecks and other problems.

One of the merits of our model worth mentioning is its practicality in light of prevalent data problems. The inclusion of non-tradables in theoretical models presents a problem because, typically, data on non-tradables are not available. Consequently, many models are not advanced beyond the stage of theoretical analysis. In formulating a convincing model which avoids non-tradables, we are presenting a model which is readily susceptible to empirical analysis even in cases where data are fairly limited.

1.1 PLAN OF THE DISSERTATION

In its attempt to add to the large literature on devaluation, this dissertation is composed of four main parts. In terms of the sequence in which they appear, there is, firstly, a look at the literature on devaluation and its effects. Secondly, we present our own model of the effects of devaluation on a small, open economy as already defined.

The third part presents a description of the salient aspects of the Jamaican economy and is essentially a preparation for the next part. The final part is an econometric application to Jamaica, based on our own theoretical model. These substantive parts are bounded by the introduction and conclusion.

The survey of the literature consists of three sections represented by chapters two to four. Chapter two concentrates on the theoretical literature, starting with the three main approaches to the balance of payments and their prescriptions. It also seeks to clarify relevant concepts such as the definitions of tradables and non-tradables and external disequilibrium.

Chapter three approaches devaluation within the wider context of stabilization programs. This is a matter of considerable current interest as we try to analyse the interacting elements of the conventional package, including monetary and fiscal policy trade and other forms of liberalization. It is also an area of controversy reflecting neoclassical versus structuralist views of the economy. On the one hand, there are those who, while acknowledging that the standard stabilization package causes a deterioration in living standards, see this as inevitable and indeed a part of the solution to external imbalance. On the other hand are those who emphasize the implications of stabilization packages which they consider excessively deflationary.

Chapter four narrows the focus to highlight the analysis of devaluation in the Caribbean. Devaluation is a matter confronting Caribbean economists in the 1980s against the background that there have been devaluations in several countries of the region, starting with currency realignments in the late 1960s and more recently, devaluations aimed at external adjustment. Chapter four chronicles these experiences

and discusses the views of Caribbean economists.

The second part consists of chapter five which introduces our model of devaluation in a small open economy. Its key assumptions are defended at length. It should be emphasized that, apart from its central assumptions which have already been mentioned, all the assumptions employed are familiar in the literature. These include the assumptions of a fixed wage rate, fixed proportions for inputs, no capital account and constant terms of trade between exports and imports. This is also true of the computations by which the effects of devaluation are derived. The working of the model is demonstrated through a basic version, which presents the model in its bare essentials, and an extended version, which expands the demand side and is formulated in aggregate terms.

Chapters six and seven constitute the third part which is devoted to a description of social, political and economic developments in Jamaica in recent decades. This is an important preliminary step to the empirical application of the model to Jamaica. The aim is to show the factors which may have given rise to the need for stabilization efforts in order to understand the sources of the problems. In addition, special attention is paid to aspects that have a special relevance in the econometric application. Consequently, supply and trade factors figure prominently as do issues of other areas of the balance of payments and debt. Socio-political factors are also highlighted, in light of our emphasis on confidence and expectations in determining the supply response to devaluation.

The final substantive part of this dissertation is chapter eight which seeks to demonstrate the practical relevance of our model by applying it to an actual situation.

An econometric model, based upon the theoretical model of chapter five, is applied to the case of Jamaica for the years 1974 to 1985. The length of the time series available is relatively short but it is still possible to obtain some statistically significant results and draw useful conclusions. The results of the empirical application provide conditional conclusions on the effectiveness of devaluation in Jamaica. They also provide some feedback concerning the most appropriate specifications for the theoretical analysis. Although the conclusions reached are conditional, this exercise constitutes a very worthwhile culmination to the foregoing analysis. Finally, chapter nine concludes with some general comments on the achievements of the dissertation and indicates possibilities for fruitful extension.

Chapter 2

2. ISSUES IN THE THEORY OF DEVALUATION

2.1 INTRODUCTION

The theoretical analysis relating to exchange rate changes has been formulated since the early part of this century in terms of three general approaches: the elasticities approach, the absorption approach and the monetary approach. The three approaches have been concerned with identifying the policies and conditions for achieving internal balance (i.e. full employment equilibrium) and external balance (balance of trade equilibrium). The elasticities approach, a most authoritative exposition of which is that of Robinson, was the accepted approach in the 1930s and onwards for a couple of decades.[1] The absorption approach was advanced as a challenge in the 1950s notably by Alexander.[2] In its turn, the latter was eventually challenged by the monetary

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[1]Joan Robinson, "The Foreign Exchanges" In Essays in the Theory of Employment (London: Macmillan and Co. Ltd., 1937). Reprinted in Readings in the Theory of International Trade, H. S. Ellis and L.A. Metzler eds. (Philadelphia: Blackiston Co., 1949).

[2]Sidney S. Alexander, "Effects of a Devaluation on a Trade Balance," IMF Staff Papers (April, 1952). Reprinted in American Economic Association Readings in International Economics, Richard E. Caves and Harry G. Johnson eds., (London: George Allen and Unwin Ltd. 1968).

approach whose early outlines could be attributed to Polak, Fleming, Mundell and Johnson.[3] Currently, the dominant approaches are the absorption approach and the monetary approach, the bias of favour being determined by whether the analyst prefers a non-monetary or monetary approach respectively.

The three approaches should be viewed as complementary rather than competing, each one adding a worthwhile dimension to the others. The elasticities approach is essentially a partial equilibrium analysis which focusses on the effects of terms of trade changes resulting from devaluation and other trade measures on the trade balance. It tends to ignore income and expenditure repercussions. The absorption approach takes a step forward by bringing the income and expenditure considerations into the forefront of the analysis. As its name suggests, the monetary approach emphasizes the need to specify the behaviour of monetary variables and the role of the monetary authorities in the analysis of the balance of payments. These are all elements whose contributions to a modern theory of the balance of payments are widely acknowledged.

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[3]J. J. Polak, "Monetary Analysis of Income Formation and Payments Problems", IMF Staff Papers (1957). Reprinted in IMF, The Monetary Approach to the Balance of Payments (Washington D.C.: Johns Hopkins University Press, 1977); J. Marcus Fleming, "Domestic Financial Policies Under Fixed Exchange Rates", IMF Staff Papers, (1962); Robert A. Mundell, "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability", IMF Staff Papers, (1962); Idem, "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates", Canadian Journal of Economics and Political Science, (1963); Harry G. Johnson, "Towards a General Theory of the Balance of Payments", in idem, International Trade and Economic Growth: Studies in Pure Theory, (Cambridge, Mass.: Harvard University Press, 1961). Reprinted in AEA Readings (1968).

There is a tendency to rank the three theories in terms of a temporal series from the short-run to the long-run.[4] The elasticities approach, by virtue of its partial analysis, may be associated with the short-run impact of a devaluation on the trade balance. The absorption approach, incorporating the income and expenditure repercussions, would tend to be viewed over a medium-term horizon. Finally, on the assumption that asset portfolios take a long time to adjust following a disruption, there are grounds for associating the monetary approach with the long-term. Cooper cautions, however, that such a sequential view would be a serious oversimplification since "all factors are present to some degree even immediately following a devaluation".[5] It is to be noticed, however, that recent stabilization approaches incorporating the monetary approach to the balance of payments have tended to operate within a very short-term framework.

There is also a tendency to link the elasticities and absorption approaches with Keynesian analysis because of their use of real variables and the Keynesian transmission mechanism. The monetary approach has been applied on the basis of Keynesian and monetarist assumptions.[6] However, its essential monetarist character is revealed by the central role of the assumption of a stable money-demand function. All three approaches have focused on the behaviour of the current account or the balance

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[4]See Richard N. Cooper, Currency Devaluation in Developing Countries (Essays in International Finance, Department of Economics, Princeton University, 1971) pp. 7-9.

[5]Ibid., p. 7.

[6]Mundell (1963) and Fleming (1962), whose analyses are widely associated with the monetary approach, both employ some typical Keynesian assumptions.

of trade. In principle, the monetary approach is intended to address the balance of payments as a whole. However, it is usual for convenient assumptions to be made to allow the capital account to be ignored and direct the focus to the trade account. For example, one article states at the outset: "There is no market for securities nor international capital movements in the model. Therefore, the balance of payments is equivalent to the balance on international (traded) goods".[7]

2.2 THREE BALANCE-OF-PAYMENTS APPROACHES

2.2.1 The Elasticities Approach

The elasticities approach essentially combines the Marshallian apparatus of supply and demand analysis with Keynesian assumptions of underemployment and wage rigidity and tries to establish "the conditions under which devaluation would improve a country's balance of payments".[8] Under this approach, devaluation results in relative price changes between exports and imports. The direction and magnitude of the consequent effects on the balance of trade are determined primarily by the combination of four elasticities: the home country's elasticity of demand for imports and elasticity of supply of exports and the foreign country's elasticities of demand for imports and

[7]Guitian (1976), p. 66.

[8]Harry G. Johnson, "The Monetary Approach to Balance-of-Payments Theory", in Jacob Frenkel and Harry Johnson eds. The Monetary Approach to the Balance of Payments (Toronto: University of Toronto Press, 1976), p. 149.

supply of exports.[9] These assumptions also help to establish balance of payments adjustment as "a policy problem for governments"[10] rather than an automatic process. This is another reflection of the Keynesian influence.

Investigating the conditions for devaluation to be favourable to the balance of trade, the analysis yields the 'Marshall-Lerner condition' i.e. that the sum of the demand elasticities of the home country and the foreign country (in a two-country world) must be greater than one. This condition is based upon the highly questionable assumption that the elasticities of supply are both infinitely elastic and the further assumption that the balance of trade is initially in equilibrium.[11] Extensions have been produced which allow for an initial deficit and result in an increase in the critical value of the sum of elasticities of demand.[12]

A number of other underlying features of this analysis may be mentioned. Firstly, there is the implication that a favourable effect of a devaluation requires that export supplies be highly elastic requiring the existence of unemployed resources. Because of this, the elasticities approach has attracted the criticism that it is not suitable for conditions of full-employment.[13] This criticism may have been pertinent in the buoyant conditions affecting developed countries in the early post-war era but appears

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[9]See Robinson (1937), Part II.

[10]Johnson (1976), p. 149.

[11]The latter assumption is typical of a lot of balance-of-payments analysis.

[12]See, for example, A. C. Harberger, "Currency Depreciation, Income and the Balance of Trade," Journal of Political Economy, (1950). Reprinted in AEA Readings (1968).

[13]See Alexander (1952), Johnson (1961).

uninteresting in the conditions at present prevailing in underdeveloped countries.

Secondly, although it is recognized that changes in the balance of trade may affect income and employment which in turn may have further repercussions on the balance of trade, the analysis has typically tended to under-emphasize or abstract from these repercussions.[14] This does not mean that the awareness of income repercussions was lacking but they were just not considered relevant enough to be fully incorporated into the analysis. For example, Robinson states:

> "The final change in the balance of trade in either direction will be smaller, the greater are the change in demand for imports and the change in supply of exports brought about by the changes in home activity and expenditure which are due to the initial change in the balance of trade"[15]

Thirdly, in stressing the changes in relative prices of exports and imports there has been neglect of non-traded goods. It is not obvious that a devaluation should alter the relative prices of imports and exports or the direction of any change. Dornbusch has demonstrated that "there is no presumption whatsoever about the direction in which a devaluation ... will change the terms of trade."[16] Recent analyses have adopted the approach of assuming that the terms of trade are exogenous under the small-country assumption and have focussed on the changes in relative prices of tradable and non-

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[14]See Robinson (1949), p. 88.

[15]Ibid., p. 93.

[16]Dornbusch (1975), p. 867.

tradable goods.[17]

A final criticism of the elasticities approach is that it is partial, not taking account of all the complexities ("total elasticities") of a system adjusting as a whole to a new equilibrium after a devaluation[18]. The fact that it is partial should not detract from its validity and usefulness. The elasticities approach, although partial, is still very relevant in the context of a world trade environment characterized by many departures from free trade.

In spite of the criticisms that have been levelled against the elasticities approach, it is likely to be an enduring feature of balance of payments analysis. Machlup states: "The study of the elasticities of supply and demand is, thus, the core of the theory of foreign exchange rates."[19] More recently Dornbusch has said: "these shortcomings not withstanding, the model continues to enjoy considerable popularity in policy discussions and interpretations of current events,... The BRM[20] model is likely to remain the preferred tool in the analysis of trade balance issues".[21] In another context he points

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[17]Anne O. Krueger "The Role of Home Goods and Money in Exchange Rate Adjustment" in Willy Sellekaerts ed., International Trade and Finance (London: Macmillan, 1974); Dornbusch "Devaluation, Money and Non-traded Goods" American Economic Review (1973); Cooper (1971); Guitian (1976); W. Max Corden, Inflation, Exchange Rates and the World Economy: Lectures on International Monetary Economics, 2nd edition (Chicago: University of Chicago Press, 1983).

[18]See Alexander (1968).

[19]Fritz Machlup, "The Theory of Foreign Exchanges" in American Economic Association, Readings in The Theory of International Trade, Ellis and Metzler, eds. (1949), p. 111.

[20]BRM stands for Bickerdike, Robinson and Metzler.

[21]Dornbusch (1975). Quoted in Krueger, Exchange-Rate Determination (Cambridge: Cambridge University Press, 1983), p.

out : "Relative prices and price elasticities ... do play a critical role even in an otherwise quite monetarist model."[22]

2.2.2 The Absorption Approach

The absorption approach, with which we associate the name of Alexander, focuses on income and expenditure activities in the determination of trade balance changes. Essentially Keynesian in assumptions, it attempts to incorporate the income and expenditure repercussions of trade balance measures using the Keynesian multiplier apparatus. Starting with the familiar national income identity:

$$Y = C + I + G + (X - M)$$

where Y = total output or income

C = consumption expenditure

I = investment

G = government

and $X - M = B$ = the balance of trade,

it is possible to derive $B = Y - A$ (or $b = y - a$ in terms of changes) where $A = C + I + G$ is total domestic expenditure or absorption. This analysis links the balance of trade $(X - M)$ to foreign savings.

In another version, which Johnson (1968) refers to as a "payments approach", the balance of trade is viewed as the difference between total receipts (R) of residents and total payments (P) by residents:

36.

[22]Dornbusch (1980), p. 136.

$$B = R - P.$$

It is evident that the balance of trade will be improved to the extent that the difference between Y and A is increased. It is argued that under the assumptions of the existence of idle resources the devaluation will cause an expansion in Y. The mechanism by which this comes about relies initially on changes in relative prices between tradables and non-tradables. After that, the familiar foreign trade multiplier process will act to expand income.[23] Absorption on the other hand is affected in two ways: 1) as an income-induced response, 2) directly as a response to the assumed increase in the general price level.

The direct effect on absorption will be more noticeable as prices rise domestically, for example, under conditions of full-employment. Alexander introduces the cash balance effect as one of the mechanisms by which this operates. That is, the reduction in the real value of cash holdings as a result of a devaluation causes the community to hoard to re-establish the real value of their holdings. Accordingly, there is a reduction in spending. This mechanism is more typical of monetarist analyses.

Under full employment conditions it is clear that real output changes, y, cannot occur and therefore direct disabsorption becomes more important. In these circumstances a devaluation has to be accompanied by some 'expenditure-reducing' policy such as monetary or fiscal restraint. Another way to look at increases in Y being caused by a devaluation depends on money wage increases lagging behind increases in the prices of traded goods in domestic currency terms. This makes the production of traded goods more profitable and may lead to an overall expansion in

[23]See, for example, Johnson (1968).

output.

Johnson has introduced the convenient terms 'expenditure-switching' and 'expenditure-reducing' to describe the action of balance-of-trade measures on expenditure behaviour.[24] An expenditure-switching measure is one that may cause domestic as well as foreign demand to be redirected towards domestic production. An expenditure-reducing policy is one which results in a reduction in absorption. A devaluation has the property that it is supposed to achieve both effects simultaneously due to the change in relative prices in domestic currency terms. Typically however, the absorption effect of a devaluation may have to be supplemented by some other measure to achieve internal and external balance.[25]

The absorption approach is advanced as suitable to full-employment conditions because it makes explicit the need for expenditure-switching policies to be accompanied by expenditure-reducing policies to allow for the expansion in the production of exportables and import-substitutes. The question of rigidities arises as one considers whether the resources released from one sector can be applied readily in the expansion of other areas of production.[26]

A controversy erupted between the supporters of the elasticities and absorption approaches and attempts were made to settle the matter by a synthesis which treated elasticities as a first stage which could be superimposed on the income and expenditure

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[24]See ibid.

[25]See Corden (1983).

[26]Alexander (1968) p. 372.

analysis.[27] However, Tsiang has demonstrated the inadequacy of this procedure indicating the critical absence of considerations of money effects.[28]

2.2.3 The Monetary Approach

The modern origins of the monetary approach to the balance of payments are associated with the works of Polak, Fleming and Mundell.[29] Polak's analysis in particular arose from the concern that although payment problems have an essential monetary dimension, an adequate theoretical basis and analytical apparatus for "integrating monetary and credit factors in the explanation of income and payments developments"[30] seemed lacking. Fleming and Mundell approached the subject by investigating the effects of monetary and fiscal policies in the context of an open economy incorporating particularly the role of monetary repercussions. What emerges from this analysis is a taxonomy of outcomes on the balance of payments and income given different exchange rate regimes (fixed or flexible) and macro-economic policies (fiscal or monetary).

The main findings are that a monetary expansion has a strong positive effect with

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[27]See Sidney S. Alexander, "Efects of a Devaluation: A Simplified Synthesis of Elasticities and Absorption Approaches" American Economic Review (1959).

[28]See S. C. Tsiang, "The Role of Money in Trade-Balance Stability: Synthesis of the Elasticities and Absorption Approaches," American Economic Review (1961). Reprinted in AEA Readings (1968).

[29]See Polak (1957), Fleming (1962) and Mundell (1963). Frenkel and Johnson (1976) have however claimed a long line of classical antecedents to this approach.

[30]Polak (1977), p. 15.

respect to income and the reserves under flexible exchange rates but has no effect on income and causes a deterioration in reserves under a fixed exchange rate regime. Conversely, fiscal policy is favourable under a fixed exchange rate but is futile under a flexible exchange rate regime. In addition, Mundell presents an analysis of the appropriate policy mix for stability under fixed exchange rates and concludes that monetary policy should be aimed at achieving external balance and internal balance should be dealt with via fiscal policy.[31]

The monetary approach to the balance of payments is based on the premise that the balance of payments is "essentially a monetary phenomenon".[32] A simple illustration may be used to indicate the monetary aspect. In an economy which is not growing and with a constant money supply,

$$Mb = R + C,$$

where

Mb = the monetary base,

R = international reserves, and

C = Domestic credit.

It follows from the relationship above that any change in C would have to be offset by a change in R to keep Mb constant. An expansion of domestic credit (C) would therefore be associated with an equal drop in international reserves (- R) reflecting the occurrence of a deficit.

It is evident that as Mussa points out, this proposition flows from the fact that the

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[31]See Mundell (1962).

[32]Frenkel and Johnson, (1976), p. 21.

balance of payments refers specifically to the Official Settlements Balance, that is, to the 'money account'.[33] This means that the monetary approach essentially ignores considerations with respect to specific accounts of the balance of payments. Instead, it "concentrates on the official settlements accounts and lumps everything else into a single category, 'items above the line'".[34]

The definition of the balance of payments advanced above gives the impression that both the current and capital accounts are analysed in this approach. Although this is within the capabilities of the approach, such an impression would in general be misleading. A large number of balance-of-payments analyses assume away the capital account altogether or have it more or less in the background while they concentrate on the current account. Even though, in principle, the monetary approach should be applied to the entire balance of payments, applications tend to define external balance in terms of the current account or the merchandise account.

Mussa also emphasizes that though the balance of payments has an essential monetary dimension, it is "not exclusively" a monetary phenomenon. To a greater or lesser extent depending on the circumstances, real variables such as income and the rate of interest may influence the behaviour of the balance of payments. The rationale for the monetary approach rests therefore on the essential relevance of money. It can be argued however that some applications, especially those that depend on a monetarist

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[33]See Michael Mussa, "The Monetary Approach to the Balance of Payments," In Robert E. Baldwin and J. David Richardson, eds., International Trade and Finance, 2nd edition, (Boston: Little, Brown, 1981), p. 368. This point is also made by Frenkel and Johnson (1976), p. 21.

[34]Ibid., p. 369.

transmission mechanism, run the risk of over-simplifying the role of non-monetary factors.

The recognition of the monetary dimension of the balance of payments does not in itself represent a theoretical proposition. As the illustration outlined above indicates, the monetary aspect flows purely from balance sheet relations. To extend the analytical usefulness of the monetary approach it is necessary to integrate it with a theoretical framework which is organised around the role of money. Consequently, the money demand function has become the central theoretical relationship around which the theory has been organized. This function in turn rests critically on the proposition that the demand for money is a stable function of a small number of variables. As Mussa points out:

> If money demand were passive, ... the monetary approach would have no predictive power. The cumulative balance of payments surplus would be whatever was dictated by exclusively non-monetary considerations...[35]

The centrality of the role of money tends to bias the analysis in a monetarist direction. It should be noted however that the analyses of Mundell, Fleming and others were based on explicitly Keynesian assumptions, e.g., fixed money wage rates, unemployed resources, savings and taxes as a function of income, investment as a function of the interest rate, and money demand as a function of income and the

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[35]Ibid., p. 370.

interest rate.[36] The more monetarist versions emphasize changes in the money supply as the driving force behind income changes through the hoarding or dishoarding of excess cash balances.

Polak illustrates the argument that the monetary approach is conformable with either strong monetarist assumptions or more Keynesian assumptions about spending. He proposes two alternative specifications of the income-spending relationship as follows:

1) $MO_t = Y_t - Y_{t-1} = Y_t$, and

2) $Y_t - cY_{t-1} - gr_t = Y_t - Y_{t-1} + hr_t$,

where

Y = nominal national income

= change in

r = the rate of interest

MO = money supply

c = marginal propensity to spend

g = the coefficient linking income and the interest rate

h = the coefficent linking money and the interest rate.[37]

Equation (1) states that changes in the money supply are equal to changes in money income, implying the assumption that the velocity of circulation of money is constant. This is an extreme quantity-theory assumption. Equation (2) involves more typically Keynesian spending relations, incorporating a marginal propensity to spend that

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[36]See Mundell (1963), and Fleming (1962).

[37]Polak (1977), pp. 32-33.

is less than one, and relationships between income and money on the one hand, and the rate of interest on the other.

One consequence of the relations in equation (2) is that the velocity of money is no longer constant. However, it is possible to draw conclusions about money and income if a stable money-demand function can be assumed. The latter assumption indicates the essentially monetarist basis of the approach. There is therefore some scope in terms of theoretical framework, provided that there is an explicit and stable role for monetary variables.

Two typical aspects of the apparatus of the monetary approach to the balance of payments are the real balance effect and the price specie-flow mechanism. Real balances refer to the real value of money holdings i.e. the ratio of nominal money supply to the price level. A disturbance in this ratio presumably triggers off 'hoarding' or 'dishoarding' activities to restore equilibrium between real money demand and money supply, given the assumption of a stable money demand function. It is assumed that all money that is not being hoarded (during an adjustment process) is spent. Consequently the adjustment to changes in real balances provides the link between monetary events and income and expenditure changes.

The price specie-flow mechanism is the classical idea, often associated with David Hume, linking the state of the balance of payments with the domestic price level. A balance of payments surplus, for example, means that the country is accumulating reserves which in turn cause the money supply to expand in the absence of intervention by the monetary authorities. The increase in the money supply causes prices to rise compromising the competitiveness which was presumably the basis for the original

surplus. Eventually external balance is restored and internal balance is maintained provided flexibility in prices and wages prevails.

The price specie-flow mechanism operating in the way outlined implies the existence of an automatic self-correcting mechanism for the balance of payments. This of course depends on assumptions of flexibility in prices and wages. In the monetary approach, it is emphasized that among the factors that can frustrate this automatic mechanism is the action of the monetary authorities with respect to domestic credit creation. The monetary approach therefore focuses attention on the operations of monetary policy with respect to internal and external balance.

The monetarist bias of the monetary approach is revealed in the apparatus which is the basis for its analysis. For example, a major assumption encountered is that income-velocity of money is constant. Polak advances this assumption as "a worthwhile step in a monetary theory of income formation"[38] on the basis of "crude empirical observations" of 44 countries from 1950 to 1954.[39]

The assumption of a constant income velocity is explicitly made by Mundell also when he states that, "Since interest rates are unaltered, this means that income must rise in proportion to the increase in the money supply, the factor of proportionality being the given ratio of income and money (income velocity)."[40] An assumption that is

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[38]Polak (1977), p. 22.

[39]Ibid., see Chart 1.

[40]Mundell (1963), p. 477. It is also stated: "Before the flow equilibrium is established the demand for money will increase, at a constant interest rate, in proportion to the increase in income." Ibid., p. 479. Emphasis added in both quotations.

linked to the one above is that the interest rate is constant. The connection of the two things is made evident in Polak's formal system and discussed above.[41] In Mundell's system, the constancy of the interest rate is assured by the assumption of perfect capital mobility, which means that the rate of interest remains fixed by the international rate.

Another interrelated assumption is that all money created is spent and therefore enters into the income stream. This is made explicit by Polak who says: "Thus the assumption of full spending of credit creation is a necessary corollary of the assumption of constancy of the velocity of circulation"[42] and again, "the assumption made earlier that all credit expansion is spent is a necessary condition."[43] This assumption is significant in reflecting the monetarist character of much of this theorizing. The Keynesian alternative would be for changes in the money supply to affect spending by changing the interest rate and thus the level of investment. The outcome would operate through the multiplier process. The analytical framework is more complex than that of the monetarist approach but is probably more complete in its treatment.

At the back of all this is a major point of appeal of the monetarist apparatus, i.e., its relative simplicity and convenience. In place of the complexity of propensities and leakages of the Keynesian system, it employs a simplified system with money supply linked directly to money income and expenditure. Polak acknowledges this aspect noting that "There is, in this respect, a real and perhaps unexpected gain in

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[41]See Polak (1977), pp. 32-33.

[42]Ibid., p. 41.

[43]Ibid., p. 40. Emphasis in the original.

simplicity."[44] The problem with this is that many important details of a non-monetary nature are being glossed over or ignored and the apparent elegance of formulations may be misleading.

A central distinguishing feature of the monetarist approach is the assumption of full employment. Indeed, it is observed that the 'Chicago world' is a world of fixed output and variable prices.[45] The assumption of full employment is defended by Frenkel and Johnson on the grounds that

> in the context of a growing world economy in the long-run, the assumption of wage rigidity and variable employment becomes uninteresting; either employment expands into the full-employment range and quantity adjustments yield to money price and wage adjustments or it contracts and people either starve to death and go back to full-employment numbers, or ...[46]

A final assumption to mention is that "a country's price level is pegged to the world price level".[47] This seems a reasonable assumption in line with the small-country assumption. However, this assumption is itself subject to qualifications.[48]

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[44]Ibid., p. 22.

[45]See John McCallum and David Vines, "Cambridge and Chicago on the Balance of Payments," Economic Journal (1981).

[46]Frenkel and Johnson (1976), p. 25.

[47]Johnson (1976), p. 153.

[48]Peter Isard, "How Far Can We Push the 'Law of One Price'?" American Economic Review (1977).

Serious questions are raised about some of the assumptions that are at the core of the monetarist analysis. In the context of contemporary stabilization efforts in LDCs it is the assumption of full-employment which is most questionable. As will be observed in chapter six, unemployment in some LDCs is not only an existing problem of considerable magnitude. It is also a rather intractable problem.

The assumptions of high capital mobility, a constant income velocity and a constant interest rate, which are somewhat linked also raise doubts. For one thing, the models abstract from the existence of speculative international capital flows, which are a significant factor in the experiences of many LDCs.[49] A look at the criticisms and reservations with respect to some of these assumptions will be undertaken further on.

2.3 FUNDAMENTAL DISEQUILIBRIUM

So far we have focused on devaluation as an instrument for achieving macroeconomic balance internally and externally. There is also a set of considerations which, while not completely divorced from those discussed so far, focus more centrally on the level of the exchange rate that might be considered an equilibrium exchange rate.

The question of the relevant exchange-rate measure to use arises given the existence of at least three definitions: the market equilibrium exchange rate (MEER), the current equilibrium exchange rate (CEER) and the fundamental equilibrium

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[49]This is made explicit in Fleming (1962). Fleming devotes a section to conditions that would violate this assumption.

exchange rate (FEER). The MEER is the easiest to identify being defined as "the exchange rate that balances demand and supply in the absence of official intervention".[50] It is basically a nominal exchange rate that is associated with external balance The CEER is defined as "the rate that would obtain if markets had full information of all relevant facts and reacted rationally to that information".[51] This concept suggests the rate, in nominal terms, that would clear the external market in the context of considerations of the path of interest rates, the state of the business cycle and risk aversion in an essentially rational-expectations analysis.

The one most relevant to this study however is the FEER for the practical reason that it is the one most associated with devaluation arguments under the Bretton Woods arrangements. Fundamental equilibrium involves a measure of the 'real' exchange rate which takes account of movements in a country's price level relative to that of its trading partners. As such it is what is kept in mind when people talk of an exchange rate being 'over-valued' or 'under-valued'. Underlying this notion of exchange rate equilibrium is the purchasing power parity theory. It is suggested that the concept also takes account of "underlying capital flows"[52] in determining the nominal exchange rate that is sustainable.

At this point it is worthwhile to digress briefly to outline the purchasing-power-parity (PPP) theory. One version of the theory referred to as the "strict relative PPP

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[50]John Williamson, The Exchange Rate System, (Washington D.C.: MIT Press for Institute for International Economics, 1983), p. 13.

[51]Ibid., p. 16.

[52]Ibid., p. 14.

hypothesis" states that "the exchange rate between the currencies of any pair of countries should be a constant multiple of the ratio of general price indexes of the two countries"[53] i.e. the exchange rate should be a constant proportion of the ratio of general price indexes between trading partners. The maintenance of purchasing power parity is attributed to a number of factors among which one can mention (a) "cost-of-production indexes"[54] operating through competition and the international mobility of industry and (b) "commodity arbitrage through international trade".[55]

Several aspects of PPP theory have been analysed and subjected to empirical testing. Balassa has pointed out the relevance of productivity considerations, for example, in determining parities.[56] Dornbusch has argued that the presence of non-traded goods is also a factor making for "divergent behaviour of price levels".[57] In addition, there is a connection between the PPP theory and the "law of one price" which will be discussed in section 2.4.

The basic idea, therefore, is that if prices are out of line with those of trading partners, this implies that the exchange rate is also out of line, i.e., over-valued or under-valued. Such a disequilibrium would precipitate forces for adjustments in exchange rates. Special problems arise however in the case of fixed exchange-rate

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[53]Peter Isard, Exchange-Rate Determination: A Survey, Princeton Studies in International Finance, no.42, (Princeton, New Jersey: Princeton University Press, 1978), p. 3.

[54]Ibid., p. 4.

[55]Ibid.,p. 4.

[56]See Bela Balassa, "The Purchasing Power Parity Doctrine: A Reappraisal," Journal of Political Economy (1964).

[57]Dornbusch (1980), p. 151.

regimes as attempts must be made to identify the precise level of exchange-rate adjustment required. In practical terms, this has to be based upon a presumed equilibrium some time in the past when it was felt that the exchange rate truly reflected purchasing power parity. In addition there are complications such as variations in the speed of adjustments in prices and assets[58] which may cause some 'overshooting' in devaluation exercises.

All these considerations serve to underline the fact that,

> there is no simple objective test of whether or not a rate is in fundamental equilibrium. At best, estimates of FEER require judgements that in practice contain subjective elements regarding cyclical adjustment, the underlying capital flow and trade elasticities. At worst, skeptics deny any hope of identifying the fundamental equilibrium rate.[59]

This view reflects the spirit of one expressed nearly fifty years earlier by Robinson, who said:

> It is now obvious that there is no one rate of exchange which is the equilibrium rate corresponding to a given state of world demands and techniques. In any given situation there is an equilibrium rate corresponding

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[58]See Rudiger Dornbusch, "Expectations and Exchange Rate Dynamics," Journal of Political Economy (1976).

[59]Williamson (1983), p. 16.

> to each rate of interest and the level of effective demand, and any rate of exchange within very wide limits can be turned into an equilibrium rate by altering the rate of interest appropriately ... The notion of the equilibrium exchange rate is a chimera. The rate of exchange, the rate of interest, the level of effective demand and the level of money wages react upon each other like the balls in Marshall's bowl, and no one is determined unless all the rest are given.[60]

2.4 TRADED GOODS AND THE LAW OF ONE PRICE

In recent times it has become the accepted practice to conduct balance-of-trade analysis in terms of traded goods and non-traded goods. The implication for traded goods is that there is a fixed price ratio between exportables and importables and indeed between any two products included in these categories.[61] The constancy of this relationship is argued on the basis that the individual country is usually small relative to the rest of the world and faces given prices in international markets.[62] In addition the activities of arbitrage and international competition ensure that the prices of traded goods do not diverge from international prices except in a fixed way determined by transportation costs, tariffs, etc. Non-traded goods on the other hand, are home goods

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[60]Robinson (1949), p. 103. Emphasis in the original text.

[61]See Guitian (1976), Dornbusch (1980) and Corden (1983) for discussions of how traded goods are defined.

[62]Dornbusch refers to this as the "dependent economy model". See idem (1980), chapter 6.

sheltered from the international market by tariff and non-tariff protection, transportation costs or other factors. The prices of these goods are determined by domestic conditions of supply and demand and are completely independent of international prices. It is usually assumed that the bulk of non-traded goods are services which must be produced and consumed in the same place.

The assumption that the price ratio between exportables and importables is fixed allows us to treat all tradables, including both types of goods, as a single composite good. Similarly, non-tradables are treated as another composite. Consequently, in analyzing the effects of devaluation, attention is paid to changes in the relative prices of the two composites of traded and non-traded goods.

The validity of this procedure has been called into question by an empircial study undertaken by Isard. Isard found that "in reality, the law of one price is flagrantly and systematically violated by empirical data".[63] Furthermore it was observed that "exchange rate changes substantially alter the relative dollar-equivalent prices of the most narrowly defined domestic and foreign manufactured goods for which prices can readily be matched". These, relative price variations could not be dismissed as transitory because in some cases they were found to persist "for at least several years".[64]

Isard's findings are not surprising in the imperfect market conditions prevailing internationally where there is enough product differentiation, at least in the perceptions of consumers, to make for variations in relative prices among categories of traded

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[63]Isard (1977), p. 942.

[64]Ibid., p. 942.

goods. Imperfections extend to the markets also in the sense of bottlenecks affecting expansions in supply.

In spite of Isard's evidence, it is arguable that the law of one price holds validity in the context of small countries such as those of the Caribbean region. Firstly, Isard's evidence is based on investigation of the USA, Japan, Germany and Canada. These countries being large, it is not surprising that their domestic prices may govern the determination of the prices of their tradables to a considerable extent. It is arguable that this would not be the case for small countries such as those of the Caribbean region. Secondly, as Isard observes, empirical evidence supports the law of one price when applied to primary products even in the case of large countries. This is probably attributable to the fact that primary products tend to be fairly homogeneous, irrespective of their place of origin. The evidence against the law of one price is based on investigations of manufactured goods where the scope for product differentiation is greater. Primary products constitute a substantial portion of the output of some small countries providing some basis for the validity of the law of one price.

2.5 THE EFFECTS OF DEVALUATION

Having sketched the general features of the dominant balance of trade theories, we now narrow our focus to consider the prescriptions of the different conventional approaches specifically with respect to devaluation.

A useful starting point is to determine what questions and problems devaluation is intended to address. For this purpose, attention is drawn to four configurations of

internal and external imbalance, which have been identified in the literature and whose origins are usually traced to James Meade.[65] The four possible combinations are (i) unemployment/surplus, (ii)overemployment/surplus, (iii) overemployment/deficit, and (iv) unemployment/deficit.

Two of these combinations, (i) and (iii) above are described as 'compatible' because, in each case, it would take one consistent policy to eliminate both imbalances.[66] For example, in a situation of unemployment/surplus, a policy of expansion would be required to attain both internal and external balance. The other two combinations present 'policy dilemmas' in that the elimination of the imbalances require conflicting policies. For example, given a situation of unemployment/deficit, the achievement of internal balance would require an expansionary policy while the elimination of the deficit would call for a contraction in demand

For our purposes the really relevant policy dilemma is that presented in (iv). The situation of overemployment/surplus would be an embarrassment of riches as far as LDCs are concerned and is not known to be an existing problem among them in the 1970s or 1980s. Our focus will therefore be turned on the combined problems of unemployment/deficit It is rather strange that the models intended to address this situation typically operate on the assumptions of initial balance both internally and externally.

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[65]See Dornbusch, (1980) Ch. 4, Krueger (1983), Ch. 3, James Meade, The Balance of Payments (Oxford: Oxford University Press, 1951).

[66]See Krueger (1983).

2.5.1 Non-Monetary Models

The effects of a devaluation on output and the trade balance can firstly be explored via an elasticities model.[67] Important assumptions are that "world prices of importables are given and that the price of domestic goods is given".[68] These assumptions ensure a "one-to-one correspondence between exchange rate depreciation and terms of trade worsening".[69] It is also assumed that there is equilibrium in the trade account at the outset. The significance of this assumption will be made clear when we consider contractionary models.

In the context of these assumptions, the Marshall-Lerner condition emerges as the critical factor determining the outcome. This is the condition that the absolute sum of elasticities of demand of the two trading countries (in a simple two-country model) must be greater than unity. Once this condition holds, it is found that a devaluation is favourable both to output and the trade balance. The output increase induces an increase in imports which dampens but does not offset the improvement in the trade balance. A critical assumption is that domestic prices are unaffected by the devaluation measure so that the relative price change is not reduced.

The move from elasticities models to absorption models involves largely the explicit recognition of some assumptions that have tended to be kept in the background

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[67]See Dornbusch (1980), Ch. 4.

[68]Ibid., p. 62.

[69]Ibid., p. 62.

in the former.[70] These assumptions allow account to be taken of the income and expenditure repercussions of devaluation.

It is first of all evident that there must be some good or market in the background to the elasticities analysis "or else the model violates the budget constraint" [71] One interpretation is to assume that money is that additional good but the more accepted approach is to assume a sector of non-traded goods.

Secondly, the behavioural equations of the original formulations were based upon the absolute price levels of imports and exports. This is also incongruous in that the real effects of a trade model require a change in a relative price. For this reason it is necessary to assume that some nominal quantity is being held constant. Some nominal variables that could be held constant include money income, money expenditure, wages, the price level or prices of a particular class of commodities [72] Jones and Corden, for example, choose to hold the money wage rate constant [73]

From among the array of variables to hold constant, Dornbusch chooses the nominal price of home goods. This is kept constant by the deliberate action of fiscal policy. It is shown by Dornsbuch to be of material importance which nominal variable is being held constant.

Accordingly, the set of assumptions that are appended to the usual model are:

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[70]See Dornbusch (1980).

[71]Dornbusch (1975), p. 860.

[72]Ibid., p. 861.

[73]See Ronald W. Jones and W. Max Corden, "Devaluation, Non-Flexible Prices, and the Trade Balance for a Small Country", Canadian Journal of Economics, (1976).

(i) a nominal price of home goods that is maintained constant in each country by fiscal policy,

(ii) a unit marginal propensity to spend on non-traded goods,

(iii) zero cross price effects (substitution effects) between traded goods.[74]

On the basis of this model, Dornbusch finds that "a devaluation unambiguously improves the trade balance of the devaluing country".[75] The question of the output effect is averted by the assumption of a fiscal policy that maintains internal equilibrium. It is pointed out that "it is essential to the success of a devaluation that there be an internal balance policy that validates the relative price changes by a reduction in absorption at home and an increase in absorption abroad".[76]

This last point underlines the importance of the assumption of continuous internal balance. The initial impact of the devaluation is to shift demand towards non-tradables which may cause their prices to rise. This suggests the need for a deliberate policy to tax income and thereby maintain the prices of non-tradables constant. Otherwise the rise in the prices of the latter would vitiate the effects of the devaluation. One conclusion that can be drawn is that, unfortunately, this analysis is not directly applicable to a situation where high unemployment is a major feature.

One point worth stressing is that a decline in the standard of living, in the form of a reduction in real wages, is an inevitable cost of improvement as a result of a devaluation. It is argued that the policy is necessitated by downward rigidity in money

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[74]Ibid., pp. 861-2.

[75]ibid., p. 865.

[76]Ibid., p. 866.

wages, otherwise adjustment to imbalance would be spontaneous. On the other hand, 'real-wage resistance', i.e., downward inflexibility of real wages would frustrate a devaluation measure. It is questionable if 'real-wage resistance' can be a long-run feature in the presence of rising unemployment.

A possible solution to the problem of real-wage resistance would be to subsidize labour. This would drive a wedge between the wage received by labour and the cost of labour to firms. However, this solution has the drawback of "substituting a budgetary problem for a real wage problem".[77]

With respect to the more typical absorption model, referred to as the 'dependent economy model', we may consider the conclusions of two interpretations.[78] These models are based on the distinction between tradable goods on the one hand, and non-tradable goods on the other. Tradables are defined as goods which "have their domestic prices determined broadly by the world market,..." Non-tradables are goods and, especially services, "the prices of which are determined by supply and demand domestically".[79] In order to treat tradables as a composite good, it is necessary to take the relative prices of all categories in this group as given.

The process by which devaluation affects the economy in these models depends on the changes in the price of tradables relative to those of non-tradables. It is assumed that a devaluation raises the relative price of tradables. This attracts productive resources to that category of goods while reducing the demand for them. Non-

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[77]Ibid., p. 74.

[78]See Ibid., Ch. 6; Corden (1983).

[79]Corden (1983), p. 8.

tradables, meanwhile, are subject to a reduction in supply and an increase in demand. The combination of these forces acts to reduce the excess demand for tradables which is the manifestation of external imbalance.

The assumptions about the ways in which external imbalance is manifested differ between these models. It is worth reiterating that Dornbusch is making the extreme neoclassical assumption of "full and instantaneous wage and price flexibility, thus ensuring full employment".[80] It is also assumed that initially, there is external balance. These assumptions appear ironic because they dispel the very motivation for a policy intervention such as a devaluation.

Dornbusch observes that "trade balance problems are either a reflection of imbalance between income and spending (Y-E) or of a disequilibrium in the home goods market".[81] He proceeds to assume that income is identically equal to expenditure and therefore external imbalance is represented by disequilibrium in the home-goods market. Corden takes the alternative route of assuming equilibrium in the market for home goods. An external imbalance is therefore reflected by an excess demand for tradables. Bringing tradables and non-tradables together, it is evident that external imbalance would be reflected by expenditure (or absorption) exceeding income. It is worth noting that Corden conducts his analysis in terms of the current account, not just the trade account.

The differing assumptions underlying these models provide the basis for conclusions of varying interest. The Dornbusch model considers a relative price change

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[80]Ibid., p. 104 (emphasis in the original).

[81]Dornbusch (1980), p. 102.

(such as that caused by a devaluation) between tradables and non-tradables in response to external imbalance. It is to be noted that the external imbalance is reflected in an excess supply of home goods By assumption, there is never any internal imbalance, a rather extreme simplification. It is found that the relative price change has ambiguous results with respect to the balance of trade. Measured in terms of home goods, total expenditure and income rise, while they fall in terms of traded goods. Given the fact that the domestic price level would be an index of the prices of these two categories of goods, it is evident that the outcome in terms of output is ambiguous. In other words, it is indicated that starting from a position of internal balance and external deficit, external balance can be achieved by a devaluation but with ambiguous results showing up with respect to output.

Corden's analysis also provides some interesting conclusions. It is to be recalled that the external imbalance takes the form of an excess demand for tradables. An apparently reasonable solution would be to use monetary and fiscal policy to restrain this demand. However, that action would also affect non-tradables Assuming prices to be sticky downwards, unemployment would result and external balance would be achieved at the expense of internal balance.

To address the problem, Corden invokes the well-known doctrine attributed to Tinbergen, that the number of instruments must be equal the number of objectives. In this case, monetary or fiscal restraint is needed to reduce absorption and a 'switching' policy such as devaluation is required to switch demand from tradables to non-tradables and thereby obviate the precipitation of an internal imbalance In practice, it is to be

noted that a devaluation also has disabsorption effects. This complicates the question of determining what are the levels of both devaluation and monetary restraint required.

To some extent, the problem addressed by Corden flows from his assumptions. Since he starts from a position of internal balance,[82] it is necessary for expenditure switching to be accompanied by disabsorption policies. It seems reasonable to argue that in the more realistic circumstances where the external deficit is accompanied by substantial unemployment, a devaluation need not be backed up by monetary and fiscal restraint. The devaluation does have a certain amount of disabsorption effect and there is presumably no short-run difficulty in obtaining the additional resources required by expenditure switching. This is an important practical issue because, as we shall see in chapter three, a criticism of IMF-type stabilization programs is the tendency to insist on monetary restraint along with devaluation.

2.5.2 The Monetary Model

The effects of a devaluation are analysed through the monetary approach in a large number of models.[83] These models typically assume full employment, flexible prices and wages, and money as the only asset. The assumption of continuous full-employment equilibrium detracts somewhat from the interest of the model because the question of contractionary or expansionary effects on output never arises. Output is by

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[82] I.e., full employment equilibrium where "increased output of some industries can only be brought about by reducing the resources available to some other industries", requiring "some change in relative prices". Corden (1983), p. 8.

[83] See for example: Dornbusch (1973, 1980); Corden (1983); Guitian (1976); Polak (1977).

assumption constant.[84] We are therefore interested only in balance-of-payments effects. The assumption of price flexibility also trivializes the analysis somewhat because in these circumstances there is not much reason to undertake an exchange-rate change in preference to monetary-policy action.

In analysing the effects of a devaluation, the monetary approach emphasizes the effect of money supply changes of spending via the real balance effect. The balance of payments is determined by the difference between total income and total spending, all in nominal terms When this relationship is positive, the balance of payments is in surplus. Relative prices also play a role in determining the composition of production and spending between tradables and non-tradables This too has some relevance for the balance of payments.

Starting from initial external balance (as generally assumed by these models), a devaluation will cause a rise in the domestic prices of traded goods. This means that the domestic price level rises unambiguously since the prices of non-traded goods either rise or remain the same. The rise in the price level reduces the real value of money holdings and sets off a process of hoarding Accordingly spending is reduced and so income is now greater than spending. Accordingly the balance of payments goes into surplus proportionate to the rate of hoarding.

The story does not end here however. Assuming that there is no sterilization by the monetary authorities, the surplus means that the domestic money supply is increasing. This is where the price specie-flow mechanism comes into play. Increased

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[84]Guitian (1976) manages to assume full-employment and, at the same time, the possibility that productive services could vary in response to factor prices.

money supply leads to increased spending and rising prices. Eventually balance between income and spending is restored and the balance of payments is once again in equilibrium.

Two observations emanate from this analysis Firstly, the effect of a devaluation on the balance of payments is seen to be transitory in this framework. Secondly, there is one significant result of the whole process, namely that foreign exchange reserves are increased. Indeed, Guitian makes the point that the question of whether or not the economy is in a general equilibrium depends on how satisfied the authorities are about their new level of reserve holdings.[85] Another change to note is that, at the end of the process, the general price level is higher and this may have side-effects with respect to income distribution, for example.

The role of the monetary authorities is also brought into focus. We have assumed the monetary authorities did not interfere with the money creation process. It can be shown that if they increased the money supply equiproportionately with the devaluation, there would be no balance of payments effects and the only change would be an increase in the price level. There is the implication that the only way a deficit could be sustained is if there is continuous credit creation in excess of the growth of money demand. This is the underlying thinking which leads practitioners of this approach to attribute balance of payments problems to 'mismanagement' of monetary policy. Another aspect brought out is that a devaluation may be a response to a situation where

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[85]See Guitian (1976), p. 73.

the currency is 'overvalued' because of past price increases. In this way it insulates the international transactions from the consequences of domestic price rises.[86]

A few considerations arise which are borne out by both the absorption and monetary approaches. A devaluation can be seen to have both expenditure-switching and disabsorption effects. In the monetary approach, the switching effects result from relative price changes whilst disabsorption is a consequence of the rise in the general price level. Where monetary restraint has to accompany a devaluation, there is a problem as to how severe this should be and Corden suggests that monetary restraint should be gradual. This matter has some relevance to the issue of 'overkill' to be considered in the next chapter.

Examination of devaluation effects also shows up the inevitable real costs of macroeconomic adjustment. Some of that real cost consists of the reduction in real wages and standards of living which is a necessary condition for devaluation to achieve its targets. As Corden points out, "To make devaluation necessary money-wages have to be inflexible, and to make it effective real wages have to be flexible."[87] What this means is that if money wages and other prices are flexible, adjustment to equilibrium would be automatic or could be achieved by monetary policy. When (as is often the case) money wages are rigid downwards, monetary deflation would result in reduced output and employment as side-effects Devaluation may be called for as it allows money wages to be maintained whilst real wages are reduced.

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[86]Ibid., p. 73. See also Corden (1983).

[87]Corden (1983), p. 32. Emphases in the original.

However if real wages are not flexible (as in the case of some automatic wage indexation against devaluation losses), a devaluation will not improve the trade balance. It is clear that money illusion is an underlying assumption of this analysis as people who would not accept a money wage decline must be willing to accept a real wage reduction. The analysis incorporates the judgement that a cut in real wages is more politically feasible via price increases than cuts in nominal wages Devaluation is seen as useful because it offers a way of raising prices and thereby reducing the real wage, providing nominal wages are restrained. The alternative may be direct deflation, which may be resisted and may also cause unemployment if money-wages are inflexible downwards.

In terms of the efficacy of devaluation, the overall picture emerging from the literature is not very favourable. The results of the analysis rest heavily on the assumptions about the features of the economy and about which nominal variable is held constant. We have seer the ambiguous results suggested by the models of Dornbusch. In addition, we may consider the model of Jones and Corden, which pays explicit attention to the shares of labour and capital in production.[88] On the assumption that fiscal policy is designed to keep nominal wages constant, a devaluation raises the cost of capital. Consequently, goods that are capital-intensive experience an increase in prices relative to labour-intensive goods. If, therefore, tradables are labour-intensive, their relative price falls instead of rising, stimulating an excess demand for them and thereby causing the external deficit to worsen.

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[88]Jones and Corden (1976).

This is only one of the models which indicate the possibility that a devaluation could have unfavourable balance-of-payments effects. Consequently, one senses widespread skepticism even in the mainstream literature with respect to the efficacy of devaluation. Decades ago, Johnson remarked that "historical experience can be adduced in support of the proposition that devaluation is a doubtful remedy"[89] for balance-of-payments disequilibrium. More recently, an IMF official has admitted that whether a devaluation "will raise overall efficiency and production is still an open question".[90]

2.6 CONTRACTIONARY EFFECTS OF A DEVALUATION

Considerable impetus has been given to skeptical views about devaluation by an article written by Krugman and Taylor.[91] This article has investigated conditions under which a devaluation will cause output to decline. It draws heavily on the long-neglected analyses of Hirschman and Diaz-Alejandro.[92] Hirschman demonstrated that the existence of a deficit prior to a devaluation made a contractionary outcome likely. Diaz-Alejandro investigated the income distribution effects of devaluation and showed

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[89]Johnson (1968), p. 386.

[90]Mohsin S. Khan, "Macroeconomic Adjustment in Developing Countries: A Policy Perspective," The World Bank Research Observer, (1987), p. 37.

[91]Paul Krugman and Lance Taylor, "Contractionary Effects of Devaluation," Journal of International Economics (1978).

[92]Hirshcman (1949) and Diaz-Alejandro (1963). These analyses had been relatively neglected by the literature. One analysis which followed them up before that of Krugman and Taylor (1978), however, was that of Cooper (1971).

them to be conducive to contractionary effects. The Krugman-Taylor model has been subjected to criticism by James Hanson[93] for its structuralist assumptions. We shall explore these analyses and criticisms. Attention will also be drawn to other adverse aspects of devaluation in the context of LDCs, discussed by Cooper.[94]

Hirschman observes that most analyses of the effects of devaluation start from a position of initial equilibrium with respect to the trade balance. The Marshall-Lerner condition is relevant only to the case where initial balance is assumed. It is interesting to find that, given initial disequilibrium in the trade accounts, the implications for trade balance differ depending on whether it is specified in domestic currency or foreign currency terms. Given an initial deficit, the sum of demand elasticities is required to be less than unity to cause an improvement in the trade balance in foreign currency terms. In the case of a trade surplus, the demand elasticities are required to be above unity to show an improvement.

Moreover, an improvement in terms of foreign currency, starting from an initial deficit, may be accompanied by a deterioration in terms of domestic currency. One implication of this analysis is that "the greater the disease (i.e. the pre-devaluation relative import surplus), the likelier it is that devaluation will provide at least a partial cure".[95] On the other hand, it is pointed out that the ratio of exports to imports provides an indication of the size of adjustment required, i.e., the same absolute import

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[93]James A. Hanson, "Contractionary Devaluation, Substitution in Production and Consumption and the Role of the Labour Market," Journal of International Economics (1983).

[94]See Cooper (1971).

[95]Ibid., p. 53.

surplus will generally be more difficult to eliminate if it represents one-half than if it represents one-tenth of total imports.[96]

Diaz-Alejandro focusses on the income distributional effects of a devaluation. It is argued that a devaluation increases the price of traded goods in terms of domestic currency by the amount of the devaluation itself. Assuming fixed money wages, this amounts to a redistribution of income in favour of the capitalists in the sector producing tradables. On the usual assumption that capitalists have a lower marginal propensity to consume than workers, this leads to a fall in output. At the same time, it is likely that the balance of trade will improve although it is possible to have a deterioration in this as well.

The analysis of Krugman and Taylor essentially combines those of Hirschman and Diaz-Alejandro outlined above. Their only innovation is to consider the contractionary effects of a redistribution of income from the private sector to the government as a result of ad valorem taxes on exports and imports. It is assumed that the government has a "saving propensity of unity in the short-run"[97] and so this redistribution tends to be contractionary.

With respect to the case of an initial deficit, the impact of the price increases of traded goods is to reduce real income. With respect to the distributional effects, it is shown that "the elasticity of output . with respect to devaluation is proportional to the difference in marginal propensities to consume,..."[98] Assuming workers to have a higher

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[96]Ibid., p. 53.

[97]Krugman and Taylor (1978), p. 446.

[98]Ibid., p. 450.

marginal propensity to consume, this elasticity is found to be negative. Krugman and Taylor also consider the case of an export tax and find a devaluation to be contractionary. This case has particular relevance for agricultural exports which have to be sold to the state at fixed prices entailing a marginal tax rate of one and consequently a strong fiscal drag on output.

Krugman and Taylor take the view that "in the short-run the balance of payments deficit is 'structural',that is, both imports and exports are not very sensitive to price changes for a given level of domestic output."[99] Consequently, the model incorporates some rigidities with respect to production and substitution and this has been the basis for some criticism. It is admitted that given the structural rigidities, the only way to improve the balance of payments is through economic contraction.

Krugman and Taylor do not think that devaluation should be discarded as a tool of stabilization. However, the principal conclusion emerging from their analysis is that since devaluation is contractionary, it should not be accompanied by other policy measures of restraint. This, in their opinion, would amount to "piling deflation on deflation." Rather, governments should resort to borrowing and aid to finance measures aimed at "eliminating structural difficulties by expansion of traded goods production in the medium run".[100] In other words, devaluation should be part of a medium-term effort to restructure the economy with sufficient external finance made available to make the restructuring feasible.

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[99]Ibid., p. 454.

[100]Ibid., p. 455.

Hanson criticises the Krugman and Taylor analysis mainly on the rigidity of its assumptions. He argues that one reason for the contractionary result is the neglect of the "possibilities of substitution in production and consumption".[101] In particular, Hanson argues that a devaluation is effective in achieving some expansion in exports in the short-run. It is worth noting that this consideration was acknowledged by Diaz-Alejandro who observed that "if some elasticity were allowed to the production of F with respect to the increases in its price, a decrease in domestic output following a devaluation would become less likely."[102] However, both Diaz-Alejandro and Krugman and Taylor defend the view that in the short-run, the existence of rigidities, which impede the possibilities for substitution, is a practical reality in LDCs.

A second criticism by Hanson pertains to the assumption made by Krugman and Taylor with respect to monetary policy. The latter assume that monetary policy is designed to keep the interest rate pegged at a given value. This implies an expansion in the money supply, which would be associated with reserve losses that would be ultimately unsustainable.

These criticisms lead to the general view that the root of the deficit may be the policies being pursued and therefore a contraction of output may be part of the solution. Hanson argues that,

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[101]Hanson (1983), p. 187.

[102]Diaz-Alejandro (1963), p. 578. F stands for what Diaz-Alejandro refers to as "a single Hicksian composite good" consisting of exportables and importables.

> Aggregate demand eventually will have to decline relative to supply and the temptation to measure losses from such an unsustainable peak should be avoided,... a reduction in aggregate demand is generally necessary in such situations and thus there is no reason either to eliminate a devaluation from the policy options because it may be contractionary, or to take offsetting monetary and fiscal actions.[103]

This is consistent with the view often expressed by the multilateral agencies that a balance-of-payment crisis may have been caused by inappropriate domestic policies and therefore some contraction is a necessary and desirable part of restructuring (see chapter three).

Hanson also criticises Krugman and Taylor for suggesting that borrowing should be resorted to in order to avoid the contractionary effects of devaluation on the grounds that, in most cases, the government would probably already have utilized this option to the fullest before the situation reached a critical stage.

In addition to the points raised by Hirschman, Diaz-Alejandro and the others, Cooper[104] has pointed to a number of other factors that will present difficulties in the effort to achieve improvements in output in the short-run in the context of LDCs. The success in promoting an expansion in capacity by devaluation depends crucially on a perception of durability, i.e., on investors expecting the "improvement in their position

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[103]Hanson (1983), pp. 188-89.

[104]See Cooper (1971).

to last".[105] This is important since investors may be faced with the drawn-out task of establishing new products in unfamiliar foreign markets. These are important considerations in the context of many LDCs. Often their exports consist of products which are not consumed at home (e.g., bauxite) and therefore export expansion inevitably involves increasing capacity (instead of compressing domestic consumption) or embarking on the production of new goods (e.g., non-traditional exports).

Devaluation may also be associated with speculative effects. If it is anticipated, stocks are increased and swiftly run down after the devaluation so that the initial impact is a decline in output. In addition, a devaluation causes a proportional increase in the value of the external debt in terms of domestic currency and this can adversely affect the availability of credit. There may be a credit squeeze arising from the initial trade-balance deterioration in local currency terms which will be adverse to output.

Cooper has drawn attention to two further sets of circumstances which alter the realistic prospects emerging from a devaluation Firstly, devaluation may typically be introduced to replace existing restrictions such as import controls and quotas. Secondly, devaluation is usually introduced in LDCs as part of a package and its effects must be considered in that context. For example, the package may include liberalization of both trade and capital flows and these could complicate the conventional picture by introducing a further tendency towards a balance-of-payments deficit.

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[105]Ibid., p. 14.

2.7 CONCLUSIONS

We are left with the question of how ultimately to evaluate the uses and effectiveness of devaluation on the basis of the various theoretical analyses we have looked at.

In general, one finds no serious conflicts in prescriptions emerging from orthodox Keynesian as opposed to monetary models. Orthodox models depict devaluation as being favourable to output growth and the closing of the balance-of-payments gap by switching domestic demand away from traded goods while promoting their production. It is particularly recommended in a situation where money wages are inflexible downwards. If money wages are flexible and assuming that the imbalances are compatible (as described in section 2.5), conventional monetary and fiscal policies would be adequate.

Where money wages are inflexible downwards, a devaluation has the additional property that it can lower the real wage without the necessity of money wage cuts. A flexible real wage is a sine qua non for the effectiveness of devaluation. This suggests that some element of 'money illusion' is at the heart of devaluation analysis. It also draws attention to the fact that the real cost of devaluation in the short-run is a decline in the standard of living of wage and salary earners.

The harmonious view of the effects of devaluation has been questioned by Hirschman, Diaz-Alejandro, Cooper, and Krugman and Taylor. They have argued that a devaluation will have contractionary effects on output if, as is usually the case, it is taken when the economy is in a balance-of-payments deficit. In addition, a devaluation

tends to redistribute income towards capitalists which may be adverse to output in the short run. This does not mean that the instrument should be abandoned. Rather, it is suggested that "it may sometimes be desirable to accompany devaluation with modestly expansionary policies".[106] This is diametrically opposed to the conventional prescriptions In the monetarist view, an expansionary monetary policy accompanying a devaluation will tend to neutralize its effects.

Krugman and Taylor, in particular, suggest that governments should seek foreign assistance as part of a stabilization package to help them overcome the structural difficulties presented in the short run Specifically, it is stated that "the government should beg or borrow to meet the short-term deficit and work toward eliminating its structural difficulties .."[107]

The Krugman and Taylor article is important in stressing the structural nature of many balance-of-payments problems in LDCs. Their solution therefore requires more than the straightforward macroeconomic prescriptions. In addition the analysis draws attention to the short-run costs in terms of employment equilibrium of achieving external balance This is a serious problem in reality because it undermines the basis for balance-of-payments improvements to be sustainable It gives rise to economic and political problems which tend to reverse the short-run external gains.[108]

We have so far neglected an aspect of the analysis of devaluation which is of much current relevance. It is the preoccupation with 'liberalization' of trade regimes as

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[106]Cooper (1971), p. 19.

[107]Krugman and Taylor (1978), p. 455.

[108]See Cooper (1971).

a means of solving the current problems of developing countries. This subject belongs in the discussion of devaluation in the context of stabilization programs to which we turn in the next chapter.

Chapter 3

3. DEVALUATION IN A STABILIZATION CONTEXT

3.1 INTRODUCTION

In the last chapter we looked at the theoretical issues relating to devaluation somewhat in isolation. It is important however to to place the discussion of exchange-rate analysis within the context of the 1970s and 1980s. This is a highly contentious subject in the economics profession and bears directly on policy prescriptions and stabilization programs for developing countries. Many of these countries face serious problems of low or stagnant growth, severe balance-of-payments disequilibria and strangling debts. The orthodox prescriptions for the solution of these problems usually come in a package of policy recommendations. Devaluation, although a typical recommendation, is only one of the instruments prescribed and has to be analyzed with the rest of the package in mind. Here we briefly survey the devaluation issue in the context of recent stabilization programs.

International institutions, notably the IMF and the World Bank, are major agents in stabilization efforts. Developing countries facing crisis conditions are forced to approach the IMF in order to pave the way for further external credits. The IMF is therefore able to make recommendations for finance from a position of strength and has

stamped its mark on stabilization programs. The issues of IMF conditionalities and associated policy recommendations have become an area of great controversy which has not been laid to rest by the theoretical literature. These issues are also of concern to the developing countries themselves and to the OECD countries as primary creditors and donors with strong control within the Bretton Woods institutions.

We shall attempt to analyse the devaluation issue in connection and interaction with the other elements of stabilization policies, while trying to keep it the main focal point. We shall be interested particularly in the issue of 'overkill'.[1] This ungainly term is used here to refer to the tendency for the contractionary effects of a devaluation to be aggravated by the insistence that the devaluation be backed by deflationary demand-management policies which cause external balance to be achieved at severe costs in terms of the standard of living and prospects for the resumption of growth.

We begin by outlining the general setting in section 3.2, showing the shifts in emphasis with respect to development and trade strategies that have influenced approaches to stabilization and adjustment policies. In section 3.3, we present the arguments generally used by advocates of devaluation and the typical stabilization package. Section 3.4 examines some of the criticisms and reservations raised with respect to these issues. Finally section 3.5 presents some concluding remarks suggested by the discussion.

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[1]This term has been attributed to Carlos F. Diaz-Alejandro, "Southern Cone Stabilization Plans," in Cline and Weintraub eds., Economic Stabilization in Developing Countries (Washington, D.C.: The Brookings Institution, 1981), by Sidney Dell, "Stabilization: The Political Economy of Overkill," in Williamson ed., IMF Conditionality, (Washington D.C.: Institute for International Economics, 1983).

3.2 THE SETTING

The emphasis on devaluation and the other elements of stabilization packages is a reflection of a major shift in the orthodox approach to development economics. This approach has been characterized by a renewed emphasis on the price mechanism as the basis for achieving optimal resource allocation and, thus, growth and development. This marks a contrast with the structuralist approaches of the 1950s and 1960s, which emphasized investment and saw a major role for the public sector.

In order to put in perspective the direction that current orthodoxy in development economics has taken, it is best to start by looking briefly at the theories of the 1950s.[2] It was believed that the example of the developed countries pointed to a high degree of industrialization as the principal characteristic of economic development. Rapid industrialization (in order to 'catch up') was considered to require an acceleration of capital accumulation. The capital formation required was considered to be 'lumpy' and associated with large 'indivisibilities'[3] and externalities. Market prices were thus considered to be a poor guide to socially optimal investment decisions. The role of the

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[2]See for example, W. Arthur Lewis, "Economic Development with Unlimited Supplies of Labour," The Manchester School (1954). Reprinted in A.N. Agarwala and S.P. Singh, The Economics of Underdevelopment, (Bombay: Oxford University Press, 1958); W.W. Rostow, The Stages of Economic Growth: A Non-Communist Manifesto, (Cambridge: Cambridge University Press, 1960); Paul N. Rosenstein-Rodan, "Notes on the Theory of the 'Big Push'" in Howard S. Ellis ed., Economic Development for Latin America (London: Macmillan and Co. Ltd., 1961).

[3]See Paul N. Rosenstein-Rodan, "International Aid for Underdeveloped Countries," Review of Economics and Statistics (1961).

public sector was stressed since much of the required infra-structural investment was of the type which would not usually attract private capital. Employment generation was also a central objective, as stressed in Lewis' outstanding article.[4] Inflation, on the other hand, was not perceived as a serious problem. A notable variant of the structural approach was the 'two-gap' model which emphasized the structural constraints in converting domestic savings into foreign resources and promoted the need for medium to long-term capital inflows into developing countries.[5]

One consequence of these analyses was a tendency towards import-substitution industrialization (ISI). Most of the models were inward-looking except to the extent that they considered the need for capital assistance. As a practical matter, import substitution seemed to offer an obvious basis for achieving the desired rapid growth in industrialization. This outlook was also fostered by the argument that import substitution was a natural process in the experience of countries in the course of development.[6]

There was one branch of development thinking that emphasized trade matters from the outset, however. This was the Latin American school, in which Raul Prebisch was a prime mover, which argued that, as primary-producing countries, there were

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[4]See Lewis (1954).

[5]See Hollis B. Chenery and Alan M. Strout, "Foreign Assistance and Economic Development," American Economic Review (1966).

[6]See Hollis B. Chenery, "Patterns of Industrial Growth," American Economic Review (1960); Hollis B. Chenery and Lance Taylor, "Development Patterns: Among Countries and Over Time," Review of Economics and Statistics, (1968).

fundamental tendencies towards a deterioration in the terms of trade of developing countries with adverse consequences for development.[7] These arguments became associated with efforts to mount preferential trade measures such as the Generalised System of Preferences and to design commodity price stabilization schemes at the international level as means to promote the development of the LDCs.

Against the background of such ideas, ISI flourished as a development strategy in Latin America, East Asia and elsewhere. The initial successes of this strategy boosted its acceptance as developing countries experienced respectable growth performances in the 1950s and 1960s. It should be pointed out, however, that at the conceptual level some tensions were beginning to be experienced between the 'structuralists' and 'monetarists'. Indeed, it has been observed by several writers that the debates of the 1950s and 1960s foreshadowed theoretical discussions that preoccupied mainstream economics somewhat later.[8]

Starting in the late 1960s, some development economists influential with policy-making bodies in OECD countries started to emphasize a market-oriented approach to development economics.[9] Their main recommendations may be summarized

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[7]See United Nations Economic Commission for Latin America, The Economic Development of Latin America and its Principal Problems (New York: United Nations, 1950).

[8]See, for example, Diaz-Alejandro (1981) and Alejandro Foxley, "Stabilization Policies and Their Effects on Employment and Income Distribution: A Latin American Perspective," in Cline and Weintraub eds. (1981).

[9]See, for example, Harry G. Johnson Economic Policies toward less Developed Countries (Washington D.C.: Brookings Institution; 1967); Ian Little et al. Industry and Trade in Some Developing Countries (Oxford: Oxford University Press for OECD, 1970); Bela Balassa, Policy Reform in Developing Countries

as follows:

(i) Outward-oriented growth and liberalization instead of inward-looking industrialization.

(ii) Greater reliance on the price mechanism.

(iii) Emphasis on the promotion rather than the protection of industry.

(iv) A larger role for the private sector.

(v) The maintenance of an 'equilibrium' exchange rate.

It can be seen that there is considerable overlap in terms of the implications of these policy prescriptions. Outward-oriented growth implies greater emphasis on exports as the main engine of growth in preference to an import-substituting type of industrialization strategy. It is argued that a strategy of outward-oriented growth is more favourable to economic development because it allows the country to exploit its comparative advantage and produce for a virtually unlimited world market. In the conditions of under-employment characteristic of LDCs, export-oriented strategies were believed to be favourable to the generation of employment. These policies are, however, critically dependent on the discouragement of wage increases in real terms. It has also been argued that growth performance will be faster and more sustained under this strategy than under an inward-looking import-substitution strategy. While import-substituting industrialization (ISI) was said initially to enjoy an 'easy' period with rapid growth, this growth was likely to be short-lived. Inefficiencies and policy

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(London: Pergamon, 1977); Anne O. Krueger, Liberalization Attempts and Consequences (New York: NBER, 1978); Bela Balassa et al., Development Strategies in Semi-Industrial Economies (Washington D.C.: Johns Hopkins University Press, 1982).

distortions would, inevitably, produce balance-of-payments crises and inflation.

The orthodox strategy (for want of a better description) emphasizes a reliance on the price mechanism as the basis for resource allocation. Thus, for example, it is recommended that quantitative restrictions be replaced by tariffs, preferably at a uniform rate across the board. There is a great preoccupation with 'distortions' as obstacles to efficient resource allocation. These would include the whole battery of possible controls such as rent controls, price controls, food subsidies, exchange controls, etc. The objection to these measures is that they lead to inefficient resource allocation which is inevitably inimical to growth. Furthermore they may involve a larger bureaucratic machinery which may be conducive to corruption and waste. It is argued that they distort the incentive aspects of the price mechanism and sustain inefficient productive activities which cannot be competitive in external markets.

Similar arguments are used with respect to the preference for promotion over protection. Where some industries need special help, it is recommended that direct measures such as subsidies be used rather than tariff and quota protection. Apart from the arguments summarized above. it is argued that protective measures inevitably contribute to a regime which is biased against exports. They may make inputs more costly, especially if imported, and tend to be associated with an over-valued exchange rate.

The maintenance of an equilibrium exchange rate is a central feature of orthodox proposals. It is considered of major importance with respect to the effort to ensure the competitiveness of exports. It is also a major reflection of the preoccupation of orthodox economics with the problem of inflation. By contrast, earlier development

theories had given central focus to unemployment.[10] Inflation is seen as an enemy of good export performance if it exceeds that of trading partners and rivals. The typical recommendations are for floating exchange rates or for a crawling peg regime, which would insulate export prices in foreign currency terms from the effects of domestic inflation.

Underlying these proposals is a definite preference for an enlarged role for private enterprise. Emphasis is placed on a strategy that will promote private initiative by ensuring good profits. Among other things, the crawling peg will prevent rising wages from eroding profits. Also the idea of equilibrium factor prices in a labour-surplus situation inevitably implies low wages. To this extent, government intervention in the form of minimum-wage legislation and trade union activity to increase wages are forms of market distortions and imperfections not favoured. The maintenance of so-called 'free' market factor prices is also considered to be a stimulus to employment as low wages would be associated with a high labour demand and the substitution of labour for capital. A notable paradox emerging is that 'free' market conditions are considered consistent with measures, often harsh and confrontational, to restrain wage increases.

This is constrasted with the situation characteristic of inward-looking growth where, it is argued, the exchange rate tends to be overvalued and, along with rising wages, there is a bias towards capital-intensive industrialization. These conditions tend to aggravate balance-of-payments problems and under-employment. In situations of import-licensing, it is argued that under-utilization of capacity may be encouraged by the system for distributing licences.

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[10]For example, Lewis (1954).

There have been many studies in the 1970s and 1980s aimed at providing empirical support for the export-oriented strategy. Typically they have focused on the so-called 'Newly Industrializing Countries' (NICs) and especially the South East Asian NICs (South Korea, Taiwan, Singapore, Hong Kong). It has been established that these countries have enjoyed relatively high growth rates even during the difficult times of the 1970s and 1980s.[11] They rapidly completed the adjustment process in the face of the oil price shocks, so well in fact that they have given rise to a concern "that their actual or incipient current account surpluses both endanger their continued economic progress and hinder global balance of payments adjustment."[12]

It is very significant that the empirical foundation for the outward-oriented strategy has relied very heavily on the performance of the four South East Asian NICs. Other countries whose embrace of similar policies was heralded about a decade ago, including Mexico and Brazil, are no longer looked on with such favour.[13]

An important question that arises is the extent to which the experiences of the East Asian NICs can serve as a practical example for LDCs on the whole. Cline has estimated the level of export expansion that would be required to achieve a satisfactory performance for LDCs. He has concluded that such a level of export expansion would

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[11]See Bela Balassa and John Williamson, Adjusting to Success: Balance of Payments Policy in the East Asian NICs, (Washington, D.C.: Institute for International Economics (1987), Tables 1.1 and 1.2.

[12]Ibid., p. 1.

[13]See for example, Little et al. (1970) where Brazil and Mexico are among a sample of countries favoured for their outward-looking policies in the late 1960s.

require an expansion of imports which is beyond the bounds of likelihood.[14] Two other considerations that arise are the cyclical recurrence of recessions and the growth of protectionism in industrialized countries.

The focus of the South East Asian NICs reflects a fundamental shortcoming of the literature promoting export-oriented growth. The idea that export-oriented growth is favourable and desirable is widely accepted. The question that this literature fails to address is how to achieve a successful transition to such a strategy on the part of the majority of low-income developing countries. The limitations of the international market are just one of the problems to be faced.

In this connection, the problem of protectionism in industrialized countries rears an ugly head. Bhagwati has observed that "while the developed-country nominal tariffs are low on all countries, they are higher for products of interest to the developing countries".[15] In addition, given tariff escalation which affects exports from developing countries especially, effective protection is said to be even higher than the nominal tariffs indicate. Of further concern is the fact that while tariff levels have been declining under GATT arrangements, there has been "an offsetting rise in the incidence of NTBs [nontariff barriers]."[16] These developments militate vigorously against the chances of successful adoption of the outward-looking strategy by developing countries generally.

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[14]William R. Cline, "Can the East Asian Model of Development be Generalized?" World Development (1982).

[15]Jagdish Bhagwati, "Outward Orientation: Trade Issues," (mimeo) IMF-World Bank Symposium (1987), p. 21.

[16]Ibid., p. 22.

Among other questions raised about the South East Asian NICs, the extent to which they are all really liberalized and free of government intervention has been disputed. It has been argued that "the Far Eastern economies (with the exception of Hong Kong) and others that have come close to the EP strategy, have been characterized by considerable government activity in the economic system."[17] This view finds support in the statement that,

> Their strategy has been much closer to a combination of import-substitution and export promotion than pure liberalization. They rely on the international economy, they have relatively few distortions, but their governments are far from a laissez-faire philosophy and policies.[18]

It is clear that many lessons can be learned from experience of the NICs. However, doubts linger about specific aspects of the strategy in favour of which their performance is advanced and about the possibilities of extending the model to the other LDCs in crisis. As already observed, empirical support for the export-oriented strategy has been based exclusively on the NICs. Indeed Balassa sets out explicitly to make recommendations "for reforming the system of incentives in developing countries that have already established an industrial base."[19] On another occasion he argues that "the

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[17]Ibid., p. 5.

[18]Stanley Fischer, "Economic Growth and Economic Policy," (mimeo) IMF-World Bank Symposium (1987), p. 23.

[19]Balassa (1977), p. 7. See also idem (1982).

objective conditions for adjustment were better for the more industrialized than for the less industrialized developing economies."[20] There are enough qualitative differences between such countries and the majority of low-income developing countries facing crisis conditions for us to question the possibility of an easy application of liberalization and the other policy recommendations to LDCs on the whole.

3.3 THE STANDARD STABILIZATION PACKAGE

It is conceivable that a country might embark on a stabilization program on its own initiative when unsatisfactory economic developments persist It is therefore possible that stabilization strategies may vary widely from country to country and situation to situation. In the context of the late 1970s and 1980s however, stabilization programs have invariably involved the IMF and, increasingly, the World Bank as well These agencies have played the dominant role in the design of stabilization programs. Consequently, there has emerged a standard stabilization package and this will serve as the basis for our analysis

Although each individual case shows some variation, it is fair to say that the standard package consists of the following three main elements: (a) devaluation, (b) restraint on aggregate demand, and (c) liberalization Restraint on demand typically takes the form of monetary and fiscal restraint. Ceilings are prescribed for the expansion of domestic credit. Fiscal restraint is introduced partly to ensure that the

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[20]Bela Balassa, "The Adjustment Experience of Developing Economies After 1973," in Williamson ed., (1983), p. 170.

private sector does not get 'crowded out'. To this purpose ceilings are placed on the extension of credit to the public sector. Liberalization is typically aimed at the trade regime Where QRs exist there are recommendations for a process of elimination and replacement with tariffs at low levels across the board Liberalization may also involve international flows and a lively debate has arisen with respect to the sequencing of different aspects of liberalization[21] There seems to be an emerging consensus that where liberalization is appropriate the current account should be liberalized first.

The domain of operation and supervision of the IMF is supposed to be limited to these macroeconomic areas. Concentration on macroeconomic areas is supposed to be in accordance with two important aspects of its mandate Firstly it should be observed that the three measures listed here are expected to impact primarily on the balance of payments. The state of a country's balance of payments is the primary concern of the IMF or as a staff member of the fund put it, "Despite the interdependence among economic policies and their objectives, the mandate of the Fund focuses mainly on external objectives, in particular on balance of payments viability."[22] The concentration on the external accounts results partly from the perception that the main responsibility of the Fund is with respect to the health of the international economy. Guitian points out that "the Fund stresses the attainment of balance of payments objectives as the

[21]See Sebastian Edwards, The Order of Liberalization of the External Sector in Developing Countries, Essays in International Finance, no. 156 (Princeton, New Jersey: Princeton University, 1984).

[22]Manuel Guitian, "Adjustment and Economic Growth - Their Fundamental Complementarity," (mimeo) IMF-World Bank Symposium (1987), p. 36.

domain where the interests of each member and those of the membership as a whole intersect and coincide."[23] It is also assumed that an essential complementarity prevails between the interests of member states and the international community as a whole.

The second aspect of the Fund's mandate that is said to be advanced by the concentration on macroeconomic considerations is the principle of political neutrality. It is stated that the effort "to avert undue international interference in domestic policy decisions.. is manifest in the priority the institution accords to external objectives - e.g. the balance of payments, exchange restrictions, external payments arrears."[24] It is questionable whether concentration in these areas constitutes an acceptable observance of political neutrality. A lot depends for instance, on the level in the hierarchy of policy formulation and implementation to which the Fund extends its supervision and we shall see that the Fund tends to dictate policy at low levels of policy implementation. For example, the IMF is not satisfied to recommend the achievement of fiscal balance but will typically insist that this goal be achieved on the basis of expenditure cuts Furthermore, when we consider the operations of the Fund and the World Bank as a team, it is clear that much interference prevails. The role of the World Bank under its structural adjustment lending program (SAL), initiated in 1980, is to supervise in microeconomic areas paying specific attention to removing distortions that affect the operations of the public and private sectors. Increasingly, the connections between IMF facilities and the SALs are being observed.

Several kinds of criticisms have been attracted with respect to the Fund's

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[23]Ibid., p. 9.

[24]Ibid., p. 10.

concentration on the balance of payments. There has been the concern that the Fund's concentration on the balance of payments leads to a critical neglect of growth and other aspects of national well-being.[25] Another criticism somewhat along the same lines is that in pursuing balance-of-payments objectives, there is the tendency to use devices that are adverse to output and employment (we shall refer to these as "overkill" arguments). A third line of argument accepts balance-of-payments stability as a valid target of the Fund and takes issue with respect to the confusion of instruments and targets and the ineffective interference this entails.[26] A fourth criticism disputes the theoretical claims of the orthodox school with respect to the merits of liberalization and other aspects of the standard stabilization package on the basis of an examination of the characteristics of the East Asian NICs.[27] We shall return to the consideration of these criticisms and the points made earlier.

It is useful at this point to examine the arguments which surround the formulation and implementation of the standard stabilization package. Essentially, it is considered by the Fund to be the correct and necessary response to a condition of 'fundamental disequilibrium' This involves a judgement that the balance-of-payments imbalance being experienced by a country is not a temporary setback due to some transient

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[25]See for example, Diaz-Alejandro (1981), Dell (1983), Kari Polanyi-Levitt, "Mr Seaga's IMF Blues," Caribbean Newsletter (1984).

[26]See John Spraos, IMF Conditionality: Ineffectual, Inefficient, Mistargeted, Essays in International Finance, no. 166 (Princeton, New Jersey: Princeton University, 1986).

[27]Jeffrey Sachs, "Trade and Exchange Rate Policies in Growth-Oriented Adjustment Programs," (mimeo) IMF-World Bank Symposium (1987).

exogenous shock such as bad weather or a terms-of-trade deterioration. If the problem is a temporary imbalance then the orthodox recommendation is for a period of financing to ride out the period of disequilibrium. The nature of the diagnosis will also determine the strength and pace of the adjustment effort required for its elimination.[28] Financing may take the form either of the depletion of international reserves or borrowing In practice, this turns out to be a superfluous analysis from the point of view of the IMF because a country facing a temporary disequilibrium is unlikely to resort to the Fund.

Once it is clear that a fundamental disequilibrium exists, the next step is to determine its origins. The orthodox view typically attributes imbalance to two things: (a) the country is 'living beyond its means' or (b) proper management and operations are being inhibited by distortions and inefficiencies which cause the country to operate within its production-possibility frontier. In the words of Guitian, the need for adjustment can develop,

> because the sum total of demands for resources that develop in an economy exceeds the global amount of resources from abroad on an approrpiate scale and on sustainable terms. But it can also emerge on account of inefficiencies in the use of available resources or other distortions that constrain the level or rate of expansion of aggregate supply.[29]

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[28]Guitian (1987), p. 5.

[29]Guitian (1987), p. 4.

This diagnosis leads to the adoption of demand management prescriptions and liberalization measures as the solution.

On the basis of such a diagnosis, the orthodox analysis implies the need for devaluation and demand restraint. The high incidence of these prescriptions is borne out by the available evidence. It has been observed that "a reduction in the fiscal deficit appears as one of the stabilization objectives in 86 out of 94 Fund-supported programs during 1980-81".[30] In this context, it should be noted that fiscal and monetary restraint are inextricably linked as observed by Avramovic, Khan and Knight, Guitian and Connolly with respect to Jamaica, among others.[31]

Devaluation is also found to be a typical recommendation. Spraos reports that "in 61 percent of standby and Extended Facility credits in the period 1973-80 a devaluation occurred within six months on either side of the credit arrangement".[32] Moreover, it was observed that "exchange rate action (not necessarily devaluation) was set as a precondition in nine cases out of thirteen".[33]

The purpose of devaluation is primarily to turn the balance of payments around by switching expenditure from tradables to non-tradables and reallocating resources in

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[30]Dragoslav Avramovic, "Conditionality: Facts, Theory and Policy - Contribution to the Reconstruction of the International Financial System," (mimeo) WIDER/UNU (1987), p. 3.

[31]Avramovic (1987), Mohsin S. Khan and Malcolm D. Knight "Do Fund Supported Adjustment Programs Retard Growth?" Finance and Development (1986); Guitian (1987); M.B. Connolly "The Exchange Rate and Monetary and Fiscal Problems in Jamaica: 1961-82," in Michael Connolly and John McDermott Eds. The Economics of the Caribbean Basin (New York: Praeger, 1985).

[32]Spraos (1986), p. 8.

[33]Ibid., p. 8. See also Avramovic (1987), p. 9.

favour of the production of tradables. If the exchange rate is adjudged to be over-valued because of internal inflation, as it most usually is considered to be,[34] the devaluation would enhance competitiveness by bringing the relation between domestic and foreign prices back into line The need for monetary and fiscal restraint is generated by three considerations, namely, (a) the idea that the country was initially living beyond its means, (b) the need for real wage restraint to support the objectives of the devaluation, and (c) the effort to promote the private sector by restraining government demand.

In addition, the reliance on these policies reflect a dogmatic attachment to the view that imbalances have a demand origin. In the words of a senior IMF official,

> In all cases of continued payments difficulties, the authorities' attention will have to be focussed on ways of reducing the level of the rate of growth of demand - which broadly means deflation - and on redirecting resources - which broadly calls for devaluation".[35]

The promotion of these policies is based on a harmonious view of their effects with respect to the balance of payments and output. An extreme view is that "trade-offs

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[34]There are suggestions that a deficit is taken as sufficient evidence of the overvaluation of the exchange rate. See, for example, J. Salop's comments to Ahluwalia and Lysy (1981). Lysy [(1981), p. 189], on the other hand, "disputed that one could say clearly whether a country had incorrect relative prices or excess absorption, ..."

[35]C. David Finch, "Adjustment Policies and Conditionality," in Williamson ed. (1983), p. 78.

among policy objectives are more apparent than real. Under most circumstances, the only trade-offs that exist are intertemporal..."[36] The same author considers a reduction in growth under stabilization program not as a setback but as an indication that the economy was hitherto operating at an unsustainably high growth rate and therefore the slow down is to be seen as "an element of the solution rather than being a manifestation of a problem".[37] A view which has wider currency is that adjustment does inevitably involve short-term costs in terms of output performance.[38] However this is seen as "a necessary price for achieving longer-term benefits".[39] It is considered as an aspect of the transition from a protected industrial structure to an export-oriented one. The reduction in output occurs as uncompetitive industries close down and investors hesitate to commit themselves to large investments in export products in the uncertain circumstances of the transition. In addition, the difficulties of getting established in producing new products for new markets engender a temporary slow-down in industrial activity. In these circumstances, the question of whether adjustment should be gradual or short and sharp is brought into focus. Krueger concludes that, in view of possible political problems, "there is a presumption in favour of a once and for all sharp adjustment"[40] The short-term nature of IMF upper tranche arrangements is an

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[36]Guitian (1987), p. 33.

[37]Ibid., p. 13.

[38]See Anne O. Krueger, "Interactions Between Inflation and Trade Regime Objectives in Stabilization Programs," in Cline and Weintraub (1981); also Khan and Knight (1986), Khan (1987).

[39]Krueger (1981), p. 111.

[40]Ibid., p. 112.

indication that this institution is influenced by this view.

3.4 THE POLITICAL ECONOMY OF OVERKILL

The general vision of stabilization and adjustment outlined above has been brought into question in a number of recent expositions. One approach finds that devaluation is not expansionary as generally supposed by the orthodox analysis. Consequently, the complete stabilization package causes unnecessary contraction which jeopardizes the chances of long-term adjustment. This criticism draws mainly on the experience of "Southern Cone"[41] countries in South America.

Diaz-Alejandro observes that "stabilization plans achieve their clearest and quickest success in the balance of payments".[42] This is due to developments with respect to the capital account rather than the current account. Stabilization programs may be accompanied by inflows from the IMF and other sources that immediately improve the balance of payments.[43] The situation on the current account is less sanguine. Improvement from this direction is usually generated by a drop in the quantum of imports as their domestic currency prices go up. This has adverse consequences for

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[41]This expression is used to describe countries "located in the southern part of South America", Diaz-Alejandro (1981), p. 119.

[42]Ibid., p. 124.

[43]This is at the expense of massive debt as in the experience of Jamaica. See Owen Jefferson "Jamaica's External Debt: Size, Growth, Composition and Economic Consequences", in Omar Davies ed., The Debt Problem in Jamaica, (Department of Economics Monograph series, University of the West Indies, 1986).

investment and output generally and even for exports given the typically high import-content of production. The reduction in import quantities and the collapse of some formerly protected industries may cause difficulties in production even of non-tradables.[44] On the export side, expansion will be slow in coming but, in the medium term, there is widespread agreement that "evidence indicates a clear victory for export optimists".[45]

Inflation proves to be a far more stubborn problem. The upward thrust in prices due to devaluation is inescapable. What is more, the prices of non-tradables cannot be relied upon to lag behind. Arthur Laffer has observed a strong link between devaluation and inflation even with respect to the American economy where trade is a small portion of GNP.[46] Diaz-Alejandro observes that "The upward thrust provided by exchange rate devaluation works faster than the downward pressures generated by tariff cuts and the elimination of import quotas."[47] It has also been observed that there is a tendency for devaluation to be associated with inflation making subsequent devaluations necessary.

The escalation of inflation in the short-run may urge the need for repressive actions with respect to money wages. Indeed Diaz-Alejandro argues that any slow down in inflation is due to these measures. The result of all this is sagging aggregate demand in real terms. The emergence of substantial excess capacity in these

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[44]Diaz-Alejandro (1981).

[45]Ibid., p. 125.

[46]See Arthur Laffer, "The Bitter Fruits of Devaluation", Wall Street Journal, January 10, 1974, p. 14.

[47]Diaz-Alejandro (1981), p. 126.

circumstances should indicate that excess demand is no longer a plausible explanation for imbalance. Nevertheless demand-oriented restraint may continue in use causing further contraction, because prices may be observed to be still rising.

A particularly adverse aspect of the demand restraint measures is that they impact not only on consumption but also on investment. There is an air of uncertainty that prevents investors from rushing into long-term investment. Also the reduction in public sector investment may prove adverse to private sector activity. Liberalization of capital markets provides relatively safe investment opportunities that may not benefit the domestic economy. Investors "show more interest in buying paper than in installing machinery and equipment" and in short-term rather than long-term investment.[48] All these developments weaken the investment thrust and undermine the prospects for long-term recovery.

Another analysis that takes the view that the standard stabilization program is a source of overkill is that of Ahluwalia and Lysy.[49] They take the view generally that "deflation as the consequence of a devaluation is a genuine possibility in some economies" [50] Ahluwalia and Lysy take a pessimistic view of export possibilities in the short run. Exports typically are dominated by primary commodities "whose supply is rigidly limited in the short-run by sector-specific capital such as a number of rubber trees". On the import side, similar rigidities are assumed because "imports have often

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[48]Ibid., p. 128.

[49]Ahluwalia and Lysy (1981).

[50]Ibid., p. 151.

been reduced by developing countries' governments to the minimal necessary imports of raw materials or capital goods for which there were no domestic industries that could come close to competing".[51] In these circumstances the depressant forces prevail through high import prices and a redistribution of income from low to high savers. If the redistributive effect is weak, profits fall. The balance of payments may improve in the short run but long-term competitiveness is affected by low investment and future balance-of-payments prospects are jeopardized. Ahluwalia and Lysy conclude that devaluation "is basically a clumsy tool in effecting a balance of payments improvement because of the higher import costs that accompany it".[52] They favour steps to directly influence exports.

It is significant, that they find income distribution 'fairly insensitive" to stabilization programs. In this regard they agree with Diaz-Alejandro who also could not detect any unambiguous movement.

Contractionary effects of the standard stabilization package in the circumstances of LDCs are also observed by Van Wijnbergen. The analysis notes in particular the high dependence of investment activities on bank lending in LDCs in the absence of a sophisticated level of financial intermediation. It is observed for example that "debt/equity ratios in countries like Korea range from 5 or 6 to 1 upwards as opposed to 1 or 2 to 1 in the United States or Western Europe".[53] Also bank credit is typically

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[51]Ibid., p. 154.

[52]Ibid., p. 151.

[53]S. Van Wijnbergen, "Stagflationary Effects of Monetary Stabilization Policies: A Quantitative Analysis of South Korea," Journal of Development Economics (1982), p. 134.

dominated by loans to firms rather than consumers. Two important conclusions flow from these circumstances. Firstly, the business sector in LDCs is found to be highly vulnerable to adverse credit conditions. Secondly, the impact of tight credit is felt not only in the area of consumption but particularly in the area of investment.

Van Wijnbergen's analysis posits a supply-side transmission mechanism between monetary instruments and real output. Tight money policies push borrowing more and more into the 'curb' market where interest rates are typically high, causing them to rise further. Higher interest rates are incorporated into prices through a mark-up pricing rule. The results of this process are higher inflationary pressures and a tendency to reduced output. These forces operate rapidly (more so than the demand-management processes) because of the important role of the curb market where borrowing is very short term. By introducing this mechanism operating on the supply side of the credit market, Van Wijnbergen demonstrates an aspect of the relationship between interest rates and inflation which is ignored by the orthodox analysis, and helps to explain why, in practice, events so often diverge from the expected course. It is evident that van Wijnbergen is thinking mainly about the effects of monetary restraint. Devaluation may aggravate the problem through increases in the prices of imported inputs, which add to the cost-push forces mentioned above.

Another explanation of the 'overkill' effects of the stabilization policies is presented by Alejandro Foxley.[54] Looking at the orthodox stabilization experience of Southern Cone countries. Foxley makes four general observations:

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[54]See Foxley (1981).

i) Inflation was resistant to the efforts to reduce it. Specifically "it took between four and five years to bring the inflation rate to around 40 percent a year" in three of the countries considered. In Argentina inflation remained at 150 percent after 3 1/2 years.

ii) Inflation coincided with recession for equivalent periods. In two cases per capita GDP actually fell in real terms. This observation weakened the arguments for demand management prescriptions, as Diaz-Alejandro observed. Recession was reflected also in a sharp increase in unemployment.

iii) Wages fell between 20 and 40 percent in real terms.

iv) Contrary to the other studies which we have mentioned so far,Foxley found that income distribution had deteriorated notably.

In explaining these developments, Foxley presents an initial scenario of "disequilibrium characterized by repressed inflation". In these circumstances, the market is not allowed to provide the signals that might restore equilibrium. When prices are liberalized abruptly, there is not a stable situation of expectations on which to base decisions about the future. Inflation tends to rise as firms protect themselves against uncertainty with high mark-ups. At the same time, repression of wages reduces consumption, causes excess supply of goods and may therefore cause a fall in real output. The situation is aggravated by the existence of oligopolistic market structures.

Foxley makes some observations with respect to the financial sector, which reinforce the analysis of Van Wijnbergen which has already been discussed. Sharp increases in the interest rate have the effects of a 'supply shock'. Increased costs

caused by higher interest rates feed their way into price formation. This is a consideration neglected by the orthodox analysis because it concentrates on the effect of higher interest rates on savings. However, the strength of the relationship between interest rates and savings in developing countries has been disputed. It has been observed that

> the evidence from developed and developing countries alike is not quite conclusive in regard to the interest elasticity of savings... For less developed countries, even allowing for the dubious nature of statistics, the evidence points toward the same kinds of doubt about the interest elasticity of savings.[55]

and furthermore that

> despite the amount of research expended on the responsiveness of savings in general, and in developing countries in particular, it is still uncertain whether an increase in interest rates will, on balance, raise the savings rate.[56]

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[55]D. Khatkate, "Analytic Basis of the Working of Monetary Policy in Less Developed Countries," in Money and Monetary Policy in Less Developed Countries, W.J. Coats and D.R. Khatkate (eds.) (Oxford: Oxford University Press, 1980), p. 134.

[56]Khan and Knight (1985), p. 14.

It is conceivable that these adverse repercussions of price and interest-rate liberalization might reverse themselves in time. However, the introduction of devaluation and monetary restraint as components of the stabilization package serves to aggravate the situation. The problem is one of improper diagnosis. As is implied by Spraos, the problem of stabilization may require a substantial reformulation of approach when a country is already in crisis.

Foxley finds that the effect of a devaluation could be favourable or unfavourable. It all depends on the relative strengths of export expansion and the depressive tendencies of internal demand. On the whole, Foxley's analysis reinforces that of Diaz-Alejandro already discussed.

The skeptical views on devaluation are supported also by Dell.[57] Among other things, Dell questions the basic arguments for the standard application of demand-management policies.

Among the considerations which make the demand-management diagnosis questionable, one may mention:

(i) the often observed coexistence of unemployment and excess capacity with inflation,

(ii) the fact that inflation may be cost-induced along the lines suggested by van Wijnbergen and Foxley, and

(iii) the low mobility of resources in a developing country relative to the situation in a developed country.

[57]See Dell (1983).

In addition, Dell disputes some of the monetarist foundations which inform the approach of the IMF. For example,

(i) doubts exist about the direction of causality between the money supply and levels of expenditure,

(ii) practical problems of measurement of the money supply and the appropriate liquidity measures persist,

(iii) the existence of substantial portions of idle bank money may invalidate the analysis, and

(iv) the existence of excess capacity and unemployment might weaken the link between money demand and inflation.

With respect to devaluation, he points out the difficulties of determining the precise degree of adjustment needed given the problems associated with purchasing-power-parity measures.

In general, Dell believes that prescriptions for stabilization need to be tailored on the basis of a careful analysis of individual cases. Also he is skeptical about some of the theoretical foundations of demand-management policies. He also draws attention to the implication that the burden of adjustment is imposed disproportionately on the oil-importing LDCs.

In this connection, it is worthwhile to draw attention to some observations by Robert Dunn Jr. on aspects of the adjustment by the developed countries to the oil-price shocks.[58] Inquiring why current-account deficits persist in developed countries

[58]See Robert Dunn Jr., "Exchange Rates, Payments Adjustment and OPEC: Why Oil Deficits Persist," in Baldwin and Richardson

despite the adoption of floating exchange rates, he finds the answer in the behaviour of the capital account. Current-account deficits have been accommodated by large capital inflows generated by the recycling of OPEC surpluses thus obviating the need for painful adjustments. He argues that this is a fortunate development because full adjustment on current account would have been intolerably injurious to developed countries.

This analysis helps to underline the asymmetry in the position of deficit countries. Surely the implication is that adjustment in the current environment facing LDCs warrants a greater reliance on financing, especially if it is accepted that the current difficulties have been precipitated largely by the external forces of a sharp deterioration in the terms of trade (as a result of the oil-price shocks) and rising interest rates. This, in itself, would imply a shift of the burden of adjustment. Such an approach may also be more favourable to an expansionary process for the international economy as a whole. The present approach implies that the international agencies are contributing to a beggar-my-neighbour approach to international adjustment.

Sachs, Spraos and Avramovic have provided a further set of criticisms of current adjustment practices under the supervision of the IMF and the World Bank.[59] In general, these authors take issue with the theory and practice of conditionality. Briefly, Avramovic feels that national governments should have a more positive role in the design of stabilization programs and that conditionality should be limited to

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(1981). See also Morgan Guaranty Trust Co. of New York, "The Response to Higher Prices: Adjustment and Financing," in Baldwin and Richardson (1981).

[59]See Spraos (1986), Sachs (1987) and Avramovic (1987).

considerations regarding the debt-servicing capacity and the financial management of the borrowers. Somewhat consistent with that view, Spraos argues that the major legitimate basis for conditionality in a world of sovereign states is improvement in the balance of payments because this is important in order for the Fund to be paid back. It does not mean that other considerations such as growth and development are not important but conditionality should not be related to them He feels that primary problem in the operations of the IMF is the tendency to treat instruments of policy as targets.

Sachs draws on the experience of three East Asian countries (Japan, South Korea and Taiwan) to raise questions about the validity of the orthodox analyses with respect to liberalization and other aspects of the standard stabilization package

Avramovic accepts the need for certain measures usually associated with stabilization efforts including:

(i) fiscal discipline,

(ii) export expansion,

(iii) proper management of public enterprises, and

(iv) alleviation of price distortions.

On the other hand, other areas are found to be based upon weak foundations.

With respect to monetary programming for example, Avramovic observes that the "inability to foresee the velocity of money" undermines the whole analysis. The velocity of money is found to be subject to major unpredictable shifts in response to "changing expectations and lately to deregulation of financial markets and introduction of new credit instruments..".[60] In addition, problems of defining, measuring and

[60]Avramovic (1987), p. 8.

controlling the money supply arise. Attempts to achieve targeted reductions in the money supply in conditions of inflation have had severely contractionary effects on employment and output due to an exaggerated shortage of liquidity. Attention is drawn to the case of Jamaica, where monetary constraints became so severe that critical bank financing was cut off from some export manufacturers.

Questions are raised about the effectiveness of devaluation in certain circumstances. Drawing on the findings of a recent IMF study,[61] Avramovic observes that where trade imbalance is attributable mainly to a fall in export receipts due to a price decline, "devaluation may fail to have the expected favorable effect on the balance of payments as domestic spending it generates could lead to a further trade deterioration".[62]

Attention is also drawn to the adverse impact on output when "as is frequent", the price elasticities of supply of tradable goods are low in the short run. The balance of trade may improve in these circumstances but this is a mixed blessing since it may be due mainly to declining import volumes in response to the income contraction. The experience of Jamaica shows that this is a very plausible scenario especially where the devaluation is accompanied by monetary restraint which creates difficulties for investors. Genuine concern with respect to these considerations is expressed by a World Bank official, commenting on African experience, Mellor thinking mainly of agricultural

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[61]Iqbal M. Zaidi, "Currency Depreciation and Nonclearing Markets in Developing Countries," IMF Staff Papers (1986).

[62]Avramovic (1987), p. 9.

supply response and Blackman commenting on the Barbadian experience.[63] These observations are not presented to suggest that devaluation should not be used but that it should be approached with circumspection and should be accompanied by positive measures to promote exports.

Avramovic also questions the policy of raising the real interest rate with a view to promoting savings. Empirical studies have on the whole not been able to establish a strong positive relationship between interest rates and savings On the other hand, high interest rates have adverse effects with respect to investment and inflation through a cost-push effect on prices It is recognized however that the domestic interest rate, relative to international rates, may have relevance with respect to the encouragement of capital inflows The general recommendation is for a positive but low rate of interest consistent with the need to encourage capital inflows from abroad.

Import liberalization is another issue that is subject to severe criticisms. Import liberalization is advanced by the orthodox school as an important element of the overall thrust to enhance the competitiveness of the LDC economy In terms of a static, theoretical framework, the arguments appear reasonable. The main, however, are with respect to attempts to liberalize imports in the middle of a balance of payments crisis and in association with other stabilization policies. As Polanyi-Levitt observes, import liberalization may drastically affect production in areas such as the agricultural sector to an extent that is not justified by considerations of competitiveness. This is substantiated by the experience from Turkey, cited by Avramovic, which indicates that "liberalization through its incidence on import composition has worked...against capital

[63]Ibid., p. 10.

formation, in favour of consumption and current production requirements".[64]

It is also observed that devaluation and import liberalization are at odds with each other, the former depending on an increase in the price ratio between tradable and non-tradable goods and the latter tending to reduce that price ratio.[65]

An assault has been made on the view that the successes of the NICs are attributable to liberalization. Lance Taylor observes that "the major 'success' cases such as Korea, Brazil and Turkey are scarcely historical paragons of liberal philosophy". On the other hand, "extreme anti-distortionist regimes were associated with policy disasters in the southern cone (Argentina, Chile, Uruguay) and current stagnation in Mexico and elsewhere".[66]

Sachs has devoted his paper to demonstrating the falsehood of the myth that the successes of Japan, Korea and Taiwan have been based upon the traditional view of liberalization. He argues that those countries had achieved stabilization before the problems of the 1970s arose. They have, moreover, displayed high levels of government intervention. Indeed, it is observed that "Taiwan is more heavily dependent on state-owned industry than is probably any country in Latin America with the possible exception of Venezuela".[67] On the question of import liberalization, he notes that "in none of the countries was there a sudden removal of tariff or quota protection

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[64]See Korkut Boratav, "Distribution, External Linkages and Growth under Orthodox Policies: The Turkish Economy in the Early 1980s," University of Zimbabwe and WIDER, (June 1986). Cited in Avramovic (1987), p. 13.

[65]See Sachs (1987).

[66]Cited in Avramovic (1987), p. 14.

[67]Sachs (1987), p. 11.

for domestic industry, or indeed anything approaching the adoption of a flat tariff of 10 to 20 percent in the course of a five year period."[68] Import decontrol was not introduced in these countries until after the success of export-promotion efforts was assured. Sachs adds to the chorus of skeptics who accept the basic theoretical principles of stabilization but counsel that there may be special problems when attempting to stabilize in the middle of a crisis such as that facing many LDCs currently.

In addition, Sachs emphasizes that attention should also be directed in areas typically neglected by the orthodox approach For example, careful attention should be given to the question of importation of foreign technologies. Sachs also emphasizes that a movement towards an equitable distribution of income is not a consequence of liberalization but an important precondition for economic progress.

3.5 CONCLUSIONS

Devaluation in the 1970s and 1980s has been typically introduced as part of a wider program of stabilization and adjustment, which is linked to the outward-looking strategy of development. It is argued that the outward-looking strategy, which emphasizes the role of the private sector in the development process and which highlights reliance on the price mechanism and the exploitation of comparative advantage in labour-intensive products, is more favourable to the optimal allocation of resources, the promotion of employment and the achievement of economic stability.

[68]Ibid., p. 19.

Stabilization programs also come against a background of economic crisis reflected in the rapid accumulation of debt dictating the need for external support. Consequently, the IMF and the World Bank are inevitably in a strong position to influence the contents of the stabilization package. A major role is advanced for monetary and fiscal restraints, which aggravate the contractionary tendencies inherent in the devaluation instrument.

Some dispute arises with respect to the elements of the typical stabilization package. Those in favour see the contraction of income which is suffered as a result of the demand restraints imposed as transitional as the economy adjusts to a more efficient pattern of growth. Moreover, contraction is seen as part of the solution and consistent with the achievement of external stabilization on a sustainable basis. Critics of the package do not oppose devaluation per se but question the conditionalities which are associated with it. While accepting the view that devaluation may be favourable to the expansion of manufactured exports, they doubt the wisdom of the additional contraction imposed by the policies of monetary and fiscal restraint. It is argued that this contraction falls not only on consumption but also on investment, jeopardizing the likelihood of achieving long-term stabilization and growth. These analysts favour a greater role for financial support to help overcome structural difficulties and promote long-term growth.

Chapter 4

4. THE CARIBBEAN EXPERIENCE WITH EXCHANGE RATE MANAGEMENT

4.1 INTRODUCTION

The Caribbean experience with exchange-rate management since the beginning of the 1970s provides a virtual laboratory for the analysis of the effects of devaluation. Among the countries of the Caribbean Community (CARICOM)[1] can be found examples of a wide variety of exchange-rate regimes and experiences. There are examples of fixed and floating exchange-rate regimes, unitary and multiple regimes. Some countries have been characterised by stable exchange rates while others have experienced several exchange-rate changes. Since the collapse of the Bretton Woods system in 1971,[2]

[1]The Caribbean Community consists of Antigua, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St Kitts-Nevis, St Lucia, St Vincent and Trinidad and Tobago. Antigua, Dominica, Grenada, Montserrat, St Kitts-Nevis, St Lucia and St Vincent belong to a sub-group known as the Organization of Eastern Caribbean States (OECS).

[2]The precise date of the collapse of the Bretton Woods system is subject to disagreement but a significant landmark is the suspension of convertibility by the United States on August 15, 1971 when "two pillars of the Articles of Agreement -- the par value system and the gold convertibility of the dollar -- crumbled." See Margaret G. De Vries, The IMF in a Changing World 1945-85 (Washington, D.C.: International Monetary Fund, 1986), p. 83.

countries have pegged their exchange rates to a single reserve currency whilst, in one case, there has been experimenting with a basket of currencies.

In 1970, all the countries were still operating fixed exchange-rate regimes with currencies pegged to the pound sterling. Exchange rate changes vis-à-vis the US dollar were typically passive in the sense that they were undertaken to maintain a fixed parity with the pound sterling when the latter changed relative to other major currencies. An example of this was the 14.3 percent devaluation of the Jamaican currency on November 21, 1967 following the devaluation of the pound by the same percentage three days earlier.[3] An exception to this rule was Guyana which, while still pegged to the pound sterling, devalued by 8.5 percent in 1971 to offset the impact of a revaluation of the pound by that amount and maintain parity with the US dollar.

The dominant form of exchange rate regime has been a fixed exchange rate regime with official intervention being carried out to maintain a given parity with the U.S. dollar. The term 'fixed' needs to be qualified in this context insofar as the exchange rate does fluctuate along with its intervention currency against all other major currencies. Guyana is the exception because its rate has been determined in terms of a basket of currencies rather than a single currency since 1981.

The first active exchange rate changes came in the early 1970s when countries switched to pegging their currencies to the US dollar and used the realignment as an opportunity to change their exchange rates. Jamaica has had the most varied experience

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[3]Bank of Jamaica, The Central Bank and the Jamaican Economy 1960-1985 (Kingston: Bank of Jamaica, 1985), Appendix A. See also Michael Witter, "Exchange Rate Policy in Jamaica: A Critical Assessment," Social and Economic Studies (1983).

of exchange rate changes and systems. Up to 1973, its exchange rate changes relative to the US dollar consisted of passive responses in order to maintain parity with the pound sterling whenever the latter underwent change. In 1973, the Jamaican dollar was devalued by 18.5 percent relative to the US dollar in an action designed to address an external imbalance and to repeg the currency to the US dollar at a rate of 0.909 : 1.00. This was the first time that Jamaica had adopted a devaluation as a deliberate exercise designed to correct an external imbalance, 5.6 percent of the devaluation being attributed to that purpose.[4] In April 1977, Jamaica adopted a dual exchange rate, under pressure of deteriorating balance-of-payments performance, involving a basic rate of 0.909 : 1.00 (all exchange rates will be given in terms of units of domestic currency per U.S. dollar) and a special rate of 1.25 : 1.00. The special rate represented a devaluation of 37.5 percent. Several devaluations were introduced, ranging from 2 percent to 48 percent until May 1978, when the rates were unified.

In June 1978, a system of monthly mini-devaluations was introduced and this went on until April 1979. By this time, the official exchange rate had reached 1.78 : 1.00, where it stayed for almost four years. During that time, there developed a black market in foreign currency and in January 1983, a dual exchange rate system was again adopted by the formalizing of the parallel market. Under this system, each commercial bank was allowed to determine its own parallel rate on a daily basis. In May 1983, a CARICOM rate of 2.25 : 1.00 was introduced in addition to the other two rates. August 1983 saw an amendment being introduced requiring all commercial banks to trade at the same parallel market rate which was determined weekly. In November

[4]See Witter (1983), p. 8.

1983, there was another unification of the rates achieved by a 77 percent devaluation of the official exchange rate. The new exchange rate was set within a band of thirty cents and the band and rate were adjusted periodically.

March 1984 marked the introduction of an auction system by which the exchange rate was determined twice weekly and was allowed to fluctuate within a prescribed band. The auction system was modified in November 1984 in order to allow the rate to fluctuate freely without reference to a prescribed rate. The exchange rate displayed an inexorable slide downwards with very few appreciations, reaching 6.40 : 1.00 in October 1985, subsequently appreciating to 5.50 : 1.00 where it has been maintained since November 1985. Although the auction is still in operation on a twice weekly basis, it is clear that the system is being managed to keep the rate at 5.50 : 1.00, casting doubts on the accuracy of calling it a floating exchange rate system.

In 1975, Guyana pegged its currency to the US dollar at the cross-rate of G$2.55 : US$1.00. In 1981, Guyana initiated a system of basing its exchange rate on a basket of currencies consisting of the US dollar, the pound sterling, deutsche mark, Trinidad and Tobago dollar and the Japanese Yen. With the US dollar continuing as its intervention currency, the rate was set at G$3.00 : US$1.00. In 1984, the composite basket of currencies was changed, dropping the US dollar and the Trinidad and Tobago dollar and introducing the French Franc and the Netherlands guilder, and a new exchange rate of G$3.75 : US$1.00 was adopted. Finally, at the beginning of 1987, there was a massive devaluation setting the official exchange rate at G$10.00 : US$1.00.

The Barbadian currency was repegged to the US dollar in 1975 with a revaluation of 9.5 percent, setting it at B$2.00 : US$1.00 and it has remained at that exchange rate until this time. The currency of the OECS countries was repegged to the US dollar in 1976 at the cross-rate with a slight devaluation for rounding purposes, arriving at a rate of EC$2.70 : US$1.00 where it has remained.

Trinidad and Tobago did not transfer its link from the pound sterling to the US dollar until May 1976, when it did so with a revaluation of 11.4 percent. The rate was set at TT$2.40 : US$1.00 where it remained until December 1985, when there was a 33.3 percent devaluation. A further devaluation of 18 percent was announced in August 1988.[5]

An interesting experiment has been that of the auction in Jamaica. The essential objective is to allow the exchange rate to be determined by market forces. However, given the tendency for the currency to float downwards, and the adverse consequences of this movement in terms of inflation and instability, a decision has evidently been taken to stabilize the rate at J$5.50 : U.S.$1.00. Consequently, instead of being an instrument for maintaining external stability, the stability of the exchange rate has been converted into a goal. This goal presents serious conflicts with other objectives as illustrated by the fact that one of the means by which it is achieved is a contraction of output caused by monetary restraint in the form of high interest rates. The stability of the exchange rate has also been assisted by declining petroleum prices and capital goods imports, the increase in tourism earnings and the availability of ready access to

[5]Information on the movements of exchange rates in the few paragraphs is taken from Bank of Jamaica (1985), Central Bank of Barbados Quarterly Report, several issues, and Witter (1983).

foreign capital assistance.[6]

It is interesting to note that the auction may involve an anti-export bias. Exporters cannot be assured of being able to recoup any losses from unanticipated adverse fluctuations in the exchange rate because they have no control over international prices. On the other hand, "distributors of imported consumer products and producers for the home market would be in a much stronger position to make price adjustments to offset these costs."[7] The existence of an anti-export bias in the auction mechanism is contrary to a basic objective of the policy.

Considerable skepticism has been generated concerning the effectiveness of devaluation on the basis of the Caribbean experience. At the superficial level, this skepticism is supported by observing that the countries which have used the devaluation instrument most sparingly, Barbados and the OECS, have enjoyed the best circumstances in terms of external and internal stability. On the other hand, reversing the direction of causation, it may be argued that good fiscal and monetary management has obviated the need for devaluation. In addition, it is important to take account of a range of exogenous factors which may have affected the countries in different ways.

The effectiveness of devaluation as a policy instrument in the small countries of the Caribbean is examined in section 4.2 with special attention to the work of

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[6]See Karl Bennett, "The Caribbean Experience with Floating and Managed Floating Exchange Rates." Paper presented to a symposium on The Management of Exchange Rates, Port of Spain, January 12 - 14, 1988.

[7]Ibid., p. 26.

Caribbean analysts who have addressed this question.[8] The final section notes some insights of relevance to the theoretical model presented in chapter five.

4.2 THE EFFECTIVENESS OF DEVALUATION

The effectiveness of devaluation has to be evaluated in the context of the objectives for which it is employed. The primary objective of devaluation in the English-speaking countries of the Caribbean in the 1970s and 1980s has been the achievement of acceptable external balances in the face of deteriorating debt conditions. The ultimate objective was to generate current account surpluses in order to reduce the debt which has accumulated. However, in the practical circumstances of Caribbean countries, there are several competing objectives.

Firstly, there is the objective of promoting the growth of output. Mindful of the fact that stabilization efforts may be at odds with the growth objective, Blackman argues that "policy makers in small open developing countries therefore require a bifocal model that addresses both the problem of short-run external and internal

[8]A fruitful resource is the proceedings of a symposium on The Management of Exchange Rates, organized by the Commonwealth Secretariat in cooperation with the Central Bank of Trinidad and Tobago, the Caribbean Community and the Institute for Social and Economic Research, held in Port of Spain on January 12 - 14, 1988. In particular, see Courtenay Blackman, "The Exchange Rate in the Balance of Payments Adjustment Process of CARICOM States", Karl Bennett, "The Caribbean Experience with Floating and Managed Floating Exchange Rates", Marion Williams, "Clearing and Payments Arrangements in the Caribbean", DeLisle Worrell, "The Harmonisation of Exchange Rates in the Commonwealth Caribbean", idem, "The Effects of Devaluation on Competitiveness and Trade".

stability, as well as that of long-term growth."[9] Secondly, against the background of black markets in foreign currency, governments have taken measures to eliminate the leakage of foreign exchange from the official channels.[10]

A third consideration of major importance in the Caribbean context is that exchange rate changes of individual member countries should not be unfavourable to intra-regional CARICOM trade. It is necessary to be conscious of sensitivities to unfair advantages in CARICOM trade conferred by devaluations to prevent retaliatory measures with disruptive consequences. The question of efficient exchange management and the maintenance of convertibility is an important preoccupation of policy makers in the CARICOM context.[11]

In our analysis of the effectiveness of devaluation in the recent experience of the Caribbean, we shall concentrate on the twin objectives of stability and growth. The problem of black markets appears susceptible to amelioration through the use of devaluation. The evidence from the Jamaican experience suggests that an element of flexibility in the regime is desirable because it is the auction which, to some extent, "has been effective in reducing the leakage of currency to the black market."[12] The question of the appropriate machinery to facilitate intra-CARICOM trade and payments

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[9]Blackman (1988), p. 9.

[10]See Karl Bennett, "Exchange Rate Policy and External Imbalance: The Jamaican Experience, 1973-1982," Social and Economic Studies (December 1983), p. 52 where "the role of exchange rate management in helping to minimize the leakage of foreign exchange from the official market." is discussed. See also idem (1988).

[11]See Worrell, (1988a); Williams (1988).

[12]Bennett (1988), p. 25.

on an on-going basis is a matter to be subjected to further study.

It is also important to bear in mind a number of factors associated with a devaluation as an instrument of stabilization and adjustment. It is necessary to distinguish the respective effects of the elements of a stabilisation package. Account has to be taken also of exogenous factors, such as changes in conditions affecting markets for the major exports of Caribbean countries. If major commodity prices are declining on international markets, the effectiveness of a given level of devaluation may be undermined.

Another major concern is the inflationary effect of devaluation. Indeed, this is the primary factor accounting for its unpopularity. The question of capital flows and adverse expectations is evidently of considerable importance in the Caribbean context. Finally, we must mention the effects of devaluation on the distribution of income between the rich and the poor. This is clearly an important dimension. However, it tends to be approached in terms of the effects of the overall stabilization package rather than by attempting to isolate the effects attributable to devaluation alone.[13] The relationship between the distributional impact of stabilization programs and their success in achieving their goals is too often ignored or dismissed with the observation that "the cost of adjustment should however appear equitable in order to engender social

[13]See Derick Boyd, "Macro-economic Stabilization in Jamaica: The Lessons of Recent Experience," Overseas Development Institute, Working Paper no. 19, 1986.

cohesion."[14]

Recent experiences with devaluation in English-Speaking Caribbean countries have engendered skepticism among policy makers and academic observers. This is perhaps best reflected by the following observations made by Courtenay Blackman, then Governor of the Central Bank of Barbados, with respect to the Barbadian experience:

> For example, upon realigning our currency from the pound sterling to the U.S. dollar in July 1975, the Barbadian authorities revalued upwards by 10 percent. We went on to enjoy five of the most prosperous years in our economic history and have maintained that parity ever since.[15]

Blackman's arguments against devaluation being effective in a small Caribbean country rest on the limitations of the market in these countries.[16] Adopting an argument attributed to Solow, he states that there is a corridor around an equlibrium path within which market mechanisms can be relied upon to correct disturbances but if the economy is propelled outside that corridor, extra-market measures have to be resorted to. Since markets in LDCs "lack the depth and sophistication of those in developed

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[14]"Some Issues and Conclusions from Discussions on Exchange Rate Management in the CARICOM Region," Summary of Proceedings from the Symposium on the Management of Exchange Rates, January 1988, p. 3.

[15]Courtenay Blackman, A Heterodox Approach to the Adjustment Problem, Adlith Brown Memorial Lecture, (Barbados: The Central Bank of Barbados, 1986), p. 4.

[16]See Blackman (1986) and (1988).

countries",[17] the corridor is narrower for the former and therefore the resort to extra-market measures would be required more often.

This argument is followed up by observing that LDC economies are characterised by market imperfections which inhibit the effectiveness of market-oriented measures. Account has to be taken of rigidities and bottlenecks which hamper the smooth reallocation of resources. In these conditions, shocks such as those experienced in the 1970s and 1980s can precipitate a crisis which Blackman argues is comparable to the experiences of Japan and Europe after World War II.

Blackman speaks of a situation of market collapse where market disequilibria are enormous. He uses the examples of Guyana and Jamaica where "foreign debt arrears are so huge that it would require an inconceivably large devaluation to bring about the equalization of demand and supply of foreign exchange."[18] The inflation caused by such a devaluation would be highly adverse to output growth.

These considerations lead to the conclusion that the promotion of growth and stability require a longer time horizon than typically applicable in a developed country. Moreover, he urges that approaches to stabilization should involve larger amounts of concessionary financing.

A second line of argument pays more attention to the rigidities inherent in the economic systems of small LDCs, associating the ineffectiveness of devaluation with a "crisis of production".[19] This analysis is based on an elasticities model which sees a

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[17]Blackman (1986), p. 7.

[18]Blackman (1986), p. 11.

[19]See Michael Witter, "Devaluation and Balance of Payments: The Case of Jamaica," Department of Economics Occasional Paper

devaluation affecting the current-account balance by making exports cheaper in foreign markets and imports more expensive in the domestic market. With sufficiently high demand elasticities in both markets, a devaluation is expected to improve the external account by increasing the value of exports and decreasing that of imports.

Against the background of such an analysis, low elasticities play a major role in explaining the ineffectiveness of devaluation. Domestic demand for imports is said to be inelastic because of the attachment of consumers to imported consumer goods and particularly because of the heavy reliance of domestic production on imported intermediate and capital goods. On the export side, supply is said to be severely inelastic in the short run. This is aggravated by the fact the that major traditional exports of Jamaica (including bauxite, sugar and bananas) are sold at prices negotiated in foreign currency so that a devaluation does not lower its foreign price. This is advanced as an explanation why exports of these products may fail to respond to devaluation. The combination of these conditions may actually lead to a deterioration of the current account in response to a devaluation.

An alternative strategy is proposed as the solution to Jamaica's problems of stabilization.[20] It is argued that the emphasis should be placed on ways of reorienting consumers' tastes towards local products. In addition, the necessity is advanced for improving the social relations affecting labour if productivity is to be raised. Although a set of recommendations for achieving these goals are put forward, there is still a need

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Series no. 1, July 1984, University of the West Indies, Jamaica; also, idem (1983).

[20]See Witter (1983) and (1984).

to identify the precise mechanisms by which they may be achieved.

The deterioration of the balance of payments in response to a devaluation is also associated with large doses of capital flight. Devaluation redistributes income in favour of profits but instead of stimulating investment, it favours luxury spending and capital flight. This factor has been examined in relation to the experience of the 1970s and the high level of foreign investment in Jamaica.[21] It is evidently a factor of considerable importance in the Jamaican context.

The effectiveness of devaluation in the Caribbean experience has been observed to be highly susceptible to fluctuations of uncertainty and instability in expectations. It is observed that

> Most serious of all are the potential effects of a devaluation on public expectations. Devaluation will immediately add to inflationary pressures and unless it is deep enough to be credible, and unless an adequate cushion of foreign exchange is available, it could lead to a general loss of confidence in the system, with a consequent expansion of the black market and capital flight.[22]

Evidently, this is not an argument against devaluation per se but a caution that,

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[21]See Norman Girvan et al., "The IMF and the Third World: The Case of Jamaica," Development Dialogue (1980), and Luca Barbone and Francisco Rivera-Batiz, "Foreign Capital and the Contractionary Impact of Currency Devaluation, With an Application to Jamaica," Journal of Development Economics (1987).

[22]Blackman (1988), p. 15.

given the volatility of the expectations of the public, a devaluation which is not properly timed and implemented can have adverse external and growth consequences. It is observed elsewhere that "fundamental disequilibrium creates and is fed by uncertainty and lack of confidence".[23]

4.3 CONCLUDING REMARKS

The experiences of Caribbean countries in the 1970s do not engender an unequivocal faith in devaluation as an instrument of stabilization. A high premium is placed on the protection of stable exchange rates for as long as possible. Emphasis is placed on the need to pre-empt devaluation by the maintenance of sound macroeconomic policies, designed to keep the economy on a sustainable growth path, following the well-worn adage that prevention is better than cure. The exchange rate should be kept at the highest level consistent with a sustainable growth performance. It is to be noted that an appropriate level for the exchange rate may be an effective way of keeping the black market in foreign exchange in check.

If it is evident that a country is losing its competitive edge in a fundamental way, a devaluation may be indicated as part of the approach to stabilization. In such a case, a timely and adequately determined devaluation should be undertaken. Even then, success is not guaranteed, given the rigidities that may be typical of the small economy. It is argued that stabilization in these circumstances should be viewed within a long time horizon and should incorporate a significant role for net external financing to lend

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[23]Summary of Proceedings (1988), p. 2.

credibility to the devalued exchange rate.

The examination of views on devaluation in the Caribbean context generates insights, which are consistent with the intuitions that motivate the theoretical model to be introduced in the next chapter. In particular, mention may be made here of two aspects which will be taken up in the theoretical model. Firstly, there are the problems of rigidities and bottlenecks, which hinder the smooth expansion of output in response to conventional market stimuli. The existence of these elements underlines the importance of modelling the behaviour of supply.

Secondly, the possibility of perverse responses to devaluation has been noted. These responses have been associated with the volatility of expectations in the face of the transmission of inflationary developments, and with capital flight and luxury spending. The latter characteristics reflect the relative immaturity of the Jamaican capitalist class in terms of its capacity to act as the central force in the development effort.

Confusion arises because most of the analyses are based on an elasticities model of devaluation.[24] Whilst elasticities will always have some relevance in the expected effects of devaluation, it should be noted that the conventional assumptions are unsuitable to a small, open country. An underlying assumption of the elasticities model is that the domestic price of exports is given, which is inconsistent with the reality of a country that is a price-taker in the international economy.

This inconsistency leads to several types of misdiagnosis in the analysis of the effects of devaluation. For instance, it is argued that an obstacle to the expansion of

[24]See, for example, Witter (1984).

traditional exports is the fact that their prices are denominated in foreign currency. A more consistent argument is that the supply of the commodities in question does not respond in the short run to price stimuli. For example, the evidence indicates that, given the organization and characteristics of the bauxite industry, factors such as market demand by the industrialized countries, access to cheap energy and long-term sourcing plans of the multinationals play a more important role in determining output decisions than domestic prices.[25]

Moreover, although the role of devaluation in reducing the standard of living is acknowledged, this important dimension is too often ignored in the analysis of the effects of devaluation. In addition, the use of an elasticities approach makes it less easy to integrate the analysis of devaluation with that of domestic macroeconomic policies.

[25]See David Hojman, "The Economics of Bauxite and Aluminium: Distributed Lags and New Econometric Estimates," Resources Policy (1984).

Chapter 5

5. A STYLIZED MODEL OF DEVALUATION IN A SMALL OPEN ECONOMY

5.1 INTRODUCTION

This chapter develops a stylised model of the balance of payments in a small open economy. It will be employed for the purpose of analysing the effects of a devaluation on the balance of trade and total output. This model will emphasize the features of countries such as those of the Caribbean which are not only small but extremely open to the influences of the international economy. A major aspect of our model is that it accords central importance to the real-wage implications of devaluation.

In keeping with the practice followed in many balance-of-payments models, this one focuses on the balance of commodity trade and, accordingly, will ignore factor and non-factor services.[1] It must, however, be emphasised that, in principle, our model can be applied to some categories outside the commodity-trade account. Indeed, in the case of Jamaica, it is of practical importance to include tourism earnings in the analysis both because they are the principal source of foreign-exchange earnings[2] and "have the same

[1]See footnote 1 of chapter one for examples of papers which restrict themselves to the trade balance.

[2]Tourism earnings (net of payments by residents travelling abroad) were US$385.3m and US$375.3m in 1984 and 1985 respectively, compared to US$283.8m and US$212.2m for alumina,

impact on our economy as export earnings."[3] While our model is equally applicable whether tourist expenditure is included or not, its role is stressed in the Caribbean context.

It must also be emphasised that the decision to ignore the capital account does not imply its unimportance. On the contrary, it will be shown in chapters six through eight that net capital flows are of major importance in the performance of Jamaica which has the kind of economy toward which this analysis is geared. However, success in achieving improvements in the trade account would be a major contribution to the achievement of a sounder balance-of-payments position and a stronger economy.

Our model will attempt to analyse the effects of devaluation in a small, open economy such as that of the typical Caribbean country. We shall emphasise the feature of such economies as price-takers in the international economy. A focal point of the analysis will be the real wage and the implications of a devaluation for the standard of living of labour. Moreover, we shall adopt the somewhat structuralist position that an adequate supply response to the stimulus of a devaluation cannot be taken for granted and shall emphasise the role of a favourable output response for the success of a devaluation.

The development of our model will follow a number of steps. In section 5.2, we discuss the assumptions which are the foundation for the analysis. Issues to be taken up include its assumption of openness, the supply function and the price-wage fulcrum.

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the largest commodity export, in the same years. See Bank of Jamaica, Balance of Payments of Jamaica, 1985 (Kingston: BOJ, 1986).

[3]Stone (1988), p. 8.

Section 5.3 introduces a basic version of the model, the purpose of which is to explore the implications of a model based on the real wage as its central price relationship.

Section 5.4 deals with manipulations of the basic model aimed at determining the effects of devaluation on output and the trade balance. Section 5.5 introduces an extension of the model which, while it maintains the essential assumptions of the basic model, adopts a more general structure. Two primary changes are the incorporation of profit income on the demand side and the specification of income categories in aggregate terms. Section 5.6 is devoted to manipulations of the extended model towards the derivation of the effects of devaluation. Finally, Section 5.7 presents some general comments and conclusions.

5.2 GENERAL ASSUMPTIONS

5.2.1 Openness

It is customary to assume two main categories of goods in balance-of-trade analyses, i.e. tradables and non-tradables. Theoretical approaches make the assumption that the price ratio of any two goods or groups of goods included in either of these two categories is constant. This allows tradables to be treated as one composite good and likewise for non-tradables.

Following the small-country assumption that countries are price-takers in the international market, price ratios among tradables are assumed to be exogenously determined. The price level of non-tradable goods is determined independently of the international market. The analysis then revolves around changes in the price relations

between traded goods and non-traded goods as a consequence of devaluation.

The principal innovation of our model is the strength of the assumption of openness. It is assumed that all goods in a small open economy are tradables. There are no non-tradables and therefore that all prices in the country are determined in relation to the international market. One way to view this assumption is as the extreme counterpart to the closed economy model which has been widely applied in economics and which essentially assumes that there are no traded goods.

In its exclusion of non-tradables, this model may be said to resemble the elasticities models. Unlike those models however, this model adopts the further assumption, typical of modern trade models, that the price ratios of tradables are constant, allowing us to treat tradables as a composite good.

It may, at first blush, appear that our assumptions are extreme but on closer examination, strong grounds can be found for them. The main rationale for non-tradables is the existence of sectors in the country where domestic prices are determined independently of international prices. To some extent, this situation may be contrived by trade policy as some goods are deliberately sheltered from the international market. The influence of international prices on those of non-traded goods is an indirect response to substitutions in production and consumption as the price ratio between traded and non-traded goods changes. If the price of non-tradables fell relative to that of tradables, resources would be drawn away from the former and demand attracted towards them. The combination of these forces would tend to attenuate their price decline and even cause this price to rise. It is important to note that not all goods that are not being traded are non-tradables. Import-competing goods are clear examples

of tradables that are not traded since they are in competition with international goods but are made for the domestic market.

One implication of our simple model is that there is perfect substitutability in production between goods for the domestic and foreign markets. This assumption is not unique to our model. Other models assume that the tradable good produced by the country consists wholly of an exportable good, of which some portion is consumed domestically.[4] It is also not unusual to assume that factor inputs transfer readily between the tradable and non-tradable sectors.

Such an assumption of substitutability is a significant simplification of reality. It is widely recognized that a shift from domestic to foreign markets presents difficulties that have to be overcome. Not least among them is that of presenting the product in a way that is appealing to consumers in a foreign market. However, by abstracting from this difficulty, it is possible to focus on other areas of interest.

The first consideration that comes to mind in defence of our strong assumption of openness is the high importance of trade in the typical small country. In the case of Jamaica for example, imports exceeded fifty percent of GNP in 1981 and 1984 and have usually been in excess of forty percent. Exports and imports added together have been almost 90 percent of GNP in some years (see Table 6.3). It is to be expected that with trade having such a preponderant position in the economy, the formation of prices domestically would be heavily influenced by international prices.

It may be argued, however, that even where goods are not currently traded internationally, their price determination is influenced by international prices. This

[4]See, for example, Dornbusch (1980), chapter 5.

point has been made at some length by Frenkel and Johnson who put forward a number of explanations.[5] They argue that even if a good is not traded, its factor inputs have to be attracted from the production of traded goods and, therefore, this is a channel for influencing the price formation of the non-traded good

Where a good employs an "internationally immobile specific factor such as climate or land of a specific quality",[6] it is argued that in most cases the product itself is tradable. Frenkel and Johnson present the example of coal mines which employ a specific natural resource but produce coal, which is tradable. Such an example is important in demonstrating that even though many goods are not traded, it is difficult to conceptualize examples of goods the price determination of which can be entirely divorced from the international process.

It is significant that although Frenkel and Johnson are basing their comments on the small-country assumption, they are not thinking particularly of economies as small and as open as Jamaica or the other Caribbean states and mini-states. The point, however, applies a fortiori to such countries.

It is usually assumed that non-tradables consist primarily of services, e.g., haircuts, medical services. Services are considered typical non-tradables simply because they are the most obvious examples of items which must be exchanged at the location where they are produced. For a number of reasons however, even this is not as significant a factor as usually assumed. Firstly, in the small countries of the Caribbean region, tourism is a principal industry, sometimes the most pervasive. This means that the

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[5]Frenkel and Johnson (1976), pp. 27-8.

[6]Ibid., p. 28.

most pervasive service in many cases is tradable.[7] Furthermore, with the growing technological sophistication in areas such as communications, other services are becoming highly tradable Two examples, which are a growing feature in Caribbean countries, are data-entry computer services and banking.

Another relevant consideration is the low substitutability between goods and services. It is difficult to imagine that when the prices of motor cars, margarine and video machines go up as a result of a devaluation, people switch to the consumption of more haircuts or visits to the dentist. Therefore the existence of a few genuinely non-tradable services does not affect our trade mechanism in an essential way What it implies, however, is that our prediction of the increase in the domestic price level will be overestimated to the extent that non-tradables exist. However, this is not expected to be a significant overestimate

Another typical example of a non-tradable is land and other natural resources, which by their nature cannot be transported. In this case, it can be argued that the demand for land, for example, is a derived demand depending on the uses for which it is suitable. The price of land will inevitably be affected by those of the goods market. In addition, its demand is typically a function of variables such as wealth rather than a straight-forward question of relative prices. Consequently, one would not expect that consumers would move into the purchasing of land simply because the prices of goods have gone up.

Geography is another factor and, in this context, smallness need not be a

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[7]Tourism in the Caribbean is an extreme case of a tradable in the sense that all of its output is typically aimed at the foreign market, just like bauxite, for instance.

consideration. Countries that are landlocked and have good communication links with their neighbours will find their prices being significantly related to international prices throughout the scope of economic activity, irrespective of size. We are, of course, abstracting from government intervention, which could have the effect of creating sheltered sectors. A good example is Canada where superficial observation suggests that, but for government intervention, one would be hard put to find non-tradable goods. This is undoubtedly true also of Mexico and Central American countries. Jamaica is an island but it is arguable that its good communications and close contacts with the North American continent and elsewhere outweigh any tendencies to insularity.

The strong assumption of openness finds support in the Caribbean literature. There have been several studies which have established the strength of the influence of international prices on price levels in the Caribbean region.[8] In particular, attention may be drawn to a recent analysis by Carlene Francis looking at monetary policy in the Bahamas.[9]

On the basis of an empirical study conducted by the IMF[10], it is found that "inflation in the Bahamas is almost solely imported".[11] The IMF study found that a change in the consumer-goods component of the US producer price index (US being the

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[8]See, for example, Compton Bourne (ed.) Inflation in the Caribbean (Kingston, Jamaica: Institute for Social and Economic Research, U.W.I., 1977).

[9]Carlene Francis, "Monetary Policy in a Small, Open Dependent Economy: The Case of The Bahamas," Social and Economic Studies (1986).

[10]IMF, "Bahamas: Recent Economic Developments," March 1980. Cited in Francis (1986).

[11]Francis (1986), p. 116.

main trading partner of the Bahamas) resulted in a roughly proportional increase in the Bahamian CPI, with a 15-month lag. In addition, it is found that "indigenous factors appear to have very little impact on inflation in the Bahamas" [12]. This is strong support for our model since there is the implication that on average, the prices of all goods and services reflected in the CPI are influenced by international price changes, resulting in a change in the index of an equal percentage. The similarities among the Caribbean countries are strong enough for it to be assumed that Jamaica and other countries behave in a similar fashion.

The 15-month lag is significant because it shows that prices do not react abruptly to a devaluation but they change gradually over a period. This lag may strengthen rather than reduce the perception of an inflationary process and inflationary expectations of a devaluation. Inflationary expectations may contribute to general instability in the economy.

5.2.2 The Supply Function

Most analyses of the balance of payments are essentially demand-oriented. The focus of attention is on the effects of changes in relative prices on the domestic and foreign demands for domestic output relative to foreign goods. In emphasizing the demand side, they tend to ignore the supply side, which is an aspect of great practical and theoretical significance to the analysis of devaluation. To a certain extent, the concentration on the demand side is a legacy of the elasticities approach, in which the role of demand conditions in achieving improvement in the trade balance is made

[12] Ibid., p. 115.

explicit. Trade analyses have, consequently, tended to take the supply side for granted. Our model takes the approach that it is necessary to specify the behaviour of supply explicitly.

It is possible that, for various reasons, the supply response is a point of critical breakdown in the actual response to a devaluation. One way in which a devaluation is supposed to affect the trade balance is by increasing profits (assuming real wages are flexible downward) in the production of tradables and thereby promoting an expansion in their production. In the concrete circumstances of Jamaica and other LDCs, it may be found that supply behaviour does not necessarily follow this course and, therefore, may be described as 'perverse' in the light of conventional analysis.

By a perverse response, we mean an outcome that is contrary to that which conventional price theory would lead us to expect. On the basis of an upward-sloping supply curve, we would expect rising prices to be associated with increasing output. This supply curve, however, is based on the assumption of rising prices, all other things held constant. In the context of stabilization in a developing country, it is important to take into consideration such aspects as expectations, bottlenecks and rigidity, opening the possibility of obtaining an apparently perverse supply function.

A basic explanation for perverse reactions revolves around expectations which tend to be excluded from orthodox analyses. However, there is reason to believe that the nature of expectations is a very powerful feature of the devaluation situation, especially when devaluation is undertaken in an effort to achieve macroeconomic stability. A devaluation tends to stimulate inflation and inflationary expectations. Doubts may be raised as to whether economic stability is sustainable and further rounds of devaluation

can be avoided. A stable economic and social climate is necessary if investors are to be persuaded to invest in possibly new and unfamiliar ventures involving competition in foreign markets. In circumstances loaded with uncertainty, producers, instead of investing increased profit earnings in the expansion of goods for export, may be inclined to purchase land (or other existing assets) or remit funds abroad as capital flight. Other factors which may have a significant impact on the supply response include protectionism in foreign markets and the policy and commercial challenges of completing the transition to an outward-looking development strategy.

An important consideration to bear in mind is the circumstances of most devaluations in recent years Devaluation is usually postponed until it has become absolutely unavoidable.[13] Consequently, a devaluation often comes in the middle of a bitter crisis. In these circumstances, it does not take much in terms of additional inflation to set up destabilising expectations and precipitate capital flight instead of output expansion.

The occurrence of perverse reactions to a devaluation has been alluded to by several writers looking at Jamaica. Some of the writers have paid attention particularly to the bauxite industry. It has been observed, for example, that a devaluation, by increasing the domestic currency value of foreign exchange, reduces the amount of foreign currency required to service local costs. Consequently, it results in smaller amounts of profit being retained in foreign currency terms, or effectively, to larger

[13]See Spraos (1986).

outflows.[14]

This matter has been the focus of analysis in a recent application of the Krugman-Taylor model where it is shown that devaluation, resulting in a redistribution of incomes towards profits in a country where foreign investment is substantial, leads to higher remittances abroad and a contractionary effect on output.[15]

It has also been observed in an empirical evaluation that increases in the world market prices of bauxite products have a perverse effect in Jamaica.[16] Instead of generating an increase in output, they are associated with a decline. The explanation offered is that in the context of the conflict between the government and the bauxite companies over the bauxite levy, companies use the increased profits from price increases to finance the relocation of sources of supply. To the extent that this explanation is true with respect to world market price changes, it would also apply with respect to a devaluation. Since foreign investment is widespread outside the bauxite industry, perverse supply reactions may affect other sectors also.

We have developed a simple ad hoc supply function employing two explanatory variables in order to incorporate our thinking on this aspect into the model. The first explanatory variable is the price-wage ratio, reflecting the conventional assumption that supply is a function of price, subject to costs. Costs are reflected by the nominal wage. Other costs, such as the prices of intermediate goods are not specified, given the

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[14] This point has been discussed by Girvan et al. (1980), and Barbone and Rivera-Batiz (1987).

[15] See Barbone and Rivera-Batiz (1987).

[16] Hojman (1984).

assumption that these prices vary in proportion to the general price level It is assumed that there are two factors dictating the impact of changes in the price-wage ratio, as a result of exchange-rate changes, on supply. On the one hand, an increase in this ratio operates as a stimulus to expansion by virtue of an increase in the profit rate. On the other hand, the influence of inflationary expectations, bottlenecks in production[17] and other transitional factors may impose a negative tendency in the response to devaluation. The direction of the full impact of a change in the price-wage ratio on supply is assumed to be a combination of the two factors above and may therefore be favourable or unfavourable.

The second term relates the real rate of interest to the level of production. It is not unusual for a devaluation to be accompanied by increases in the interest rate as part of a tightening of access to credit and an effort to maintain positive real rates of interest in order to encourage domestic savings and defend the new value of the currency. The evidence from Jamaica suggests that interest-rate increases can be unfavourable to growth (see chapter 6). The response of output to a devaluation will depend on the outcome of the combined effects of these forces.

5.2.3 The Price-Wage Relationship

Any analysis of the balance of payments revolves around a principal relative-price relationship. As Dornbusch has observed, "exchange rate changes exert real effects

[17]Shortage of foreign exchange for the purchase of raw materials is a typical bottleneck affecting developing countries with balance-of-payments problems.

because they constitute changes relative to some other nominal variable."[18] The elasticities approach took the relative prices of importables and exportables as its focal point. Recent analyses have tended to be based on the price relations between tradables and non-tradables. The assumptions of our present model exclude both of these price relationships. Instead, the central relationship of our model is that between domestic prices and nominal wages.

The importance of the price-wage relationship is acknowledged at many levels of economic analysis. In the context of balance-of-payments analysis, its relevance is seen in the consideration of real-wage resistance, which can frustrate the effects of a devaluation.[19] In the implementation of stabilization and adjustment policies, the role of the real wage is reflected in measures to restrain increases in wages in the face of domestic price rises arising from devaluation. In general, it can be argued that the relationship between prices and wages is a key relationship in the analysis of the balance of payments.

5.2.4 Other Assumptions

Some further assumptions need to be stated. Firstly, nominal wages are assumed to be constant. This is a familiar assumption and has been widely employed in balance-of-payments models.[20] Consistent with the fixed wage assumption is the

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[18]Dornbusch (1975), p. 870.

[19]See Dornbusch (1980); Corden (1983).

[20]E.g., Krugman and Taylor (1978), Fleming (1962) and Mundell (1963).

assumption that unemployed labour exists. This assumption is certainly justified by the reality of Jamaica and other developing countries.

Secondly, we are focusing our attention on the merchandise-trade account and, therefore, the balance of payments consists only of the balance of trade for our purposes. Thirdly, we are abstracting from any active role by the government as a matter of simplification. Our hypothetical small country will be assumed to produce only exportables. The national output of goods is either consumed domestically or exported. The description of domestically produced goods as exportables rather than 'import-competing' (as is often done in trade models) is not a difference in substance but it has connotations worth noting. Trade analysis has been oriented towards a categorization of goods as import-competing if they displace potential imports. However, it must be remembered that the imports of one country are the exports of another so that the categorization is essentially trivial. In the context of LDCs, the current interest in expanding exports enhances the appropriateness of viewing each product as a potential export.

Imports consist of consumer goods and intermediate goods. For the present, imports of capital goods will be ignored but they will be introduced in an extension of our model. Intermediate goods enter the production of all domestic output in a fixed ratio. This is a simplification which is convenient for our analysis and has been widely employed in the literature. Note also that our simple model ignores domestically produced intermediate goods.

In the ensuing sections of this chapter, we advance a model which is based on our assumptions with respect to the small open economy. In the simplicity of its

assumptions, such as fixed proportions for labour and raw-material inputs and the absence of domestically produced intermediate goods, it resembles the work of Dornbusch, Krugman and Taylor, and Jones and Corden[21], which have been influential in the analysis of the effects of devaluation. Its peculiar features are the extreme assumption of openness, reflected in the absence of non-tradables, and the inclusion of a simple supply function. Two versions of our model are presented: a basic one focusing on the operation of the price-wage mechanism in generating the absorption effects which underpin the effects of devaluation, and an extended one, in which demand depends more conventionally on income variables. The two versions yield consistent conclusions about the effects of devaluation on output and the trade balance and they highlight the role of production in the process.

5.3 THE BASIC MODEL

This section is devoted to the presentation of our basic model, incorporating the features and assumptions outlined in the foregoing sections. The basic model turns the focus on the price-wage fulcrum as a basis for analysing the effects of a devaluation in a small country. Implicit in this version is the assumption that all additions to profits are saved. Later on, we shall introduce an extended model which, while maintaining the essential assumptions of the basic model with respect to the role of the real wage, brings profits more explicitly into the analysis.

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[21]See Dornbusch (1980), Krugman and Taylor (1978) and Jones and Corden (1976).

To facilitate our analysis, we shall start by presenting lists of notation and equations pertaining to the basic model. These lists will be followed by full explanations aimed at clarifying the interpretation of the variables.

List of notation

e : the nominal exchange rate in units of domestic currency per unit of foreign currency.

Px : the price of exportables in domestic currency.

Pm : the price of importables in domestic currency.

P*x : the price of exportables in foreign currency.

P*m : the price of importables in foreign currency.

P : index of prices of tradables in domestic currency. (Given our assumptions, P is equal to the domestic price level).

P* : index of prices of tradables in foreign currency.

W : the nominal wage rate.

S : total gross output in real terms.

D : total domestic demand for domestically-produced output in real terms.

X : volume of total exports.

M : volume of total imports

Mc : volume of imports of consumer goods.

Mi : volume of imports of intermediate goods. (All intermediate goods are imported).

a : share of intermediate goods in total output.

b : the 'value added' ratio; b = 1 - a.

r : the real rate of interest.

α_0, α_1, α_2 : coefficients of the supply function.

ϕ_0, ϕ_1 : coefficients of demand for domestic produce.

β_0, β_1 : coefficients of demand for imports of consumer goods.

Y : gross domestic product in real terms.

B* : the balance of trade in terms of foreign currency.

A : total domestic absorption in real terms.

INITIAL SPECIFICATIONS

Accounting Identities

$$Y = (D + Mc) + (X - M) \quad (1)$$

$$Y = bS \quad (2)$$

$$X = S - D \quad (3)$$

$$M = Mc + Mi \quad (4)$$

$$A = D + Mc \quad (5)$$

$$B^* = P^*_x X - P^*_m M \quad (6)$$

Price Assumptions

$$P_x = eP^*_x,\ P_m = eP^*_m \quad (7)$$

$$P_x/P_m = P^*_x/P^*_m = c, \text{ where c is a constant.} \quad (8)$$

$$P^*_x = P^*_m = P^*;\ P_x = P_m = P \quad (9)$$

Behavioural assumptions

$S = \alpha_0 + \alpha_1(P/W) + \alpha_2 r$; $\alpha_0 > 0$, $\alpha_2 < 0$. α_i is constant for all i. (10)

$D = \phi_0 + \phi_1(P/W)$; $\phi_0 > 0$, $\phi_1 < 0$. ϕ_i is constant for all i. (11)

$Mc = \beta_0 + \beta_1(P/W)$; $\beta_0 > 0$, $\beta_1 < 0$. β_i is constant for all i. (12)

$Mi = aS$; $0 < a < 1$ (13)

Classification of variables

Forcing variables {r, e, P*, W}.

Inherent variables {S, D, Y, B*, X, M, Mc, Mi, P, B}.

The assumptions made about prices are of central importance to our model. By equation (7), we state the relationship between domestic-currency and foreign-currency prices using the exchange rate, which is defined as units of domestic currency per unit of foreign currency. The exchange rate, e, is assumed to be exogenous, while P*x and P*m are held constant. Since we are assuming our country to be a price-taker in the international market, the relative price of exportables and importables is fixed. This assumption is expressed by equation (8). As a matter of convenience, we set c equal to unity from which equation (9) follows.

This analysis abstracts from the operations of the government and the existence of transportation costs. Moreover, since our analysis applies to the case where all the products of a small economy are assumed to be tradable, P represents an index of the domestic price level. As a final step with respect to prices, we combine (7) and (9) to obtain

$$P = eP^*. \qquad (7^*)$$

Equation (1) expresses real output as the sum of total real domestic absorption and the balance between exports and imports in real terms, (X - M). Equation (2) is obtained by simplifying equation (1) and expresses the identity that total output is equal to the sum of value added in production, given the assumption that intermediate goods are all imported.

Equation (3) is an identity which expresses exports as a residual equal to the total supply of goods available domestically less the total amount absorbed domestically, abstracting from stock adjustments. Thus, exports are equal to total domestic supply (S) plus imports of consumer goods (Mc) less the total amount absorbed domestically, consisting of goods produced at home (D) and consumer goods produced abroad (Mc).

Total imports consist of imports of consumer goods and intermediate goods, as indicated by equation (4). In this simple model, we abstract from the existence of capital goods but will remove this restriction in the extended model. Equation (5) represents total domestic absorption which, under the assumptions of our basic model, consists of domestic consumption of locally-produced goods and imported goods.

Equation (6) represents the trade balance in terms of foreign exchange, which will also be referred to as the 'foreign balance'. The foreign balance is given as the value of exports less the value of imports, all expressed in foreign exchange prices. By combining equations (6) and (9), we obtain

$$B^* = P^*(X - M). \qquad (6^*)$$

Equation (10) is a simple ad hoc aggregate supply function which relates gross output, on the left hand side, to a positive intercept term, α_0, the ratio of prices to

wages and the real rate of interest. The direction of the effect of the price-wage ratio may be positive, negative or zero, depending on the expectations generated by the devaluation, which, in this model, would be responsible for a change in the ratio. A zero effect on supply may be explained by the expectation that a change in the price-wage ratio is temporary. The nominal wage is assumed to be constant and the existence of unemployment is allowed for in the labour market.

We adopt the assumption made by Krugman and Taylor that the interest rate is kept constant by a deliberate monetary policy. This is not an unrealistic assumption because it is not unusual for devaluation for stabilization purposes to be accompanied by a tightening of credit conditions, aimed at maintaining the real interest rate or even raising it.

Equation (11) proposes aggregate demand for domestic goods simply as a function of the price-wage ratio with a positive intercept term, ϕ_0, being included The usual assumption that demand is a function of income is modified in order to emphasise the effects of real wages. We use the price-wage variable rather than the real wage rate as a matter of convenience and, consequently, ϕ_1 is negative. For the moment, we assume that the marginal propensity to consume out of profits is zero and thus an increase in prices relative to wages tends to depress demand. This assumption will be relaxed when we extend the model.

Equation (12) relates to the demand for imports of consumer goods and this is assumed to follow the same pattern as the demand for domestic produce reflected in equation (11). Equation (13) expresses imports of intermediate goods as a fixed proportion of gross output. Although a simplification, this is a plausible assumption in

the special context of small developing countries because of a tendency for the demand for imports of intermediate goods to be highly inelastic, at least in the short run.

We are left to explain the basis for imports of consumer goods. Since tradables are being treated as one good, it may appear that the country is taking the irrational action of importing the same good that it is exporting at the same price. Our explanation for imports has to rest, therefore, on product-differentiation. Imported goods are simply not being produced domestically because of physical characteristics and the narrowness of the productive base, typical of small economies.

We now have our basic model consisting of 11 equations as follows: (1) - (5), (6*), (7*) and (10) - (13) inclusive.

5.4 REMOVING INTERMEDIARY INFLUENCES

The objective of this section is to analyse the effects of devaluation on total output and the trade balance. We shall, therefore, pay attention particularly to the effects of changing the exchange rate, e, on the trade balance, assuming the other forcing variables of the model to remain constant.

5.4.1 Effects of a Devaluation on Output

A convenient expression for total real output is provided by equation (2). Substituting equations (10) and (7*) into (2) leads to

$$Y = b[\alpha_0 + \alpha_1 e(P^*/W) + \alpha_2 r]. \qquad (14)$$

A devaluation is represented by an increase in the exchange rate, e. Therefore, in order to determine the effect of devaluation on output, we take the partial derivative of equation (14), obtaining

$$\delta Y/\delta e = b\alpha_1(P^*/W). \qquad (15)$$

The terms with r and α_0 disappear since, by assumption, $\delta r/\delta e = \delta\alpha_0/\delta e = 0$.

What does equation (15) tell us about the effect of a devaluation on output? Is the effect an expansionary one or a contractionary one? This question cannot be answered unambiguously by equation (15). The direction of the output effect depends on the sign of α_1. If the outcome of the combination of positive and adverse factors is favourable, α_1 will be positive and so will the overall output effect. A negative output effect is not an unlikely outcome, given the typical climate of uncertainty affecting business investment and the formidable transitional problems. It should be noted that whatever the value of α_1, the effect of b is a dampening one reflecting the presence of intermediate imports as a leakage abroad.

5.4.2 Devaluation Effect on the Balance of Trade

It is important to observe, at the outset, that the balance of trade may be expressed in terms of either domestic or foreign currency and that it matters which one is used. Hirschman has pointed out that,

> It is only the balance expressed in foreign exchange that matters when devaluation is undertaken to meet typical balance-of-trade problems. The habit of evaluating the success of devaluation in this respect by comparing trade or current account balances before and after devaluation in domestic currency can be very

misleading.[22]

Hirschman has shown that typically, the domestic balance will deteriorate whilst the foreign balance will improve when starting from a deficit. It is, therefore, of material importance which balance is the basis for evaluation. Bearing in mind Hirschman's findings, we shall emphasize the foreign balance. We trace the main calculations in this section, while presenting a more detailed derivation of the effect on the foreign balance in appendix 5A.

The balance of trade in foreign-exchange terms (i.e., the foreign balance) is equal to the nominal value of total exports minus total imports, expressed in units of foreign currency, as indicated by equation (6*). The first steps towards determining the effects of devaluation on the foreign balance will involve finding reduced-form equations for both exports and imports. Substituting equations (10), (11) and (7*) into equation (3), we are able to obtain

$$X = \alpha_0 - \phi_0 + (\alpha_1 - \phi_1)e(P^*/W) + \alpha_2 r. \qquad (16)$$

Similarly, we may combine equations (2), (4), (12), (13), and (7*) to arrive at the following equation for imports:

$$M = ß_0 + ß_1 e(P^*/W) + (a/b)Y. \qquad (17)$$

A general expression for the effect of devaluation on the trade balance is the partial derivative of the trade balance equation with respect to the exchange rate, i.e.,

$$\delta B^*/\delta e = P^*(\delta X/\delta e - \delta M/\delta e). \qquad (18)$$

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[22]Hirschman (1949), p. 53. Note that Hirschman refers to the foreign-exchange balance of trade as the 'foreign balance' and the balance of trade in domestic-currency terms as the 'domestic balance'. For convenience, this nomenclature will be followed here from time to time.

Substituting equations (16) and (17) into equation (6*) and differentiating yields

$$\delta B^*/\delta e = (\alpha_1 - \phi_1 - \beta_1)(P^{*2}/W) - (a/b)P^*\delta Y/\delta e. \quad (19)$$

Finally, by substituting equation (15) into equation (19), we obtain

$$\delta B^*/\delta e = (b\alpha_1 - \phi_1 - \beta_1)P^{*2}/W. \quad (20)$$

Equation (20) is a convenient formulation of the balance-of-trade effect because this equation reflects the usual understanding that the change in the balance of payments depends on the change in output, relative to that of absorption. It can be seen that the coefficients in the bracket, which essentially determine the direction of the effect, are those that govern output and consumption respectively.

It should be noted that the demand side, reflected by ϕ_1 and β_1, is unambiguously favourable to the trade balance due to the strong presence of disabsorption. This is a direct consequence of the decline in real wages The decline in real wages as a result of devaluation forces a cutback in absorption. This is favourable to the balance of payments in two respects. Firstly, it tends to reduce imports of consumer goods. Secondly, it releases resources for the expansion of exports. The unambiguously favourable effect of disabsorption in the basic model may be due partly to our exclusion of profits from the demand side of the model. This restriction will be relaxed in the extended model to follow.

If α_1 is positive, the trade-balance effect is unambiguously favourable. The reduction in domestic demand is reinforced by an expansion in output for the export market. If α_1 is negative, the trade-balance effect may still be positive if the decline in output is overcome by the effects of disabsorption The presence of b, reducing the impact of α_1 ($0 < b < 1$), strengthens the likelihood that disabsorption effects will

prevail. Our basic model, therefore, lends support to the orthodox view that a devaluation will tend to be favourable to the trade balance, even if it is unfavourable to output.

A couple of qualitative observations should be made with respect to the disabsorption effect. Firstly, in the usual circumstances of a stabilization program in an underdeveloped country, the room for disabsorption may be very limited. It is quite plausible to reason, for example, that previous deflationary measures and the effects of an extended crisis would already have reduced absorption to its lowest limit and the society may dissave (if possible) or take advantage of credit availability to maintain the level of absorption. This last point suggests the relevance of monetary factors.

The second point is that, any disabsorption that does take place will be associated with a deterioration in the standard of living. This reflects the inevitably unpleasant face of a devaluation. It is particularly unfortunate that the burden of this deterioration tends to fall mainly on wage earners.[23]

5.5 THE EXTENDED MODEL

Section 5.4 was devoted to a basic version of our model, which was aimed at exploring the implications of the assumption of the real wage as the central relative-price relationship. We shall now elaborate on that basic framework to develop a general model of the balance of payments. The central assumption that all goods produced and consumed in our country are tradables is maintained. In order to focus

[23]See Foxley (1981).

on the real-wage aspect in the basic model, we took the extreme position of modelling demand variables as functions of relative prices only. In the extended model, we shall make the more conventional assumption that demand is a function of aggregate income. A major addition to the model is the explicit incorporation of profit income on the demand side. This extends the scope of the model and allows us to consider the effects of income redistribution, a factor given some emphasis in the literature on the contractionary effects of a devaluation.[24]

As was done with respect to the basic model, we shall begin with lists of notation and equations. Notation and equations duplicated from the basic model will not be repeated.

List of notation

ϕ_2 : propensity to consume domestic output out of aggregate wage income.

ϕ_3 : propensity to consume domestic output out of aggregate profits.

$ß_2$: propensity to consume imports of consumer goods out of aggregate wage income.

$ß_3$: propensity to consume imports of consumer goods out of aggregate profits.

L : quantity of labour employed.

z : aggregate profits in nominal terms

a_i : share of input i in domestic production. Two inputs are considered in the analysis, namely, labour (with subscript L) and intermediate goods (with subscript m).

[24]See for example, Diaz-Alejandro (1963); Krugman and Taylor (1978).

b_m : the value-added ratio, i.e. $b_m = 1 - a_m$.[25]

I : investment in real terms.

Mk : volume of imports of capital goods.

All parameters (α_i, β_i, ϕ_i, Θ_i and a_i) are assumed constant.

INITIAL SPECIFICATIONS (extended model)

Accounting Identities

$$Y = (D + Mc + I) + (X - Mc - Mi - Mk) \quad (21)$$

$$Y = b_m S;\ b_m = 1 - a_m \quad (22)$$

$$A = D + Mc + I \quad (23)$$

$$z = b_m SP - WL \quad (24)$$

$$M = Mc + Mi + Mk, \quad (25)$$

Behavioural Assumptions

$$L = a_L S;\ a_L > 0 \quad (26)$$

$D = \phi_2 WL/P + \phi_3 z/P$; $0 < \phi_2, \phi_3 < 1$, ϕ_i is constant for all

$i = 2,3.$ (27)

$Mc = \beta_2 WL/P + \beta_3 z/P$; $0 < \beta_2, \beta_3 < 1$, β_i is constant for all

$i = 2,3.$ (28)

$$Mi = a_m S;\ 0 < a_m < 1 \quad (29)$$

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[25]The parameter a_m is the same as a in the basic model but the subscript is used here to make the distinction from a_L, the coefficient of labour input.

$$Mk = I \tag{30}$$

$$I = \Theta_0 + \Theta_1 P/W + \Theta_2 r;\ \Theta_0 > 0,\ \Theta_2 < 0;\ \Theta_i \text{ is constant for all i.} \tag{31}$$

Classification of variables

Forcing variables {r, e, P*, W}

Inherent variables {S, D, Y, B*, Mc, Mi, Mk, I, P, L, z}

All the assumptions with respect to the behaviour of prices are retained from the basic model so that equations (7) - (9) as well as (7*) will continue to be used Equations (3) and (6*), which are identities representing exports and the foreign balance respectively, are also retained. Finally, the simple supply function, represented by equation (10), will continue to be employed.

Equation (21) expresses the national income identity that GDP is equal to total domestic absorption plus the balance of payments. When simplified, it leads to equation (22), which expresses the identity that GDP is equal to the sum of value added in domestic production. Domestic absorption is more broadly defined in the extended than in the basic model because of the inclusion of investment and is represented by equation (23).

The behaviour of investment is indicated by equation (31). It is assumed that investment is determined by the same factors affecting gross supply. The underlying rationale for the investment function is that, consistent with the small-country assumption, investment is not demand-constrained. Any level of output, produced by the small country, can be sold at the existing international price without influencing that

price. The main factor governing investment decisions would be the prospects for future profits.

The price-wage ratio, reflecting the existing rate of profits, is assumed to be associated with expectations of future profits. As in the case of the supply function, we allow for the possibility that devaluation sets off unstable expectations so that Θ_1 may be positive, negative or zero. The rate of interest is part of the cost of capital and is, therefore, inversely related to investment.

The demand for domestic output and imports of consumer goods is modified by making it a function of income and by the introduction of profit income explicitly in equations (27) and (28) respectively. Our underlying focus on the real wage is maintained through the assumption that the nominal wage, W, is constant while domestic prices are allowed to vary.

With respect to the demand function for consumer goods imports, it is perhaps unusual to specify this separately from the demand for domestic consumption goods. However, this was done because it offered a convenient way of bringing imports of consumer goods explicitly into the analysis. Our present approach allows us to explore the implications of different consumption propensities between local products and imports.

There is a considerable a priori basis for assuming a relatively high propensity to import on the basis of a cultural and historical preference for imported goods. Furthermore, the range of domestically-produced goods is relatively narrow and, therefore, it is not surprising to find that as incomes rise there will be a strong inclination towards imports. The idea that West Indian communities may display a

marked preference for imported goods is widely accepted.

With respect to total imports, the basic model only considered consumption goods and intermediate goods. With the introduction of capital goods into the model, total imports are now more broadly defined as equation (25) shows. As before, imports of intermediate goods enter domestic production in a fixed proportion, a_m, as reflected in equation (29).

The total labour input is determined by the demand for labour for the production of domestic output. Labour is assumed to enter into production in fixed proportions, as expressed in equation (26). Profits are modelled as a mark-up on costs, which consist of wages and intermediate input expenditures. After some manipulation, we obtain an expression for profits represented by equation (24).[26]

5.6 SOLVING THE EXTENDED MODEL

On the basis of the assumptions outlined above, we now have a model consisting of equations (3), (6*), (7*), (10) and (21) through (31). The model is manipulated in order to determine the effects of devaluation on output and the trade balance

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[26]Profits are modelled as a mark-up on nominal production costs. Where the production costs consist of outlays for raw materials and wages, profits may be expressed as
$z = PS - PMi - WL.$
Given (29), this equation becomes
$z = PS(1 - a_m) - WL = b_{-}PS - WL.$

5.6.1 Effects of Devaluation On Output

We use, as our point of departure, equation (22) which expresses output as the sum of value added in domestic production. Apart from a slight modification of equation (22) compared to equation (2) necessitated by the need to distinguish raw material inputs from the labour input, it is evident that we have not altered the production side of our model. Not surprisingly, therefore, the result obtained for the effect of devaluation on output in the extended model is quite similar to those obtained with the basic model, i.e.,

$$\delta Y/\delta e = \alpha_1 b_m P^*/W. \qquad (32)$$

The same considerations which were applied with respect to (15) are now pertinent. The direction of the output effect depends on the sign of α_1. This parameter can be positive or negative but there is reason to believe that it would tend to be negative in the uncertain climate following devaluation.

5.6.2 Effects of Devaluation on the Balance of Trade

The balance of trade is defined as the difference, in nominal terms, between total exports and total imports, this difference being expressed by equation (6*). In order to arrive at the reduced form for exports, we combine equations (3), (10), (22), (24), (26) and (27), obtaining

$$X = \alpha_0 + \alpha_1 P/W + \alpha_2 r - Y\{\phi_3 + Wa_l/(b_m P)(\phi_2 - \phi_3)\}. \qquad (33)$$

With respect to imports, we combine equations (22), (24), (25), (26), (28), (29) (30) and (31) in order to obtain

$$M = \{a_m/b_m + \beta_3 + Wa_l/(b_m P)(\beta_2 - \beta_3)\}Y + \Theta_0 + \Theta_1 P/W + \Theta_2 r. \qquad (34)$$

Equations (33) and (34) are brought together as indicated by (6*) and, in addition, (7*) is introduced, leading to

$$B^* = P^*[(\alpha_0 - \Theta_0) + (\alpha_1 - \Theta_1)eP^*/W + (\alpha_2 - \Theta_2)r$$

$$- (a_m/b_m + \phi_3 + \beta_3)Y$$

$$- Wa_t/(b_mP^*)(\phi_2 + \beta_2 - \phi_3 - \beta_3)Y/e]. \quad (35)$$

To determine the effect of devaluation on the trade balance in our model, we find the partial derivative of equation (35) with respect to e, obtaining

$$\delta B^*/\delta e = b_m\alpha_1P^{*2}/W(1 - \phi_3 - \beta_3) - \Theta_1P^{*2}/W$$

$$+ Wa_t/e^2(\phi_2 + \beta_2 - \phi_3 - \beta_3)(\alpha_0 - \alpha_2r) \quad (36)$$

In order to evaluate the direction of the foreign balance effect indicated by equation (36), it is convenient to consider the three terms on the right hand side separately in the first instance. The sign of the first term depends on the sign of α_1, the other terms all being positive. The part in the bracket is positive on the generally accepted assumption that the average propensity to consume of capitalists is less than one. At one extreme it may be assumed to be equal to zero, the so-called Cambridge assumption, yielding a value of one for the bracket.

The second term (Θ_1P^{*2}/W) reflects the adverse effect, from the point of view of the trade balance, of increases in investment activity, given the fact that in a small developing country, investment goods are largely imported. The third term is unambiguously positive, on the basis of reasonable assumptions about the propensities to consume and bearing in mind the given values of the other parameters. The bracket $(\phi_2 + \beta_2 - \phi_3 - \beta_3)$ is taken to be positive on the assumption that the average propensity to consume of workers is higher than that of capitalists. A possibility worth

considering is that $\phi_2 = \phi_3$ and $\beta_2 = \beta_3$, i.e., propensities to consume of capitalists and workers are the same. In that case, the whole second term disappears and the foreign balance effect is determined completely by the first term

Looking at equation (36) as a whole, it is evident that the direction of the foreign balance effect of devaluation depends on the size of investment activity. If investment is low, the growth effect may be small but with a greater tendency to a favourable trade-balance effect. If investment activity is strong, output may expand but at the expense of putting pressure on the external trade accounts An important factor is also the productivity of investment because this would determine the extent to which imports of capital goods are offset by the effects of expanding output. Another major factor favouring an improvement in the trade balance is disabsorption, reflected in the third term on the right hand side of equation (36). The tendency towards disabsorption is caused by the reduced wage rate, although an offsetting tendency may result from the expansion of employment. In addition, the occurrence of disabsorption depends on capitalists having a lower propensity to consume than workers so that the redistribution of income toward capitalists results in decreased consumption.

Our model suggests that the overall foreign-balance effect will depend on the combined effects of the factors described above A favourable supply response and disabsorption tend to improve the trade balance, while expanding investment demand is expected to have an adverse effect. Our results underline the importance of a highly productive response to devaluation, given the tendency for the structural adjustment process to be a very import-intensive one. It also suggests an important role for financial assistance in the course of a transition process.

As a matter of further interest, we may investigate the effects of devaluation on the domestic balance. A presentation of the detailed calculations is to be found in Appendix 5B.

The effect of a devaluation on the domestic balance is expressed in equation (B19) as follows:

$$\delta B/\delta e = b_m(1 - \phi_3 - \beta_3)(\alpha_0 + 2\alpha_1 P/W + \alpha_2 r)P^* - a_L\alpha_1 P^*(\phi_2 + \beta_2 - \phi_3 - \beta_3) - P^*(\Theta_0 + \Theta_2 r) - 2\Theta_1 e P^{*2}/W. \quad (37)$$

Assuming α_1 to be positive, the first term on the right hand side of equation (37) will be positive, given values of the respective parameters required for supply (S) to be positive. If α_1 is positive, the second term will have a negative impact, given the same assumptions about the values of the propensities to consume made before The third and fourth terms would both tend to have adverse effects. The overall effect on the domestic balance is ambiguous but likely to be negative, given the relative importance of negative and positive factors. If α_1 is negative, it is likely that Θ_1 will also be negative. The first term on the right hand side would be ambiguous but tending to be negative in its impact and the third term would be negative, while the last term may have a favourable effect. The second term would have a positive impact, which is likely to be outweighed by the negative impact of the other terms.

The main insight emerging from the analysis of the domestic-balance effect is that it has a tendency to be negative even where the foreign-balance effect is positive This is consistent with the analysis of Hirschman that the foreign-balance effect will tend to

be positive and the domestic-balance effect negative, when starting from a deficit position.[27] These diverging tendencies have important implications for the fiscal consequences of a devaluation. They imply that, even where there is an improvement in the trade balance, this may be accompanied by a deterioration in terms of the ability of the government to meet its fiscal commitments including the national debt.

5.7 CONCLUSIONS

In the typical circumstances of a small developing country trying to overcome problems of external imbalance and structural obstacles to growth, the impact of devaluation on the foreign balance may be limited and even negative. The increase in investment, which is a desirable feature in terms of the growth of the economy, will tend to increase the demand for imports and any growth in output experienced will tend to be associated with rising demand. On the other hand, disabsorption in the context of a declining wage rate will tend to have a favourable effect There may be a tendency to emphasise highly-productive investments in an effort to offset the adverse effects on the balance of trade of investment demand. Our analysis has placed emphasis on the importance of a favourable supply response in the achievement of balance-of-trade improvement, stressing the possibility that this response can be frustrated by adverse structural and expectational factors, which may be particularly important during the transitional period of restructuring of a small developing economy.

It is possible that the usefulness and interest of our model might be enhanced by

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[27]See Hirschman (1949).

pursuing some extensions. An important step forward would be to incorporate the government sector into the analysis, mindful that fiscal gaps are a typical concern during periods of economic instability. Other extensions which suggest themselves relate to possible elaborations of the supply function It would be interesting to explore a model including a supply function with less rigidities, incorporating scope for more substitutability of factors, and some response of the share of imports of intermediate goods to changes in prices. In addition, an important place exists for the incorporation of locally-produced raw materials into the analysis, with a view to determining the extent to which their output may respond to a devaluation. Given the importance attached to expectations by our analysis, it would be an important step forward to model explicitly the behaviour of expectations in a small open economy in the context of a devaluation.

APPENDIX 5A: FOREIGN BALANCE (BASIC MODEL)

The balance of trade is equal to the nominal value of exports less imports which, in foreign exchange terms, is expressed as follows:

$$B^* = P^*_x X - P^*_m M. \quad (B1)$$

Combining (9) and (B1) leads to:

$$B^* = P^*(X - M)^{28}. \quad (B2)$$

(3), (10) and (11) imply

$X = \alpha_0 + \alpha_1 P/W + \alpha_2 r - \phi_0 - \phi_1 P/W$, which is simplified to give

$$X = \alpha_0 - \phi_0 + (\alpha_1 - \phi_1)(P/W) + \alpha_2 r. \quad (B3)$$

(4), (12) and (13) yield

$M = ß_0 + ß_1 P/W + aS$ which, combined with equation (2), yields

$$M = ß_0 + ß_1 P/W + (a/b)Y. \quad (B4)$$

(7*), (B3), (B4) and (B2) combine to give

$$B^* = P^*[\alpha_0 - \phi_0 - ß_0 + (\alpha_1 - \phi_1 - ß_1)eP^*/W + \alpha_2 r - (a/b)Y]. \quad (B5)$$

$$\delta B^*/\delta e = (\alpha_1 - \phi_1 - ß_1)(P^{*2}/W) - (a/b)P^*\delta Y/\delta e. \quad (B6)$$

Along with equation (14) and recalling that $b = 1 - a$, (B6) yields

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[28]It is interesting to observe that equation (B2) may be combined with (3) and (4) to give
$B^* = P^*(S - D - Mc - Mi)$.
Given (13), we get
$B^* = P^*(S - D - Mc - aS) = P^*(bS - D - Mc)$.
Substituting equations (2) and (5), we obtain
$B^* = P^*(Y - A)$.
This reflects the understanding (coming from the income-expenditure approach to the balance of payments) that the trade balance is equal to the difference between output and absorption.

$$\delta B^*/\delta e = P^{*2}/W(\alpha_1 b - \phi_1 - \beta_1). \quad (B7)$$

APPENDIX 5B: TRADE BALANCE (EXTENDED MODEL)

Foreign balance

Equation (B2) will be our point of departure.

(3), (10) and (27) combine to give

$$X = \alpha_0 + \alpha_1 P/W + \alpha_2 r - \phi_2 WL/P - \phi_3 z/P. \quad (B8)$$

Combining (B8), (22), (24) and (26), we obtain

$$X = \alpha_0 + \alpha_1 P/W + \alpha_2 r - \{\phi_3 + (Wa_l/b_m P)(\phi_2 - \phi_3)\}. \quad (B9)$$

(22), (24), (25), (26), (28), (29), (30) and (31) yield

$$M = \{a_m/b_m + \beta_3 + (Wa_l/b_m P)(\beta_2 - \beta_3)\}Y$$
$$+ \Theta_0 + \Theta_1 P/W + \Theta_2 r. \quad (B10)$$

(B2), (B9), (B10) and (7*) give

$$B^* = P^*(X - M) = P^*[(\alpha_0 - \Theta_0) + (\alpha_1 - \Theta_1)eP^*/W$$
$$+ (\alpha_2 - \Theta_2)r - (a_m/b_m + \phi_3 + \beta_3)Y$$
$$- Wa_l/(b_m P^*)(\phi_2 + \beta_2 - \phi_3 - \beta_3)Y/e]. \quad (B11)$$

To determine the effect of devaluation on the trade balance, we take the partial derivative of (B11) with respect to e, utilizing (32) for the partial derivative of Y with respect to e:

$$\delta B^*/\delta e = P^*[(\alpha_1 - \Theta_1)P^*/W$$
$$- (Wa_l/b_m P^*)(\phi_2 - \phi_3 + \beta_2 - \beta_3)\{(b_m \alpha_1 P^*/We) - Y/e^2\}$$
$$- (\phi_3 + \beta_3)b_m \alpha_1 P^*/W - a_m \alpha_1 P^*/W], \quad (B12)$$

which upon simplification, gives

$$\delta B^*/\delta e = b_m\alpha_1 P^{*2}/W(1 - \phi_3 - \beta_3) - \Theta_1 P^{*2}/W$$

$$+ Wa_L/e^2(\phi_2 + \beta_2 - \phi_3 - \beta_3)(\alpha_0 - \alpha_2 r). \quad (B13)$$

Domestic balance

The domestic balance is defined as the nominal value of the difference between exports and imports denominated in domestic currency, i.e.,

$$B = P_x X - P_m M. \quad (B14)$$

Combining (B14) and (9), leads to

$$B = P(X - M). \quad (B15)$$

It can be seen that the only difference between the right hand side of (B2) and (B15) is the price factor, the former being in foreign currency while the latter is in domestic currency. The expansions with respect to X and M are the same as above and so, using (B11) and (7*) and with the appropriate change in price, we obtain

$$B = eP^*[\alpha_0 + \alpha_1 eP^*/W + \alpha_2 r - (a_m/b_m + \phi_3 + \beta_3)Y]$$

$$- (Wa_L/b_m)(\phi_2 + \beta_2 - \phi_3 - \beta_3)Y - eP^*(\Theta_0 + \Theta_1 eP^*/W + \Theta_2 r). \quad (B16)$$

Differentiating (B16), leads to

$$\delta B/\delta e = P^*[\alpha_0 + 2\alpha_1 eP^*/W + \alpha_2 r - (a_m/b_m + \phi_3 + \beta_3)\delta(eY)/\delta e]$$

$$- (Wa_L/b_m)(\phi_2 + \beta_2 - \phi_3 - \beta_3)\delta Y/\delta e$$

$$- P^*(\Theta_0 + \Theta_2 r) - 2\Theta_1 eP^{*2}/W. \quad (B17)$$

Combining (B17), (7*) and (32) gives

$$\delta B/\delta e = P^*[\alpha_0 + 2\alpha_1 P/W + \alpha_2 r - (a_m/b_m + \phi_3 + \beta_3)(b_m\alpha_1 P/W + Y)$$

$$- a_L\alpha_1 P^*(\phi_2 + \beta_2 - \phi_3 - \beta_3) - P^*(\Theta_0 + \Theta_2 r) - 2\Theta_1 eP^{*2}/W. \quad (B18)$$

After substituting equations (2) and (10) into (B18) and simplifying, →

$$\delta B/\delta e = b_m(1 - \phi_3 - \beta_3)(\alpha_0 + 2\alpha_1 P/W + \alpha_2 r)P^*$$
$$- a_L\alpha_1 P^*(\phi_2 + \beta_2 - \phi_3 - \beta_3)$$
$$- P^*(\Theta_0 + \Theta_2 r) - 2\Theta_1 e P^{*2}/W. \qquad (B19)$$

Chapter 6

6. CHARACTERISTICS OF THE JAMAICAN ECONOMY

6.1 INTRODUCTION

The main objective of this chapter and the next is to provide an essential link between the theoretical discussion of the last three chapters and the empirical analysis which will be the subject of chapter seven. An attempt will be made to examine the Jamaican economy in relation to aspects of specific relevance to our model.

Jamaica is categorized by the World Bank as a lower middle income country on the basis of estimates of its income per capita. The World Bank estimated its nominal income per capita to be US$940 in 1985.[1] As such, Jamaica displays many of the general features typical of developing countries. Among them we may highlight two features that virtually define underdevelopment. Firstly, it is clear even from superficial observation that the majority of the Jamaican population live in conditions which are below acceptable standards. A major indicator of underdevelopment in Jamaica is the persistence of high levels of unemployment. Secondly, the character of its economic activity does not provide a basis for a self-sustaining process of development.

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[1]See World Bank, World Development Report, 1987 (New York:Oxford University Press, 1987), Table 1.

Consequently, economic well-being is critically dependent on infusions of capital from abroad. This point will be developed further when we look at the balance of payments. It is worth noting also that Jamaica is an oil-importing country which, in the 1970s and 1980s, has had to cope, like many other countries, with the aftermath of the oil-price shocks of the 1970s.

Jamaica's problems of underdevelopment have been aggravated since the early 1970s by a drastic deterioration in growth performance. This has heightened the urgency of the need to adjust and achieve a satisfactory economic performance. Table 6.1 is presented to indicate some significant trends and features of the performance of the Jamaican economy in the 1970s and 1980s. The real GDP of Jamaica which stood at $2246.5 million in 1973 declined to $1828.8 million in 1980 and was still as low as $1835.2 million in 1985.[2] This represents an average annual rate of decline of 2.9 percent from 1973 to 1980 and 1 7 percent from 1973 to 1985.

A major consequence of poor aggregate performance in the 1970s and 1980s has been the sustained decline in average income as reflected in changes in real per capita GDP. From a level of $1055 in 1970, per capita GDP fell to $794 in 1985, an average annual decline of two percent. Real wages also declined substantially over the period, going from $1535 in 1974 to $893 in 1985. Real per capita consumption also declined monotonically in the 1970s but it showed increases in the 1980s, rising from $544 in 1980 to $600 in 1984. In light of sustained decreases in production, increasing average consumption is an indication of the role of net capital inflows in sustaining

[2]Statistical Institute of Jamaica [STATIN], National Income and Product [NIP] 1985, (Kingston: Statistical Institute of Jamaica, 1986), pp. 64-65. All figures in constant 1974 prices.

Table 6.1

Selected Macroeconomic Indicators 1970-85

Year	Real GDP (1974 prices) J$m.	GDP growth (%)	GDP p. c. J$	Growth in GDP p. c. (%)	Real cons. p. c. J$	Real wages (1980 pr.) J$	Unem-ploy-ment rate (%)	Exc. rate (J$/ US$)
1970	1972.7	-	1055.4	-	NA	NA	25.1[a]	.83
1971	2032.2	3.0	1081.9	2.5	NA	NA	13 5[b]	.78
1972	2218.2	9.2	1162.6	7.5	NA	NA	22.9	.85
1973	2246.5	1.3	1154.5	-0.7	NA	NA	22 5	.91
1974	2159.2	-3.9	1090.5	-5.5	741.8	1535	20 7	.91
1975	2152.6	-3.0	1069.5	-1.9	736.6	1549	20.7	.91
1976	2013.5	-6.5	986.7	-7.7	720.2	1454	24.2	.91
1977	1965.5	-2.4	952.7	-3.4	686.7	1384	23 8	.91
1978	1976.0	0.5	946.4	-0.7	623.7	1278	25 7	1.69
1979	1940.0	-1.8	918.5	-2 9	574 6	1218	30 8	1.78
1980	1828.8	-5.7	857.3	-6.7	544 8	1137	26.6	1.78
1981	1875 5	2.5	867.3	1.2	550.5	1168	2 [illegible]	1.78
1982	1898.7	1.2	863.0	-0.5	553.0	1207	28.2	1.78
1983	1942.2	2.3	866.7	0 4	591.4	1160	26 9	3.28
1984	1925.0	-0.9	844.4	-2.6	600.0	1029	25.6	4.93
1985	1835.2	-4.7	794.1	-6.0	599.2	893	25.6	5.48

Sources: STATIN, National Income and Product several years; idem, The Labour Force several issues; idem, Statistical Yearbook of Jamaica, several issues; IMF, International Financial Statistics (1986), Jefferson (1972).

Notes: (a) Unemployment rate for 1943.
(b) Unemployment rate for 1960.
p.c.: per capita.
cons.: consumption.
pr.: prices.
exc.: exchange.

consumption in the 1980s. Another major feature of the period shown in table 6.1 is repeated depreciation in the rate of exchange.

6.2 UNEMPLOYMENT

High unemployment has long been a feature of the Jamaican economy and recently has reached astronomical levels, as shown in table 6.1. The rate of unemployment was lowest in the 1950s, reaching its lowest level in the post-War period in 1960 when it was 13.5 percent. It has typically been considerably higher than the 1960 rate and the problem has been aggravated by the poor economic performances of the 1970s and 1980s. In 1979, it peaked at the cricically high rate of 30 8 percent and in 1982 and 1983, it was still as high as 28.2 percent and 26.9 percent, respectively. The reduction of unemployment to an acceptable level is a primary target and criterion of success in developmental effort in Jamaica.

A weak relationship has been observed between growth and unemployment in the postwar experience of Jamaica. This was particularly evident in the 1950s when growth rates were high. Real GDP grew at 11.5 percent annually from 1953 to 1957 whilst employment grew by one percent annually. This situation continued to affect the economy through the 1960s. It has been observed for example, that "despite vigorous growth rates of five percent per annum, unemployment increased from thirteen percent in 1960 to twenty-four percent in 1972".[3]

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[3]Owen Jefferson, The Post-War Economic Development of Jamaica, (Kingston: Institute for Social and Economic Research,1972), p. 29.

When the unemployment rate did fall significantly, it was usually attributable more to demographic factors than to the generation of jobs. The unemployment rate fell from 25 1 percent in 1943 to 17 1 percent in 1957 and further to 13 5 percent in 1960.[4] However, it is evident that demographic factors were predominantly responsible for these developments Jefferson reports that the labour force declined as a percentage of the population from forty-five to forty-one percent from 1943 to 1960. The labour force actually declined in absolute terms in 1955 and between 1957 and 1960.[5] The main factor behind these demographic developments was net emigration which was at its height in Jamaica around the late 1950s. Jefferson comments that "it is a reasonable speculation that in the absence of emigration the unemployment rate in 1960 would not have been much , if at all, below the rate in 1943" [6]

The post-war experience of Jamaica with respect to unemployment trends demonstrates that it is not enough to achieve high rates of economic growth, although negative growth can make matters worse. The pattern of economic growth must also be labour-absorbing In addition, even with high unemployment, there are critical shortages of important skills This problem is increasingly being aggravated by emigration in the 1980s. There is an observable trend in emigration towards a higher proportion of skilled persons, even though overall emigration is falling.[7]

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[4]Ibid., p. 28.

[5]Ibid., p. 27.

[6]Ibid., p. 30.

[7]Planning Institute of Jamaica [PIOJ], Economic and Social Survey of Jamaica [ESSJ], 1984, (Kingston: Planning Institute of Jamaica, 1985), p. 15.2.

6.3 PRINCIPAL PRODUCTIVE ACTIVITIES

Consideration of supply factors in the Jamaican context inevitably revolves around the analysis of agriculture, mining, manufacturing and tourism, the four sectors which are the sources of economic growth. One sector, which assumes considerable importance in the analysis of developments since the 1970s, is that of government services. Consideration of this sector is deferred to chapter seven, however, because of its affinity with socio-political aspects. We shall briefly describe agriculture, mining, manufacturing and tourism in order to convey some aspects of recent economic developments and to indicate the implications for our econometric model in chapter eight.

6.3.1 The Agricultural Sector

Table 6.2 indicates that the share of agriculture in total output has declined significantly since the 1950s, reflecting the bauxite/alumina boom and industrialization. However, the revitalizing of agriculture remains a major target in an effort to achieve sound economic development. Agriculture has an important role to play as a source of food and raw materials as well as of traditional and non-traditional exports.

Besides, its contribution to national output, the agricultural sector, sugar in particular, contributes to the well-being of large numbers of people in fields ranging from education and health to housing and sports[8] Not least among the considerations with

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[8]See Alvin Burnett, "Sugar as a Stabilizing Force in the Jamaican Economy", Jamaican Association of Science and Technology [JAST] 50TH Annual Supplement, May 16, 1986.

Table 6.2

Contribution of Industrial Sectors to Real GDP
(percentages)

	1950	1968	1974	1984
Agriculture*	24.3	10.8	7.1	8.7
Mining	0.2	9.9	9.2	6.1
Manufacturing	13.9	16.2	17.9	15.2
Construction	7.9	9.8	9.9	5 9
Public utilities	0.8	1.5	1.0	1.4
Transportation	8.9	9.3	6.4	7.1
Distribution	16.4	13.6	18.6	15.2
Financial institutions	3.9	3.0	4.0	6 7
Ownership of dwellings	5.7	2.2	9.5	12.0
Government services	5.7	8.0	11.6	18.9
Miscellaneous	12.1	15.4	5.5	5 4
Private nonprofit institutions			1.8	1.1
less imputed service charges			-2.5	-3.7

Sources: O. Jefferson (1972), table 3.5; STATIN, NIP 1985, tables 2.6 & 2.7.
* Forestry and fishing included.

respect to this sector is the fact that it still has the highest share of employed labour, estimated at thirty-three percent in 1984.[9]

Unlike most of the other major sectors, agriculture has displayed positive real growth during the 1970s and 1980s For example, over the period 1974-84 when total real GDP declined by 1.1 percent per year, agriculture grew by 1 percent annually. It must be emphasized however, that the growth of the agricultural sector was far from satisfactory, especially in light of the efforts made to promote its performance.[10] Agriculture looks favourable only against the background of the generally poor performance of the economy as a whole since the mid-1970s. A notable advantage of the sector is that it is typically less dependent on imported inputs than other major economic activities.

It is interesting to distinguish between export agriculture and domestic agriculture, and to observe the divergent performances of these sectors.[11] The growth of the agricultural sector has been attributable entirely to the performance of domestic agriculture (see table 6.3). Thus, in the decade 1974-84, domestic agriculture grew annually by two percent while export agriculture declined by four percent annually One consequence is that since 1970, domestic agriculture has been making a greater contribution to total output than export agriculture. By 1985, domestic agriculture was

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[9]Statistical Institute of Jamaica [STATIN], The Labour Force 1984, (Kingston: Statistical Institute of Jamaica, 1985).

[10]In the 1970s, the PNP Government embarked on Operation GROW to promote the sector and, in the 1980s, the JLP have been using the AGRO-21 project to spearhead its efforts.

[11]For a description of the products included in the respective categories, one may refer to issues of Production Statistics by STATIN.

Table 6.3

Value Added in Export and Domestic Agriculture
($m.; 1974 prices)

Year	Total export agriculture	Sugar cane production	Total domestic agriculture
1970	39.9	24.7	50.6
1971	40.7	23.7	70.5
1972	40.7	23.9	71.5
1973	34.1	21.0	66.0
1974	36.5	22.2	70.1
1975	29.6	17.6	72.1
1976	36.2	20.9	68.0
1977	29.5	18.5	75.8
1978	33.3	20.8	90.0
1979	26.2	17.1	80.3
1980	24.6	16.1	75.9
1981	24.9	14.2	78.6
1982	24.4	14.6	69.2
1983	23.6	13.4	75.2
1984	24.5	14.0	87.0
1985	23.7	13.1	85.7

Source: STATIN, National Income and Product (several issues).

Note: livestock, forestry and fishing are not included.

nearly four times as great as export agriculture in terms of real value added.

It is not clear what are the primary reasons for these relative performances. However, it is a reasonable assumption that the external market conditions facing traditional Jamaican products and the degree of their competitiveness are significant factors. It is also evident that external market considerations are relevant with respect to the performance of domestic agriculture. A high degree of substitutability exists between domestic agricultural output and imports of food and other agricultural goods This is partly the reason for the concern that the liberalization of the import regime in the 1980s has been adverse to the performance of the agricultural sector [12] It is evident that, in the absence of a conscious trade policy to give some protection to domestic agriculture, price relations would be governed by the conditions of the external market possibly with disastrous effects for domestic food production. Therefore, although the dominance of domestic agriculture in Jamaica implies that the major part of agricultural output is not traded, it is evident that all of this output is tradable along the lines established in chapter five. It is also noteworthy that the growing interest in promoting non-traditional exports is gradually eroding the conventional distinction between traded (export) and non-traded (domestic) agricultural goods as programs are mounted to export such things as 'winter vegetables' and fruits.

6.3.2 Mining

The fastest growing sector in Jamaica in the 1950s and the 1960s was the mining sector. This growth was dominated by the establishment and expansion of the

[12] See Polanyi-Levitt (1984).

bauxite/alumina industry.[13] From virtually nothing in 1950, mining raised its contribution to GDP to ten percent by 1968. This was achieved through growth rates of twenty-two percent per annum from 1955 to 1960 and six percent from 1960 to 1965.[14] The investment activity associated with this expansion had a major favourable impact on the growth of the economy and the balance of payments. Since that time, bauxite and alumina have become the main items dominating export earnings.

Bauxite and alumina are produced purely for export. Linkages with the domestic economy in terms of vertical integration are virtually non-existent. The industry has been wholly foreign-owned for most of its life and only in recent years has the government acquired some minor participation in it The mining sector employed only one percent of those employed in 1984, while its value added was six percent of real GDP.[15] Apart from the remuneration of nationals, an important source of income for Jamaica is the bauxite levy introduced in 1974.

Since the early 1970s, the mining sector has shown decline because of the downturn in the bauxite industry. Between 1974 and 1984, its value-added declined by five percent per annum, causing its share of total GDP to fall from nine to six percent Output fell by twenty, twenty-one and twenty-nine percent in 1975, 1976 and 1982, respectively. These reverses have had disastrous consequences for the economy and the prospects for a speedy recovery from a decade of negative growth.

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[13]For convenience, we shall refer to the bauxite/alumina industry as the 'bauxite industry' from now on.

[14]See Jefferson (1972), p. 46.

[15]See STATIN, The Labour Force, 1984.

Apart from the contribution of the bauxite industry to GDP, there are two aspects to be noted here: they are its importance to merchandise exports, and its role with respect to capital inflows. With respect to the former, the data indicate that bauxite and alumina exports averaged 70.6 percent of domestic exports from 1970 to 1984.[16] During this period, the contribution of bauxite/alumina to total commodity exports ranged between 87.2 percent in 1974 and 60.5 percent in 1983. These figures indicate the importance of the bauxite industry to the health of the balance of payments.

As already pointed out, the industry suffered substantial decline in the 1970s, giving rise to contending explanations. One view is that "bauxite production declined largely as a result of retaliation by the transnational companies against the Production Levy".[17] This comment refers to the levy first imposed by the government in May 1974. The second view, which is more widely held, is that by the 1970s, market forces were operating to curtail the growth of the industry in Jamaica. On the one hand, it is argued that by the 1970s, the Jamaican bauxite industry had entered the "maturity" phase in a staple cycle, involving a "levelling off of production as major

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[16]Data obtained from Statistical Institute of Jamaica, External Trade, (Kingston: Statistical Institute of Jamaica, several issues). See also table 6.5 of this dissertation.

[17]Girvan et al. (1980), p. 143. See also Hojman (1984). Hojman identifies the developments in the Jamaican industry with the conflict between the government and the foreign multinationals, arguing that this resulted in "perverse" responses to price changes. He states that "during most of the estimation period, Jamaica has represented one of the most outspoken nationalist pressures in the International Bauxite Association, and in 1974 a levy on Jamaican production was imposed that increased the cost of Jamaican bauxite to consumers several fold. Consumers (sic) reacted by increasing output in Australia, Brazil, Guinea and other countries". p. 187.

developments are undertaken in other host countries" such as Guinea, Australia and Brazil.[18] Moreover, the general international market conditions of the aluminum industry were less favourable, being affected by the recessionary tendencies of the 1970s.

The other aspect of the bauxite industry of relevance to our analysis is its role as a source of private capital flows. The availability of net capital inflows is a feature of critical importance to the functioning of the Jamaican economy This point will be developed further when we look at the balance of payments. Girvan et al. have provided information on the importance of capital inflows, isolating the contribution of the bauxite industry. They observe that,

> the private inflow represented a considerable fraction in relation to the current account deficit, and that direct foreign investment in the bauxite industry was a significant share of the total. Bauxite investment was especially important in the mid-1950s and the late 1960s, the periods of major expansion in productive capacity.[19]

They have also indicated a link between bauxite investment on the one hand, and

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[18]Kari Polanyi-Levitt, "Changing Country-Company Relations in Successive Stages of the Staple Cycle: Jamaica, 1942-80", (mimeo, 1981). See also Brown (1981), where it is stated: "The decline in inflows to the bauxite/alumina industry, for example, was consequent on the scheduled completion of construction activity". p. 16.

[19]Girvan et al. (1980), p. 131. Also ibid., Table 6, pp.132-33.

GDP growth and growth in the construction industry, on the other. Developments with respect to capital inflows into the bauxite industry have also been noted elsewhere, where it has been pointed out that capital inflows in the 1970s "consisted largely of government official inflows or government guaranteed inflows" reflecting the "decline in bauxite/alumina investment as well as other traditional forms of inflows and the difficulty in finding new sources of long-run finance".[20] These comments remain pertinent in the 1980s with the continued poor, often negative, performance of private capital inflows.

As a final point on the bauxite industry, it is important to note that the industry is dominated on the world scale by six large vertically-integrated firms, namely, ALCOA, ALCAN, Reynolds, Kaiser, Alusuisse and Pechiney. These six firms have total or partial ownership of sixty-seven, sixty-six and fifty-four percent of the Western World's bauxite, alumina and aluminium capacity respectively.[21]

One implication of this oligopolistic and transnational market structure is that doubts arise concerning the true price and cost relationships facing the industry. It is possible that published price data bear little relationship to actual prices paid. Furthermore, producton decisions are subject to considerations not reflected in the published prices. For these reasons, it is deemed advisable that the output of the bauxite industry be isolated from the rest of the economy and be treated as an exogenous variable in our econometric modelling.

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[20]Brown (1981), p. 27.

[21]See Janet Thym, Global Corporate Strategy of Aluminium Multinationals and Implications for Producer Countries (The Hague: Master's thesis, Institute of Social Studies, 1981).

6.3.3 Manufacturing

It is evident from table 6.2 that, at least until the mid-1970s, manufacturing displayed a growing contribution to GDP. It is customary to view this trend as a sign of progress in development. This view, however, is linked with the perception that the growing manufacturing activity involves the processing of local raw materials, giving rise to increased value-added. Also implied is a growing technological sophistication

It is doubtful whether this picture fits the Jamaican case, however. As table 6.4 illustrates, manufacturing in Jamaica is highly import-intensive and linkages within the domestic economy are weak. A further indication of this is the high level of raw-material imports, amounting typically to more than fifty percent of total imports (see table 6.8). As a consequence, manufacturing is seriously threatened when the availability of foreign exchange is limited and this is one reason for the difficulties experienced by the sector in recent times. These considerations underline the need for change in the pattern of manufacturing activity to deepen the scope of internal linkages

A second point to note is that manufactured goods have been produced primarily for the domestic market as an import-substituting activity The bulk of exported manufactures go to the Caribbean Common Market (CARICOM). Thus, the portions of manufactured exports going to CARICOM countries were fifty-nine, seventy-six and eighty-two percent in 1975, 1978 and 1981 respectively.[22] In a sense, this amounts to import-substitution on a wider scale. The manufacture of sugar, rum and molasses constitutes a departure since this is carried out primarily for export to extra-regional

[22]Based on figures obtained from Caribbean Community [CARICOM] Secretariat, CARICOM Statistics Digest 1970-1981, (Georgetown, Guyana; CARICOM Secretariat, 1983).

Table 6.4

Average Import-content ratios
of selected manufacturing sectors

Sector	Import content (%)
Rum and alcoholic beverages[a]	84.9
Jewellery and handicraft	77.6
Chemicals	74.1
Footwear	69.9
Garments	69.5
Plastic products	67.3
Building materials	62.1
Tobacco, cigarettes and cigars	57.0
Food processing	50.7

Source: Jamaica National Export Corporation [JNEC]. Estimates done by First Washington Associates.

a refers to brewing in particular.

markets. However, since 1970, these products make up less than five percent of total value added in manufacturing.

The manufacturing sector has been favoured in terms of the attitudes and policies of successive governments. It has been observed that,

> on average: manufacturing activities are encouraged relative to agriculture, mining and tourism; import-substitution activities are encouraged relative to exporting activities and tourism; and final goods activities are encouraged relative to intermediate goods activities and possibly some capital goods activities [23]

The favourable attitude to the manufacturing sector and to the fabrication of final goods, especially at times when the availability of foreign exchange is limited, is reflected also in the rise in the share of non-fuel intermediate goods in total imports.

Recent interest in export promotion and the deterioration of traditional sources of foreign-exchange earnings (e.g., the bauxite industry) have turned attention towards manufactured goods as potential exports to extra-regional markets. One of the focal points of exchange rate and other stabilization policies in the 1980s has been the competitiveness and performance of manufactured exports. Thus, Prime Minister Seaga provided the following justification for currency devaluation:

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[23]Constantine Michalopoulos, Azizali Mohammed and Sidney Weintraub, "Jamaica, A Medium-Term Assessment: Report of the Tripartite Mission", (mimeo), World Bank, Washington, D.C., April 16, 1985.

> It is not to improve the viability of the tourist sector which does not need the present rate of exchange, not to improve the viability of the agricultural sector, which can sell everything it produces and could have sold them at J$1.78 instead of the present rate of exchange, not to improve the mining sector, but to improve the manufacturing export sector.[24]

Improvement in the performance of the manufacturing sector is a major component of attempts to expand the economy. Structural change in the direction of a lower average import-content and an enlarged export capacity must be an important part of any long-term strategy associated with a sounder balance-of-payments performance.

6.3.4 Tourism

The tourism sector has shown steady growth during the 1970s and 1980s and has come to be one of the leading activities on which the overall performance of the Jamaican economy depends. Between 1970 and 1985, US dollar earnings showed an average annual increase of ten percent (see Table 6.5). Its importance as a source of export earnings has increased in the 1980s with the decline of the other traditional exports, notably bauxite and alumina. Some concern is, however, caused by the relative volatility of tourism earnings which is subject to the fluctuations of economic activity abroad and political instability at home.

In 1984 and 1985, estimated gross visitor expenditure reached US$406.6 million and US$406.8 million, respectively, compared to earnings of US$220.2 million and

[24]Quoted in Polanyi-Levitt (1984).

Table 6.5

Contribution of Tourism to Foreign Earnings

Year	Foreign travel receipts US$m.	Foreign travel receipts J$m.	Total goods exports (J$m)	Ratio of tourist receipts /exports =100 (%)	Index of import prices. (1974 exports.	Index of purchasing power of travel +
1970	95.5	79.6	284.8	28	44.4	122.4
1971	111 2	90.8	282.7	32	52.9	105.3
1972	135.7	107.9	300.1	36	52.2	116.6
1973	127.6	115.8	354 6	33	68.6	102.3
1974	133.5	121.2	549.1	22	100.0	100.0
1975	128.7	116.8	690.2	17	115.8	104.0
1976	105.9	96.0	572.8	17	124.4	80.2
1977	104.5	115.0	698.6	16	156.2	77.7
1978	148 2	218.6	1142.5	19	222.2	91.4
1979	194.3	341.3	1445.8	24	283.0	94.2
1980	241.7	430 2	1715.0	25	365.3	87.6
1981	284.3	507 2	1735.1	29	404.3	82.7
1982	337.8	601.3	1367.0	44	373.7	78.6
1983	399.2	877.5	1392.0	63	481.5	70.3
1984	406.6	1655.0	2732.5	60	856.0	76.5
1985	406 8	2237.4	3128.3	72	1221.7	65.5

Sources: STATIN, Statistical Yearbook of Jamaica, 1986; idem, Provisional External Trade, 1987.

Note: These figures do not take account of payments by Jamaican residents travelling abroad.

US$138.7 million for the bauxite industry.[25] The 1980s have witnessed a sharp escalation in the dependence on tourism earnings due to both the improved performance of the latter and the stagnation of merchandise exports The ratio of gross travel receipts to total merchandise exports jumped from sixteen percent in 1977 to seventy-two percent in 1985.

Besides export earnings, tourism is important in terms of the contribution it makes to the provision of employment. In 1982, employment in accommodation amounted to 11,300 persons, rising to 13,600 by 1985. These numbers represented 1.5 percent and 1.7 percent of total employment, respectively These figures do not take account of employment in the wide range of tourism-related activities besides accommodation facilities. Tourism is a significant source of employment for women, who suffer a higher incidence of unemployment than their male counterparts. Although it is concentrated in a few centres on the island, its effects are felt almost country-wide and particularly in some rural areas, where residents can provide services such as river-rafting for tourists. The widespread opportunities for small-scale self-employment is a positive feature of the tourism industry in a country characterised by high unemployment.

The potential benefits of tourism to the Jamaican economy are severely constrained by the high import-content of the industry. Tourists to Jamaica who come predominantly from North America, expect their accustomed tastes in food and other comforts to be satisfied, inevitably engendering a high import-content. Consequently, estimates of earnings from tourism tend to be somewhat overestimated as an indication

[25]See ESSJ, several issues.

of the increase of resources available to the economy.

6.4 TRADE

It is striking how important trade is in the Jamaican economy. This underlines the important feature of the openness of the economy, which is illustrated in Table 6.6. In the years presented, exports averaged thirty percent of GNP while imports averaged forty-six percent These high shares reflect the importance of trade activities to the performance of the economy. Imports enter, in some measure, into almost all economic activities, even the provision of exports Exports, by providing import capacity, as well as national income, play a major role in the economic well-being of the country. Inevitably, the Jamaican economy is highly susceptible to events in international markets.

The second point to be observed is that the balance of trade of Jamaica is normally in deficit. Indeed, since 1960, this account has shown a surplus in only three years, namely 1963, 1977 and 1978 (See table 6.9).[26] These three surpluses were due to special circumstances. The 1963 surplus was due to substantial increases in sugar prices.[27] The major part played by export prices is further indicated by observing that,

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[26]See Bank of Jamaica [BOJ], Balance of Payments of Jamaica, 1985, (Kingston: Bank of Jamaica, 1985), pp. 2-4.

[27]See Economic Survey of Jamaica, 1963, (forerunner to the Economic and Social Survey of Jamaica [ESSJ]). It is observed that "the high prices obtained for sugar accounted for most of the increase in export receipts." (p. 11).

Table 6.6

Year	Current GNP J$m.	Importance of Trade: Total goods exports J$m.(%)	Total goods imports J$m.(%)	Total trade J$m.(%)
1970	1014.9	284 8 (28.1)	437.8 (43.1)	722.6 (71.2)
1975	2620.2	690.2 (26.3)	1021.4 (39.0)	1711.6 (65.3)
1980	4432.1	1715.0 (38.7)	2086.6 (47 1)	3801.6 (85.8)
1981	4981.5	1735.1 (34.8)	2623.4 (52.7)	4358.5 (87.5)
1982	5563.2	1367.0 (24.6)	2460.3 (44.2)	3827.3 (68.8)
1983	6757.8	1392.1 (20.6)	2841.0 (42.0)	4233.1 (62.6)
1984	8478.9	2895.9 (34.2)	4509.5 (53.2)	7405.4 (87 3)

Source: STATIN (a) External Trade; several issues.
(b) National Income and Product (1974 and 1985).

Note: figures in brackets represent the percentage of GNP.

between 1962 and 1963, the export price index jumped from 110 1 to 129.7 and the barter terms of trade improved sharply from 76.6 to 90.6, after declining consistently since 1957 (1954 =100).[28]

With respect to the trade surpluses of 1977 and 1978, the reasons were somewhat different. By this time, the economy was in deep trouble with mounting deficits, wholesale capital flight, a negative net foreign-reserves position and severely reduced access to external finance.[29] Consequently, the government was forced to take a number of measures to limit import volumes, including foreign-exchange budgeting Although the Jamaican dollar values of exports increased substantially in 1977 and 1978 (as a result of devaluation), the surpluses in these years reflected the absence of external finance to cover a normal level of imports. Thus, there was an absolute decline in the value of imports in 1976 and 1977.[30] Import restrictions had to be eased in 1977 for fear of causing further serious dislocations in the manufacturing sector.[31]

It is clear that the improvement in the balance of trade on a sustainable basis is an important objective. This would contribute towards a better overall balance-of-payments performance. It would also reflect the achievement of a sounder economic structure. Perhaps most importantly, it would reduce the critical dependence on net inflows of capital.

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[28]Economic Survey of Jamaica, 1964, p. 39.

[29]According to ESSJ (1977): net foreign reserves were -$196m. at the end of 1977 and -$181.4m. at the end of 1976.

[30]See Bank of Jamaica, The Balance of Payments, successive issues.

[31]See ESSJ (1977), p. 46.

The information presented here serves to illustrate that the imbalance in trade and the dependence on capital inflows are fundamental features. Therefore, while there is an immediate need for short-term stabilization and external finance, there is also a long-run dimension of structural adjustment that cannot be ignored

6.4.1 Exports

Exports have been the raison d'être of West Indian societies from the time of European occupation. Whether the product was sugar, bananas, tobacco or any one of the other main exports, a primary objective of productive activity was exports. It can be said that the Jamaican economy, like those of neighbouring Caribbean islands, has always been essentially an export-led economy even when this was not the conscious bias of national policy.

It is not surprising to find, therefore, that the vibrance of the export sector is a major determinant of overall economic performance. This conclusion is supported by comparisons of export and GDP growth. Jefferson's figures indicate that for the period 1950-68, high export growth and an increase in the share of exports in GDP were accompanied by high real GDP growth. Harris finds a "close correspondence (correlation coefficient = 0.96) between the rate of growth of exports and that of GDP."[32]

A second aspect of the export regime in Jamaica is its highly concentrated nature, based almost exclusively on primary products. For most of the postwar period,

[32]Don J. Harris, "Saving and Foreign Trade Constraints in Economic Growth: A Study of Jamaica," Social and Economic Studies 19 (1970), p. 153.

Table 6.7

Export Concentration
Percentage Shares of Major Commodity Exports
(Selected years)

Year	Bauxite & Alumina	Sugar, rum & molasses.	Bananas	Citrus, coffee, cocoa, etc.b	TOTAL
1950	n.a.	53.4	14.2	17.6	85 2
1956	27 2	36.9	16.0	12 6	92.7
1968	49.5	21.4	7.8	5.6	84.3
1982	67.0	7.8a	0.6	1.0	78.4
1983	61.8	9.6a	1.0	3.7	76.1
1984	67 9	7.2a	0.3	3.7	79.1

Sources: Jefferson (1972), table 8.5; ESSJ (1984), tables 3.1 & 3.4.
(a) Molasses not included.
(b) Includes pimento and ginger. Ginger not included in data for 1982-84.

Jamaica's exports have been dominated by bauxite, alumina and sugar. So-called 'traditional' exports of lesser importance include bananas (which, at one time, rivalled sugar in importance), coffee, cocoa, citrus fruits and pimentos From around 1890 to the 1930s, bananas were actually Jamaica's leading export but after the industry was devastated by disease in the 1940s, it never regained the earlier prominence.[33]

Table 6 7 illustrates the concentration of Jamaican commodity exports In the selection of years presented, the major exports always amounted to more than three-quarters of domestic commodity exports, reaching as high as ninety-three percent in 1956 The role of bauxite and alumnina has grown over the years, while that of sugar and rum has declined In recent years, there has been a sharp decline in the share of agricultural exports due mainly to failing production

The high dependence on exports of primary goods has two implications. In the first place, the considerable income that might accrue from the processing stages is foregone. Secondly, export earnings are characterized by volatility and uncertainty, typically associated with the marketing of primary products.

The marketing of sugar presents a typical illustration

of the problem of volatility of prices. Sugar prices in 1965 averaged two cents US per pound. After a period from 1973-1976, when its annual average ranged from nine cents to thirty cents (actually reaching fifty-six cents in November 1974), the sugar price again plunged to five cents by 1984 (although it was high briefly in 1980, reaching an annual average of twenty-nine cents).

World market prices do not affect the volume of Jamaican sales directly because

[33]Jefferson (1972), p. 2.

Jamaica sells all of its exports in negotiated markets (LOME and US Generalised System of Preferences).[34] Bauxite and alumina prices have also been subject, increasingly in recent years, to unforeseen fluctuations, while production and export levels are subject to company policy on a global level The high volatility of prices severely affects the operations of the economy as a whole given the high weight of traditional exports in total exports.

The problems emerging from the volatility of prices are aggravated by fluctuations in foreign currencies. Given the currencies in which sales are denominated, it is not unusual for increases in production to coincide with adverse changes in exchange rates. For example, although sugar exports in 1984 exceeded those of 1983 by 3,349 tonnes, their export value fell from US $57.3 million to US $45.8 million due to "the depreciation of sterling against the US dollar"[35]

Recent developments in the Jamaican economy draw attention to the escalating burden being placed on the capacity to import and the failure of export earnings to keep pace. In addition to the traditional need to provide a capacity for the growth of merchandise imports, there is the additional need to provide for the large debt-service. In terms of estimating the capacity to import, tourism earnings have been playing an increasingly important role in the 1980s. On the basis of information in table 6.9, it can be shown that the balance on merchandise trade plus travel tends to be negative, but was positive for some years in the 1960s, in 1977 to 1980, and in 1984. In addition to nominal comparisons, there is the question of the impact of changes in

[34]See Burnett (1986).

[35]ESSJ (1984), p. 3.5.

import prices. Table 6.5 is useful in dramatising the failure of the sum of exports and tourism earnings to keep pace with rising import prices. An index of the purchasing power of merchandise exports and tourist receipts is observed to be declining from 122 to 65 between 1970 and 1985.

6.4.2 Imports

We approach the analysis of imports by disaggregating them by economic end-use. For that purpose, it is customary to distinguish three main categories:

i) consumption goods imports,

ii) intermediate goods imports, and

iii) capital goods imports.

Table 6.8 presents a percentage breakdown of imports by economic end-use for 1967-84. Intermediate goods are further disaggregated into fuel imports and non-fuel intermediate goods because fuel is such an important single item in imports. Looking separately at non-fuel intermediate goods also sheds light on significant aspects of the structure of economic activity.

In the late 1960s and early 1970s, merchandise imports were divided fairly equally between the three main categories. By the late 1970s, a new pattern was emerging with the bulk of imports consisting of fuel and other intermediate goods. Indeed from 1976 onwards, intermediate goods constituted a larger proportion of imports than the other two categories combined. The extreme cases were 1979-81 when imports of intermediate goods were double the combined imports of consumption goods and capital goods!

Table 6.8

Percentage Distribution of
Merchandise Imports by Economic End-Use, 1967-84

Year	J$m. Total goods imports	Cons. goods imports (%)	Interm. goods imports (%)	of which		Capital goods imports (%)
				fuel imports	non-fuel	
1967	252.4	33.6	35.5	8.0	27.5	30.9
1968	320.0	31.2	34.8	7.1	27.7	34.0
1969	362.6	32.6	32.8	6.9	25.9	34.6
1970	434.5	30.2	32.2	6.4	25.8	37.6
1971	458.4	30 3	34.9	9.5	25.4	34.8
1972	592.2	44 8	30.2	7.5	22.7	25.0
1973	615.2	23.6	42.8	10.9	31.9	33.5
1974	850.8	21.4	51.6	20.8	30.8	26.9
1975	1021.3	20.8	48.4	19.1	29.3	30.8
1976	829.7	18.0	56.4	22.3	34.1	25.6
1977	769.3	11.4	66.3	29.0	37.3	22.3
1978	1260.1	14.7	62.5	23.8	38.7	22.8
1979	1754 5	12.1	66.7	33.1	33.6	21.3
1980	2086.	11.3	71.8	38.1	33.7	16.9
1981	2623.1	12.9	67.0	33.1	33.9	20.0
1982	2460.3	16.7	59.7	29.5	30.2	23.6
1983	2838.4	16.3	59.0	29.0	30.0	24.8
1984	4509.5	13.9	62.4	29.9	32.5	23.7

Source: Statin, External Trade, several issues.

The rise in the share of intermediate goods may be attributed to a number of factors. A primary factor is the escalation in the prices of fuel imports from 1973 onwards. This had the effect of almost doubling the share of fuel imports in total imports between 1973 and 1974. The share made a further surge upwards in 1980 after the second oil-price shock. It is evident too that the share of imports of non-fuel intermediate goods also increased, though less sharply.

The growth in the share of intermediate goods in imports tells us something about the import-substituting nature of manufacturing which was established in Jamaica. The turn of events in the 1970s revealed the vulnerabilities of this structure. For a number of reasons to be discussed later, acute balance-of-payments problems began to be experienced so the capacity to obtain the desired level of imports was threatened. Under these circumstances, priority was given to the intermediate-goods imports because of their critical importance to the manufacturing sector and their attendant role in maintaining employment and income. Consequently, it was the decline in relative importance (though not necessarily in absolute terms) of the other two categories, along with the fuel price effects already cited, which were responsible for the rise in the share of imports of intermediate goods. Typically, when economic depression threatens, it is relatively easy to justify restraint on imports of consumer goods, especially when such goods are considered to be non-essential. The importation of capital goods may be deferred as the business community take a 'wait-and-see' attitude in the face of uncertain expectations about the future. It can be concluded, therefore, that the rise in the share of imports of intermediate goods reflected the critical position attributed to the manufacturing sector.

This situation dramatizes the dilemma created by the pattern followed by import-substitution. A principal objective of import-substitution is the reduction of imports in relative terms in order to strengthen the balance of payments. What actually happened was one form of dependence and vulnerability was exchanged for a more insidious one. With so much manufacturing using imported raw materials, the maintenance of operations was sustained by imports. When depression came, there was little scope for a temporary cutback in imports which would not affect production. The situation in Jamaica was aggravated by the fact that even exports were seriously threatened by the unavailability of foreign exchange.[36]

The evident decline in the share of capital-goods imports is also a matter giving rise to concern. Because Jamaica does not produce capital goods, a decline in these imports implies a reduction in investment activity.

6.5 THE BALANCE OF PAYMENTS

Some general observations may be made about the behaviour of the Jamaican balance of payments since 1960. Firstly, the early 1970s appear as a watershed in terms of the ability to sustain balance in the external accounts. For the whole of the 1960s, there were three recorded deficits in the overall balance of payments (1964, 1965 and 1969). From 1972 to 1985, there were only three surpluses (1974, 1982 and 1984).[37]

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[36]See ESSJ (1978), p. 4.1, where it is observed that "the state of external trade is influenced by ...the unavailability of import financing", among other things.

[37]See Table 6.9.

TABLE 6.9

BALANCE OF PAYMENTS – 1960 – 1984

(US$MN.)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Merchandise	– 23 0	– 12 6	– 5 9	9 2	– 36 1	– 38 1	– 8 0	– 21.6	– 81 3	– 89 3	–107.0	–139 6	–141.6
Exports (f.o.b)	164 6	178 1	184 0	208 3	218.7	216 7	276 5	239 1	251 0	291 8	342.1	366 1	353 8
Imports (f o b.)	187 6	190 7	192 9	199 1	254 8	254 8	284 5	260 7	332 3	381 1	449.1	505.7	495 4
Services (net)	– 17 7	– 12 6	– 19 1	– 20 8	– 25 8	– 9 5	– 48 7	– 51.1	– 34 4	– 48 6	– 67 4	– 2.1	– 21.7
Foreign Travel	7 5	14 0	7.8	8.9	31.9	52 9	67 2	59.1	75.4	78.5	80.0	100.9	87.2
Investment Income	– 27.4	– 31.9	– 33.6	– 36.7	– 40.3	– 42.8	– 90.7	– 80 7	– 73.2	– 87.0	– 98.1	– 48.1	– 50.5
Other	2.2	5.3	6.7	7.0	– 17.4	– 19.6	– 25.2	– 29.5	– 36.6	– 40.1	– 49.3	– 54.9	– 58.4
Goods & Services (net)	– 40.7	– 25 2	– 28.0	– 11.6	– 61 9	– 47 6	– 56.7	– 72.7	–115.7	–137.9	–174 4	–141.7	–163 3
Unrequited Transfers (net)	16.8	13.7	18.7	18.8	18.2	17.1	14.6	12.0	12.3	14.3	21.8	22.1	26.1
Private	17.1	18.2	20.4	21.0	21.0	19.9	18.2	15.4	16.0	17.6	26.1	27.9	32.4
Official	– 0.3	– 4.5	– 1.7	– 2.2	– 2.8	– 2 8	– 3.6	– 3.4	– 3.7	– 3.3	– 4.3	25.8	6 3
Current Account Balance	– 23.9	– 11.5	– 9.3	7.2	– 43.7	– 30 5	– 42.1	– 60.7	–103.4	–123.6	–152.6	–119.6	–137.2
Net Capital Movements	24.4	15.1	10 9	18 5	20.9	16 5	65 4	77.9	137.3	118 2	160 9	143.5	70.0
Official	8 4	– 4.5	2 2	6.2	11.5	8 4	10.4	6.0	15.1	12 4	– 1.4	5.1	21.8
Private	16.0	19.6	8.7	12.3	9 4	8.1	55.0	71.9	122.2	105 8	162.3	138.4	48.2
Allocation of SDRs	–	–	–	–	–	–	–	–	–	–	6.4	6.0	5.5
Change in Reserves	– 0 3	– 3.6	– 1 8	– 25 7	60.7	14 0	– 23.2	– 7 6	– 32.8	13 6	– 21.1	– 54.1	59 6
Net Errors & Omissions	– 0.2	–	0 2	–	– 37.9	14.0	0.1	– 19 3	– 1.1	– 8.2	– 6 4	24 2	2 1

(Continued)

BALANCE OF PAYMENTS 1960 – 1984 (Continued)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Merchandise	–177.3	–117.6	–159 3	–135.2	83.9	44 5	– 67.9	– 75.4	–322.7	–441.5	–438 5	–291 7
Exports (f.o.b.)	392.9	693.8	810.3	656 4	750 6	794 5	814 7	962.7	974 0	767.4	685 7	745.3
Imports (f.o.b.)	570.2	811 4	969 6	791 6	666.7	750 0	882.6	1,038 1	1,296 7	1,208 9	1,124 2	1,037 0
Services (net)	– 29.8	– 72 8	–149 6	–173 4	–138.5	–156 9	–154 7	–181 7	–138 4	– 96 8	–143 5	–118 7
Foreign Travel	99 4	97 4	76.2	46.9	93 7	136 4	184.5	228.9	270 6	306 1	374 3	386 6
Investment Income	– 58.1	– 67.6	–102.8	–112.3	–128 6	–178 6	–202 6	–251.7	–201.5	–183 5	–266.1	–301 8
Other	– 71.1	–102.6	–123 0	–108 0	–103.6	–114.7	–136 6	–158.9	–207.5	–219 4	–251.7	–203.5
Goods & Services (net)	–207.1	–190 4	–308 9	–308.6	– 54.6	–112 4	-222.6	–257.1	–461.1	–538.3	–582.0	–410 4
Unrequited Transfers net)	26 4	23.4	26.2	6.0	20 0	25.7	80.0	90 8	124 3	150 4	101 5	120.6
Private	33.8	32.5	21.0	2.0	15.1	15 2	70 0	81.8	123.3	134.5	94 7	80 4
Official	– 7.4	– 9.1	5.2	4.0	4 9	10.5	10.0	9.0	1.0	15.9	6.8	40.2
Current Account Balance	–180.7	–167 0	–282 7	–302 6	– 34 6	– 86 7	–142 6	–166 3	–336 8	–387.9	–480.5	–289.8
Net Capital Movements	137.1	243.2	208.9	126.7	34 3	– 78 5	– 10.2	107.1	225 4	465 6	190.5	482.7
Official	36 7	90 1	124.2	79.2	2.9	167 5	65 7	187.4	240.2	446.0	300.7	362 9
Private	100 4	153 1	84 7	47 5	31 4	–246 0	– 75.9	– 80 3	– 14.8	19 6	–110.2	119.8
Allocation of SDRs	–	–	–	–	–	–	10 0	10 0	10 0	–	–	–
Change in Reserves	25 9	– 59 5	80 8	180 9	30 5	165 8	137 4	57 8	95 6	– 86 0	289 1	–225 7
Net Errors & Omissions	– 17 7	– 16 7	– 7 0	– 5 0	– 30 2	– 0 6	5 4	– 6 6	5 8	6 5	0 9	32 8

Source: Balance of Payments of Jamaica, 1985

The current account balance is almost invariably in deficit and an overall surplus is thus sustained by net capital inflows. The capital account has shown substantial decline in private capital inflows and a truly phenomenal increase in reliance on official capital inflows. This provides a critical link between the performance of the balance of payments and the escalation of external debt.

6.5.1 The Current Account

Apart from merchandise trade, major items of the current account are tourist earnings, investment income and transfers. Tourism, though a service, is akin to commodity exports in the Jamaican context and is dealt with alongside merchandise trade as has been done in sections above.

Among the other service items, the most important are flows of investment income. This item consists primarily of receipts and payments of the mining companies, the central bank and the central government and government-guaranteed transactions. Receipts by the mining companies are used to defray local costs so they vary inversely with the making of profits in local operations. Ironically, in 1986, when the mining companies recorded an overall profit, their investment income receipts were zero, while payments originating in that sector amounted to US$17.8 million.

Net investment income is always negative, reflecting the significance of foreign investment in the mining sector and elsewhere in the economy. This item is a major contributor to the negative balance of the services account. The situation has deteriorated in the 1970s and 1980s due to the growth of payments by the Bank of Jamaica and the Government of interest on the national debt, in spite of considerable

re-scheduling.[38]

The remaining service items include freight and merchandise insurance and 'other transportation'. Freight and insurance are sharply negative mainly on account of freight charged for imports. Other transportation, on the other hand, is positive reflecting receipts for passenger fares and port disbursements. The positive balance of this item is, however, never enough to achieve a positive balance for the services account as a whole.

Net investment income has always been negative, reflecting the high level of foreign ownership of business enterprises. A factor of growing importance in the 1970s, and particularly, in the 1980s has been increasing payments of interest on the national external debt.

6.5.2 The Capital Account

Net capital inflows have traditionally played a critical role in financing the deficit on current account of the balance of payments. Since 1960, net capital inflows have been positive in every year except, in the crisis years of 1978 and 1979. Prior to the mid-1970s, inflows of capital were mainly associated with direct investments in the bauxite industry. Thus, from 1968 to 1977, approximately ninety percent of net capital inflows were private. Subsequently, net private capital movements became small and even negative. This change reflected a situation of reduced private capital inflows, escalating repatriation of capital, and capital flight. From the mid 1970s, there was a sharp rise in official capital inflows solicited by governments to prevent a collapse of

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[38]See BOJ, Balance of Payments of Jamaica, 1986, p. 23.

Table 6.10

Private and Official Net Capital Inflows, Seven-Year Periods
(US$m.)

Years	1964-70	1971-77	1978-84
Net total capital receipts	597.1	963.7	1382.6
Net private capital receipts	534.7	603.7	-387.8
Net official capital receipts	62.4	360.0	1770.4
Ratio of Official receipts to total receipts (%)	10.5	37.4	128.0

Source: BOJ, The Balance of Payments, 1985

economic activiy. The crucial role of large official capital inflows and the associated growing indebtedness is a continuing aspect of the Jamaican economy.

The rise in the importance of official capital flows in the 1970s and 1980s is illustrated by table 6.10, where the flows are presented for seven-year periods. Net official capital inflows, which were ten percent of net total capital inflows in the late 1960s, reached 128 percent in the third period. Evidently, in this latter period, official capital receipts have not only performed the role of accommodating the current account imbalance but have provided some resources for private capital outflows.

After 1974, chronic balance-of-payments deficits have become the norm. Surpluses were recorded only in 1982 and 1984 These were attributable to massive inflows of official capital, US$883.2 million and US$869.5 million respectively.[39] With successive deficits, foreign-exchange reserves were soon critically low and, by 1976, they were negative J$181.4 million (J$1 = US$1.10 in 1976) They have been negative ever since.

This critical situation set the stage for a series of stabilization agreements with the IMF, starting under the PNP Government in May, 1977 These agreements have become the focus of attention in the operation of the Jamaican economy over the last decade. The deficits have been associated with an increasingly serious debt situation, which is adding onerously to the constraints already faced by the economy.

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[39]BOJ, Balance of Payments in Jamaica, (1983) and (1985). Note that the figures above relate to inflows only while those of table 6.6 are net figures reflecting both inflows and outflows.

6.6 DEBT

As a culmination of a generally deteriorating balance-of-payments performance, the national debt has risen to astronomical levels. While the debt includes both domestic debt and foreign debt, we shall focus on the latter because its magnitude has immediate harsh consequences for the prospects of achieving external balance with acceptable levels of growth. The seriousness of the Jamaican foreign debt situation is appreciated by observing that on a per capita basis it is "larger than that of Mexico or Brazil, the developing world's largest debtors."[40]

Table 6.11 presents some basic data for the analysis of the foreign-debt situation. It is immediately evident how rapidly the total debt has grown over the period, registering an average annual growth rate of 22.8 percent. At its 1985 level, total debt was more than one and a half times total GDP and almost three times as large as total exports of goods and services. It is even more significant to note the debt service ratios. In 1970 and 1975, these were 2.6 and 7.4 percent, respectively. By 1985, the debt service ratio had reached 61.3 percent on an accrual basis and 40.9 percent in terms of actual payments. This means that 40.9 percent of total exports of goods and services were being diverted from the purchase of much needed imports to service the external debt. To complete the vicious circle, a large and growing part of official inflows has to be used to service debt.[41]

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[40]Robert W. Palmer, "How Washington sees Jamaica, Part I" Sunday Gleaner, December 14, 1986, p. 8A.

[41]See Owen Jefferson, "Jamaica's External Debt: Size, Growth, Composition and Economic Consequences," in Omar Davies ed., The Debt Problem in Jamaica (Kingston: University of the

Table 6.11

External Public Debt Operations Indicators
US$m.

Year	1970	1975	1980	1981	1982	1983	1984	1985
Total debt (year end)	154	688	1734	2212	2690	2920	3207	3355
Debt service (accrual basis)	14	83	341	574	555	573	736	734
Debt service (actual basis)	14	83	263	438	409	372	394	490
Exports of goods services	538	1123	1421	1500	1394	1332	1378	1198
				Percentages				
Total debt/GDP	15.8	31.2	82.2	105.0	128.5	140.5	135.3	154.1
Total debt/XGS	28.6	63.4	122.0	147.5	193.0	219.2	232.7	280.1
Debt service ratio (accruals)	2.6	7.4	24.0	38.3	39.8	43.0	52.7	61.3
Debt service ratio (actuals)	2.6	7.4	18.5	29.2	29.3	27.9	28.6	40.9
Interest payments ratio	1.5	4.4	10.8	12.5	15.9	14.6	13.5	24.7

Source: O. Jefferson, "Jamaica's external debt: size, growth, composition and economic consequences" in O. Davies (ed.), The Debt Problem in Jamaica, Economics Department, Mona, UWI, monograph #1, 1986.

West Indies, Mona, Department of Economics Monograph Series, 1986), table 6.

This situation raises some profound questions with respect to future prospects. Inevitably, with such a large proportion of export earnings being diverted from import capacity, further borrowing must be undertaken to sustain economic activity. Without radical improvements and little short of a miracle, Jamaica will face the prospect of ever-growing debts and their attendant problems. It should be observed that a major reason for the rising debt-service ratio has been the poor performance of exports. For example, between 1981 and 1985, export earnings declined at an average annual rate of 5.5 percent largely due to the collapse of the bauxite industry.

A final observation from table 6.11 is the large difference between debt service on an accrual basis and actual debt service payments. These differences reflect the high extent of rescheduling which has been resorted to, almost routinely, by the JLP administration. Jefferson shows that Jamaica has succeeded in rescheduling some 30 percent of gross debt service falling due in recent years.[42] This is an indication of the relatively cooperative attitude of the international financial community to the Seaga Government.

The devaluations were a major contributory factor in the growth of the debt. The large portions of the fiscal budget that have to be devoted to servicing debt contribute to the serious neglect of social services and amenities and of important capital activities.[43] The squeeze on resources is aggravated by the commitment of the government, as part of its agreements with the IMF, to reduce the size of the fiscal

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[42]Jefferson (1986), p. 15.

[43]See, Derick Boyd, "The Impact of Adjustment Policies in Jamaica on Vulnerable Groups," (mimeo) Department of Economics, U.W.I., Mona, 1986.

deficit drastically. Total interest payments and amortization of the Government debt amounted to $33.03 million in fiscal year 1972/73, representing nine percent of total expenditure. By 1985/86, interest and amortization were $1971 million representing forty-two percent of total expenditure. These figures dramatise the severity of the constraints on the allocation of spending in many needed areas imposed by the high debt and debt service.

The massive accumulation of debt by Jamaica in recent years raises questions about the efficacy of aid. Aid flows to Jamaica have averaged thirty percent of GDP from 1981 to 1985.[44] It is evident that Jamaica is in a very favoured position with respect to bilateral and multilateral creditors and donors. It has been pointed out that

> Jamaica's use of Fund credit in relation to its quota with the IMF is the highest in the membership and the credit has been outstanding for a longer period than any other member. Jamaica has been among the largest recipients on a per capita basis of foreign aid from the United States and loans from the World Bank.[45]

The high level of rescheduling which Jamaica has been able to negotiate is further evidence of the sympathetic attitude of the donors. It is arguable that the economy has been able to achieve some positive growth in the 1980s, not because the economy has been put on a sounder footing, but largely because of the availability of large doses of

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[44]Michalopoulos et al. (1985), p. 8.

[45]Ibid., p. 52.

official assistance.

Another issue that arises in connection with aid is that aid flows are associated to a considerable extent with consumption rather than investment activities. It has been observed that,

> much donor assistance is tied to imports, often of low priority for Jamaican development. U.S. P.L. 480 assistance has the advantage of providing commodities which may have to be imported in any case on favourable terms but it has the potential deficiency of compromising the objective of Jamaica feeding itself to a greater extent from its own production by driving down domestic producers' prices.[46]

US PL480 assistance, is cited as an example of aid which, while providing needed assistance, threatens to undermine efforts to expand agricultural production.

The problems of aid administration have been attributed to the unsatisfactory performance of both the creditors and the Jamaican Government. On the one hand, donor coordination in identifying projects in line with development priorities leaves much to be desired. "More than one donor," it is pointed out, "has urged sizable reductions in public sector expenditures while providing financing through projects to

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[46]Michalopoulos et al., p. 51. See also Kieth B. Griffin and J.L. Enos "Foreign Assistance: Objectives and Consequences", Economic Development and Cultural Change 18 (April 1970). This is one of several articles which have dealt with the implications of aid supplementing consumption instead of promoting investment.

protect their particular favorites against budget cuts."[47] On the other hand, it is argued that Jamaican Government requests and approval of investment projects are not properly coordinated either.[48]

6.7 CONCLUSIONS

The foregoing description has drawn attention to the general operations and features of the Jamaican economy. A high degree of openness, a high level of concentration of exports and the high dependence on primary products, especially bauxite and alumina have been marked features of the economy. Finally with respect to exports, we observe the distinction between traditional exports (bauxite and sugar products) and non-traditional exports. Bauxite products, in particular, are subject to marketing arrangements, which justify their separate treatment in analyses of supply conditions.

The analysis has also revealed some dimensions and underlying factors of the current economic crisis. Because of the nature of the economy and its dependence, capital inflows are of critical importance to the maintenance of economic activity. As our empirical evidence will indicate in chapter eight, net capital receipts are significant as an explanatory variable in most of the behavioural processes on which the model is based. In recent years, they have been very large and predominantly official in origin and, therefore, they are influenced by policies of creditors regarding economic

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[47] Michalopoulos et al. (1985), p. 51.

[48] Michalopoulos et al. (1985), p. 50.

assistance to Jamaica. A significant feature is that economic assistance seems to be linked primarily with consumption rather than investment activities.

Chapter 7

7. BACKGROUND TO STABILIZATION IN JAMAICA

SOCIO-POLITICAL FACTORS

7.1 INTRODUCTION

Socio-political developments provide an important background to the analysis of the Jamaican economy in the 1970s and 1980s. Major political developments have been witnessed over this period. They form an essential background to the economic policies which have been adopted and, indeed, help to explain the emergence of an economic crisis, the need for stabilization and adjustment, and the different approaches followed by succeeding government administrations.

This chapter will attempt to sketch the salient features of relevance to our exercise. It will not attempt to expand on the very ample literature that already exists on the subject[1] but will describe selective aspects of particular relevance to this study. The existing literature has tended to follow a fairly set pattern of periodization, breaking the Manley administration into three periods, namely, 1972-74, 1974-76 and

[1]See, for example, Brown (1981), C. Bullock, "IMF Conditionality and Jamaica's Economic Policy in the 1980s", Social and Economic Studies (1986); Girvan et al. (1980); Michael Kaufman, Jamaica Under Manley, (London: Zed Books Ltd., 1985); Polanyi-Levitt (1983); Sharpley (1984); Stephens and Stephens (1986).

1977-80.[2] It will be adequate for our purposes to single out specific events such as the declaration of democratic socialism (section 7.3.2), and the introduction of the bauxite levy (section 7.3.3), rather than to follow a strictly periodized format. To facilitate a quick glance at the period under consideration, a chronology of events is presented as an appendix to this chapter. There is also a brief sketch of socio-economic conditions existing at the beginning of the 1970s, which provided some motivation for the policies introduced by the Manley Government. Finally, section 7.4 is devoted to an analysis of the JLP in office, focusing primarily on their stabilization efforts.

7.2 LEAD UP TO THE 1970s

Jamaican society entered the 1970s in a state of socio-economic ferment. The signs of growing discontent and social instability were evident in the 1960s. Major manifestations of this situation were a riot in Kingston in 1965, widespread gun violence associated with the 1967 general elections making it necessary for a state of emergency to be declared, and rioting in October 1968 following the expulsion from the island of Walter Rodney.[3] Girvan et al. draw attention to cultural and musical expressions of the mood of social protest that was evident in the 1960s. Stephens and Stephens also provide indicators of the noticeable growth in violent crime.[4]

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[2]See, for example, Brown (1981), Girvan et al. (1980), Stephens and Stephens (1986), Kaufman (1985).

[3]Girvan et al., (1980) p. 113.

[4]Stephens and Stephens (1986).

This state of social instability has to be seen against the background of a set of salient features of the Jamaican society. Firstly, the distribution of income in Jamaica reflected a state of profound inequality. An authoritative study of the distribution of income in 1958 found that the lowest seventy percent of households shared 27.3 percent of total income, whilst the upper ten percent enjoyed 43.5 percent of total income.[5] This level of concentration ranks the island among the countries with the highest recorded rate of inequality of incomes".[6]

Indications are that this high level of income inequality did not show any improvement over the period of the 1960s when economic growth was still high. According to Girvan et al.,

> Income distribution worsened, and it is estimated that between 1958 and 1968 the share of the poorest 40 percent of the population in personal earned money income declined from 7.2 percent to 5.4 percent. Absolute poverty also grew, as between 1958 and 1968 it is estimated that the absolute income of the poorest 30 percent of the population fell from $32 to $25 per capita, in constant 1958 dollars.[7]

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[5]E. Ahiram, "Income Distribution in Jamaica, 1958", Social and Economic Studies (1964), p. 337.

[6]Ibid., p. 335.

[7]Girvan et al. (1980), p. 113.

The pattern of high inequality is reinforced when consideration is given to the distribution of land for agricultural use. In 1968, seventy-eight percent of the total number of farms used fifteen percent of total farm acreage while 0.16 percent of the largest farms accounted for forty-five percent of total farm acreage. A comparison with the 1954 situation indicated a worsening of the inequality in the distribution of land.[8]

A second alarming feature of the Jamaican society was high unemployment. It was particularly disturbing to observe that unemployment and under-employment persisted even during periods of high economic growth. This point has already been noted in the last chapter. Its main implication is that attention has to be paid explicitly to the goal of reducing unemployment in any strategy of development,

High unemployment continues to be one of the principal problems of underdevelopment facing Jamaica. Girvan et al. attribute this situation to the fact that "agriculture was relatively stagnant during this period, and much of the new investment was of a highly capital-intensive nature".[9] In the 1980s, there has been a further deterioration of the unemployment situation with an average rate of 26.3 percent being recorded from 1981 to 1984. The reduction of unemployment to an acceptable level is a primary target and criterion of success in development efforts in Jamaica. The chronic and severe social implications of unemployment are reflected by the fact that the numbers of people who have never been employed are typically very high.

The third underlying feature of the Jamaican economy as it entered the 1970s was the evident decline of aggregate economic performance. The Jamaican economy had

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[8]Jefferson (1972), p. 81, Table 4.3.

[9]Girvan et al. (1980), p. 113.

Table 7.1

Period	Average Annual growth of Real GDP (1956 prices) (%)
1950-55	10.1
1955-60	7.1
1960-65	4.6
1965-68	3.9

experienced a declining trend of performance ever since the 1950s. This is borne out by the figures of table 7.1 which are taken from Jefferson.[10]

Although the economy did experience a spurt of increased growth between 1968 and 1972, when real GDP grew on average by 6.8 percent annually,[11] by the early 1970s, Jamaica was experiencing "the exhaustion of the growth phase".[12] Declining economic performance aggravated the social tensions that were emerging.

7.3 THE PNP IN OFFICE

7.3.1 Their General Approach

On the attainment of power in 1972, the PNP Government embarked on a series of programs and policies aimed at achieving a more equitable distribution of income, overdue social reforms and structural changes in the economy. An aggressive policy aimed at expanding and improving the agricultural sector was a key aspect of their economic policy. Under a general programme entitled Operation GROW[13], consisting mainly of two projects, namely the Land-Lease Project and the Food-Farms Project, the agricultural policy was aimed at "increasing food production and a wider distribution of the opportunity of access to land among farmers".[14] Another major initiative was the

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[10]See Jefferson (1972), p. 46, Table 3.4.

[11]IMF, International Financial Statistics 1985, pp. 414f.

[12]Stephens and Stephens (1986), p. 56.

[13]GROW stands for Growing and Reaping our Wealth.

[14]ESSJ (1972), p. 73.

First Rural Development Project, "a comprehensive plan for multidisciplinary action in integrated rural development in the Western Region of the island".[15]

These projects were rapidly implemented[16] but they did not achieve the kind of results necessary to relieve the general pressures building in the economy and to ensure sustainability. The Food-Farms Project was phased out in 1976 and it was clear by then that the whole of Operation GROW was in jeopardy.

The early years of the PNP administration were also characterised by a range of social, economic and cultural programs which were chiefly targeted at the working class but many of which benefited all classes.[17] Associated with these programs was a process of substantive wage increases and rapidly growing government spending.[18] The latter is reflected in the sharp rise of 8 percent in the share of the government sector in real GDP between 1974 and 1980 after it had previously taken over 20 years to register a 6 percent increase. These developments were associated with a deterioration in the balance of payments and rising inflation. Whilst the intrinsic merits of the actions of the government are unassailable, they have been criticised as a case of "redistribution

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[15]ESSJ (1975), p. 104.

[16]By January 1978, 84,973 acres of land including 47,730 acres of arable land had been leased to 23,618 farmers. Some 47,000 acres were cultivated yielding $7.2 million. See ESSJ (1977).

[17]See Girvan et al. (1980), especially Table 1.

[18]Girvan et al. (1980) report: "contracted wage increases averaged 50-60 percent in late 1974 and through 1975 and began to exceed substantially cost of living increases". P. 117. See also Sharpley (1984) and Polanyi-Levitt (1983).

without growth"[19] The issue of the containment of the public sector has become one of the focal points of policy in the 1980s.

7.3.2 Democratic Socialism

In what is considered a major turning point in the PNP administration, the leader, Manley, reaffirmed the party's commitment to democratic socialism in his speech to the 36th Annual Conference in 1974. This was the climax of a process of ideological self-definition that started soon after the attainment of power in 1972.[20]

The declaration of democratic socialism as the ideological platform of the government, instead of marking the emergence of political clarity and definition, precipitated a period of confusion upon which the opponents of the government were able to capitalize. It has been pointed out that "the declaration of democratic socialism itself was not a turning-point in the government-private sector relationship".[21] A great effort was made to convey the ideology to the public in moderate terms emphasizing humanitarian and christian themes.[22]

However, considerable tension was generated within the PNP between moderate and extreme interpretations of the ideology. Although the tensions were muted originally, they produced inconsistencies, and even "sabotage and footdragging"[23], behind

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[19]Polanyi-Levitt (1983), p. 245.

[20]See Stephens and Stephens (1986), pp. 105ff.

[21]Ibid., p. 121.

[22]Ibid., pp. 106-8.

[23]Ibid., p. 109.

the scenes within the PNP, which blunted its effectiveness. A major issue was not the substance of the democratic socialist program, which was never clearly defined, but the rhetoric adopted by some party spokesmen.[24] The main opponents of the PNP, led by the JLP and The Gleaner, the leading newspaper in the land, noted for its conservative tradition, exaggerated and misrepresented the rhetoric in ways designed to alarm the private sector. These developments contributed to severe adverse consequences for the economy, including the migration of skilled personnel, capital flight and an escalating foreign debt.

7.3.3 The Bauxite Levy

In May 1974, the PNP government imposed a production levy on the bauxite and alumina companies which had the effect of increasing bauxite revenue sevenfold and, furthermore, linked revenues with metropolitan inflation.[25] The imposition was unilateral and was put forward after a period of unsuccessful negotiations. The foreign-owned companies which controlled the industry were strenuously opposed to it. The two principal issues that arise with respect to the levy are the extent to which the deterioration of the bauxite industry subsequently could be attributed to the levy and the use to which the increased revenues were put.

With respect to the former issue, the majority of opinions dispute the idea of the levy being a major discouragement to production. Stephens and Stephens for example,

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[24]See ibid., p. 109. Also Polanyi-Levitt (1983).

[25]Stephens and Stephens (1986), p. 79. The levy amounted to 7.5 percent of the price of a ton of aluminium ingot imposed on the bauxite equivalent of a ton of aluminium (about 4.3 tons).

point out that "very little of the reduction in bauxite and alumina purchases by the North American companies can be attributed to the level of the levy or the act of imposing it unilaterally. They conclude further that "the total cost to Jamaica of the levy alone in terms of discouraging foreign investments was certainly very small when measured against the financial benefits.[26] The international recession, short-term switching of sources for bauxite, and falling demand for aluminium worldwide were the chief factors accounting for the decline of bauxite and alumina earnings.

On the question of the use of the proceeds of the levy, there is also widespread agreement. It was originally intended that the Capital Development Fund, set up for the revenues of the levy, would be devoted to capital formation. Instead, "this money went into various items of current expenditures of immediate attraction to its political constituency".[27] This was clearly a misallocation of resources insofar as they could better have been devoted to growth-oriented activities. Furthermore, the bauxite revenues allowed the government to postpone needed policy adjustments in the face of deteriorating circumstances. This delay was disastrous because it meant that when adjustment was finally embarked upon, the economy was already in a crisis from which adjustment would be more painful and less likely to succeed.

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[26]Ibid., p. 81.

[27]Polanyi-Levitt (1983), p. 246. See also Sharpley (1984) for similar views.

7.3.4 The Second Term

In December 1976, the PNP was re-elected with an even more massive majority than they had gained in 1972. By this time, the economy was facing a crisis with international reserves going negative in the first quarter of 1976. In addition, given the weight of official borrowing to support the balance of payments and the budget, the debt situation was becoming a matter of serious concern.

In the wake of these developments, the second term of the Manley government was dominated by the acknowledgement of crisis and the preoccupation with adjustment approaches. Two IMF agreements -- a Standby Agreement (SA) undertaken in mid-1977, and an Extended Fund Facility (EFF) entered into in mid-1978 -- are the central features of the second term. The standby agreement was made in 1977 marking the full realization and acknowledgement of crisis. It was accompanied by the establishment of a dual exchange rate.[28]

The two agreements both ended prematurely in failure. The standby agreement was terminated in December 1977 after a performance test was marginally breached. The EFF was suspended after a performance test was not satisfied in December, 1979. Subsequently, in 1980, the government gave serious consideration to an alternative path of adjustment based on self-reliance. However, by this time, policies which might have succeeded had they been implemented earlier, were doomed to failure.[29]

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[28]The events surrounding the IMF agreements of 1977 and 1978 are outlined in Girvan et al. (1980). See Table 4.

[29]See Polanyi-Levitt (1983), Stephens and Stephens (1986).

An issue which has generated some debate in the literature on Jamaica under Manley is the extent to which the undisputed economic deterioration could be attributed to policy mistakes, on the one hand, or to external factors beyond government control, on the other. While it will not serve our purposes here to enter into the debate, it is useful to mention some of the factors that may be taken into consideration.

On the one hand, the PNP approach involved the rapid expansion of Government spending. The associated deficit which, on the whole, was not devoted to investment activities, was financed from the Capital Development Fund, from foreign borrowing, and from large-scale credit creation.[30] These actions had unfavourable repercussions in terms of the stimulation of inflation, the depletion of reserves, and the expansion of the national debt.

On the other hand, the country faced a number of unanticipated setbacks including the 'oil price shocks' of 1973 and 1980. There were some cases of lost agricultural production on account of inclement weather. Thirdly, there were instances towards the end of the decade when the maintenance of IMF agreements was jeopardized by shortfalls in foreign credits. This latter problem has been attributed to a deliberate credit squeeze aimed at destablizing the PNP government.[31]

The second Manley term witnessed the beginning of a period of experimenting with adjustment policies under the guidance of the IMF. A central policy instrument of this approach was devaluation, intended to restore international competitiveness. The period of experimenting, which was interrupted only by the pursuance of the 'non-IMF'

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[30]See Girvan et al. (1980), Sharpley (1984), Levitt (1983).

[31]See Girvan et al. (1980); Kaufman (1984); Levitt (1983).

path in 1980, gathered force under the JLP government, which came to power in October 1980.

7.4 THE JLP IN OFFICE

The JLP came to power under the leadership of Edward Seaga in October 1980 on the basis of a massive win at the polls. The convincing electoral victory reflected widespread disenchantment with the PNP in the face of evident economic deterioration and the desire for a change. However, a feature of the period which must not be overlooked was the high level of political violence surrounding the elections. Murders increased by over 150 percent to 889 in 1980, compared with 1979, and offences described as 'breach of firearms act and shooting with intent' more than doubled from 1749 to 3882.[32] The high level of violence had disruptive consequences for many aspects of life, notably for the tourism industry, which was also affected by a deliberate campaign of negative media coverage.

The JLP proclaimed a firm commitment to economic management based on 'the magic of the market' and the private sector as "the main engine of economic growth".[33] Their attitude heralded a more cooperative attitude to the IMF, and accordingly, economic policy in the 1980s has been overshadowed by successive IMF agreements.

The principal aspects of the JLP policies include:

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[32]See Stephens and Stephens (1986) p. 386.

[33]Government of Jamaica, Ministry Paper #9/81, 1981. Economic Policy Memorandum, paragraph 15.

(i) devaluation,

(ii) deregulation to "release private initiative, rebuild confidence and support the operation of an efficient market economy",[34] which involves a greater reliance on market forces with respect to prices, rent, import licensing, state marketing and pay policy,

(iii) the goal of eliminating the budget deficit and generally reducing the relative size of the public sector in favour of the private sector,

(iv) export promotion and outward-oriented growth, and

(v) tight monetary policy.

Devaluation has been pursued as the main tool for stabilizing the balance of payments in the 1980s. After a period of stability at J$1.78:US$1.00 from 1979 to 1983, a dual exchange-rate system was adopted in January 1983, involving a substantial depreciation. From then until October 1985, the currency depreciated to J$6.40:US$1.00, while different exchange-rate regimes were experimented with. Since late 1985, the rate has been stabilized at J$5.50:US$1.00.[35]

An important objective of these exchange-rate policies was the encouragement of exports in order to improve the balance of payments. The emphasis was on the promotion of non-traditional exports. The disastrous developments in the bauxite industry had given rise to considerable export pessimism with respect to traditional products. Between 1984 and 1985, Reynolds pulled out of Jamaica completely, while

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[34]Ministry Paper #9/81, 1981, Economic Policy Memorandum, paragraph 4.

[35]See Bank of Jamaica, The Central Bank and the Jamaican Economy 1960-85, Appendix A.

Kaiser and Alcoa reduced their operations considerably. Sugar, the other traditional export, continued to show a sluggish output performance and, in addition, faced increasing marketing difficulties as the USA cut back its import quotas.

In light of these circumstances, the government pinned its hopes for export expansion on non-traditional products, mainly manufactures, and agricultural goods such as "winter vegetables" and ornamental horticulture. In addition, much energy and attention was directed to restoring the tourism industry. Devaluation was seen as a measure to make exports more competitive and as part of the strategy to shift the bias of the economy towards export-orientation. These observations are further justification for the view that, in the analysis of the effects of devaluation in Jamaica, it is advisable to distinguish between traditional and non-traditional exports and treat the former as exogenous.

It is important to note that the JLP government has abandoned devaluation as a tool for restructuring the economy. Seaga has stated emphatically that, "we do not intend to use devaluation as a technique for further adjustment as this technique has been used already to the fullest extent possible in Jamaica....".[36]

Over a period of nearly a decade, Jamaica has experimented with devaluation and other conventional demand management measures and has had ample opportunity to observe its effects. The balance of payments has not improved but, as expected, the devaluations have cut the standard of living, especially that of low income sections of the population, which could least afford such reductions.

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[36]Edward Seaga, "Statement to Parliament, September 10, 1985", p. 18.

With respect to the fiscal objectives to achieve a budget surplus by the end of the 1983/84 financial year and to reduce the size of the public sector, success has not been attained despite some drastic measures. It was agreed under the 1981 EFF that government expenditure, standing at 34.4 percent of GDP in 1981/82, would be reduced to thirty percent or less. Instead it increased. By 1985/86, the preliminary outturn was showing total expenditure at 39.9 percent of GDP.[37] Expenditure-cutting measures included the reduction and elimination in some cases of subsidies, forced redundancy of workers in the government sector and a rapidly implemented program of divestment. At the same time, a rationalization of the tax system and some increases in revenue measures were introduced.

Although some reductions have been achieved in the fiscal deficit and the growth of the public sector has been arrested somewhat, the targets of the stabilization program have, on the whole, not been achieved. By 1983, it was necessary to revise several of the targets downwards, including the target for the overall deficit.[38]

Another aspect of JLP policy has been a tight monetary policy. Aspects of this policy included increases in the liquid-assets ratios, the cash reserve ratio and the interest rate. These measures made credit costly and, sometimes, even unavailable. This had severe adverse effects on production especially with respect to agro-industries and small industries. "Financing is pretty steep" was the assessment of one expert, commenting on the high initial outlay requirements aggravated by the high costs of

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[37]ESSJ (1985) p. 6.1.

[38]The information on the fiscal targets of the government has been obtained from ESSJ (1981) and (1983), and World Bank, "Jamaica: Economic Situation and Public Investment," April 1985.

credit, of establishing the cultivation of ornamental horticulture.[39] It has also been noted that some firms ran large overdrafts at rates of interest of 26 and 28 percent, with adverse consequences.[40]

One motivation for the JLP Government entering into IMF agreements was "to keep the lifeline of credit open without which conditions would be incalculably worse".[41] The effort to maintain credit availability from this direction reflects the acknowledgement of the importance of capital inflows to the economy and the failure of private capital inflows to materialize on the scale hoped for by the Government. The objective of maintaining access to foreign capital was certainly fulfilled as Jamaica became the recipient of massive inflows from the IMF, the IBRD and bilateral sources. Jamaica's use of the IMF credit has been the highest among Fund members in relation to its quota and this credit has been outstanding for longer than any other member.[42] By 1983, Jamaica was using 540 percent of its quota.[43] In addition, Jamaica was one of the eleven countries (out of a total of fifty-seven countries with upper tranche arrangements) which, by 1986, had upper tranche positions exceeding 25 percent of

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[39]Daily Gleaner, April 15, 1987.

[40]Sylvia Lee, "Big Farms Face Collapse: Working Capital Said Short; Appeal to Banks," Daily Gleaner, March 25, 1987.

[41]Edward Seaga, Statement by the Governor of the Fund and the Bank of Jamaica, in The Summary Proceedings of the 40th Meeting of the Board of Governors of the IMF, Seoul, October 1985, (Washington, D.C.: IMF, 1985), p. 159.

[42]Michalopoulos et al. (1985), p. 52.

[43]International Financial Statistics 1985, p. 35.

maximum normal access continually for 6 years or more.[44] Moreover, the IMF agreements paved the way for credits from other sources.

In summing up, the social and political climate of the 1960s and 1970s form an essential background to the economic developments and policies of the 1980s. Real growth actually became positive in the 1980s after a period of sustained decline in the 1970s. However, there is widespread dissatisfaction with the package of policies. The reduced social programs and a deteriorating standard of living, seem out of proportion with the gains. The salient factor has been the availability of massive levels of economic assistance, which has been responsible for the maintenance of stability and even a little growth in a still unbalanced economy.

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[44]Michalopoulos et al. (1985), p. 54.

APPENDIX 7: Chronology of Selected Events, 1962-87.

August 3, 1962	Independence.
February 29, 1972	Election of the PNP.
January, 1973	Active devaluation to correct external imbalance.
May, 1974	Introduction of the bauxite levy.
1974	Declaration of Democratic Socialism.
December 15, 1976	The PNP is re-elected.
April, 1977	Adoption of a dual exchange-rate system.
July 1977	Standby Agreement with the IMF.
May 1978	Extended Fund Facility begins. Devaluation and end of the dual exchange-rate system.
June 1978	Beginning of monthly mini-devaluations.
May 1979	End of system of mini-devaluations.
March, 1980	Break with the IMF.
October 30, 1980	Election of the JLP.
April, 1981	Extended Fund Facility begins.
January 1983	Formalized parallel foreign-exchange market introduced.
May 1983	CARICOM rate of exchange introduced.
November 1983	Unification of the official, CARICOM and parallel exchange rates within a prescribed band.
1984	Reynolds bauxite operations cease.

March 1984	Introduction of an auction system for determining the exchange rate.
June, 1984	Standby Agreement with the IMF.
November 1984	Modification of the auction system.
February, 1985	ALCOA alumina plant closed.
July, 1985	ALCOA alumina plant reopened by the Government as Clarendon Alumina Production Ltd. (CAP).
August 1985	Standby Agreement with the IMF.
January, 1987	Standby Agreement with the IMF.

Chapter 8

8. ECONOMETRIC ESTIMATION OF DEVALUATION EFFECTS THE CASE OF JAMAICA

8.1 INTRODUCTION

8.1.1 The Role of Econometrics

Econometric analysis is an important complement to model-building in the proper evaluation of an economic issue. This study incorporates such an econometric analysis, which is the subject of this chapter. Before moving into the econometric analysis, it will be worthwhile to discuss briefly the ways in which the econometric aspect complements the theoretical analysis.[1]

Model-building is aimed primarily at presenting an explanation of the underlying mechanism of a process occurring in the real world. Most real world phenomena are quite complex and therefore some modifications are required in order to make the analysis manageable and useful. Manageability is achieved through "various processes of idealization including the elimination of 'extraneous' influences and the simplification

[1]This section draws on the comments of G. Judge et al., The Theory and Practice of Econometrics (New York: J. Wiley and Sons, 1985); M. Intriligator, Econometric Models, Techniques and Applications (Englewood Cliffs, New Jersey: Prentice-Hall, 1978); and R. Klein, Lectures in Econometrics (Amsterdam: North-Holland, 1983).

of processes"[2].

It must be stressed, however, that these idealized processes are more than just a matter of simplification. The very design of a model is governed by the specific insights at which it is aimed in ways which may involve a deliberate distortion of reality. Consequently, as Judge et al. point out, the model-building process "tells us nothing about the truth or falsity of the conclusions. It only gives us the possibilities, provided we have correctly made use of logic."[3] Besides logic and the basic principles of economic theory, model-building calls on our resources of intuition and hence it is considered as much an art as a science. Finally, in the area of macroeconomics we almost invariably make some use of the national accounting framework.

In the instance of our particular model, the object of our interest has been the effects of a devaluation on output and the balance of payments. In our idealization, we have elected to focus on the implications of a very open economy which is a price-taker in the world market, and to emphasize the behaviour of supply factors. Our theoretical model has made the simplification that all pre-determined variables are considered constant. These include the wage rate, relative prices and the rate of interest. These restrictions have to be removed in the econometric model.

When conclusions have been reached through model-building, the process is far from complete. Typically, the usefulness of the analysis depends upon an evaluation of the direction of effects and their magnitudes. This factor has been evident in our theoretical model, where ambiguity prevails with respect to the direction of some of the

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[2]Intriligator (1978), p. 14.

[3]Judge et al. (1985), p. 2.

effects of a devaluation. This ambiguity could be solved, at least conditionally, if we could attach some plausible values to the parameters.

Econometrics has a major role to play in this area. It involves the use of tools of mathematics and statistical inference to form quantifiable conclusions based on estimates of parameters. The particular character of economic phenomena dictates the importance of statistical inference. Because economics relates to social phenomena which cannot be controlled, the experimenter has to utilize observations generated independently and statistical inference suggests probable conclusions in such circumstances. In addition, the statistical aspect is preoccupied somewhat with helping ensure that the model specification is appropriate. In this way, econometrics can provide valuable feed-back for the model-building process.

Apart from model building and the econometric analysis viewed in isolation, other important considerations are the data which are the raw material, so to speak ('the facts'), and the purposes of the analysis. Typically, data are limited and this will influence the design of the experiment. In addition, the available data have to be refined or 'massaged' into a useful form. Refinement may involve seasonal adjustments, extrapolation, merging of data from different sources, etc. Finally, the purposes of the whole exercise are identified as structural analysis, forecasting and policy evaluation. Structural analysis is the analysis of the relationships of the variables of the model facilitated by the quantification of the parameters. Forecasting, as the name suggests, involves the use of the econometric model to make quantitative predictions and other extrapolations beyond the existing sample. Policy evaluation involves the use of the findings to draw conclusions involving policy options (e.g., to

devalue or not to devalue? to devalue by 5 percent or 10 percent?). The sequential relationships of all these elements may be summarized graphically in figure 8.1 taken from Intriligator.[4]

It is expected that our econometric analysis will be able to serve the three purposes identified above. In terms of structural analysis, it is expected that the estimates of the parameters will indicate what are the important behavioural relationships which govern the effects of devaluation. Structural analysis will considerably advance our understanding of the process under study and of the economy as a whole. The depth of our structural analysis depends on the number of factors we are able to incorporate into the econometric model, which in turn depends on the amount of data available. Unfortunately, the present study is constrained by some limitations of data which restrict us to general conclusions about the direction of the effect of devaluation on output and the trade balance. However, it will be possible to identify areas for a fruitful extension of the analysis subject to the availability of data.

The results can also be the basis for forecasting but it must be emphasized that the forecasts will be conditional. They will be conditional on the quality of data for the pre-determined variables and are subject to the stochastic influences inherent in the parameter estimates. The fact that those estimates are being generated on the basis of a short time series is also a relevant consideration. In addition, care has to be taken that the forecasts are being applied to a period that is similar to the one over which the parameters have been estimated. Finally, the information generated by the whole

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[4]Intriligator (1978), p. 3.

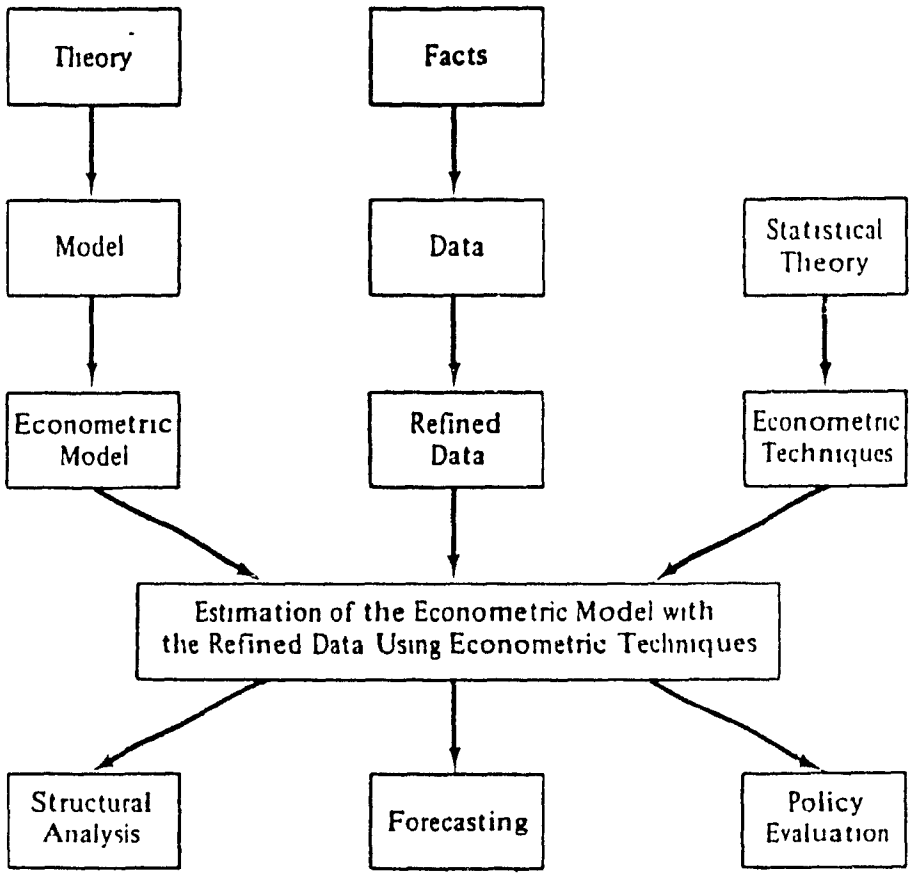

Figure 8.1 **The Econometric Model**

exercise should be valuable as an input into the evaluation of policy options.

The ensuing analysis will follow a number of steps. First is a brief outline of relevant events and social and political developments which form the background to our analysis. Secondly, we look at the data in order to be aware of their limitations. After a discussion of the methodology, we present the basic structure of the model. The next section is devoted to the estimation of the parameters of the model. Section 8.7 works out the estimators for the devaluation effects and simulates them using the parameter estimators. Finally, section 8.8 considers some of the implications.

8.2 SOME BACKGROUND CONSIDERATIONS

After considering a number of factors, it has been decided to base the economic investigation on the years from 1974 to 1985. A major consideration is the availability of data. It turns out that the period 1974-1985 is one over which consistent data on the principal economic indicators are readily available. The period 1974-1985 is also a very relevant one in view of the objectives of this study. As one surveys the post-independence history of Jamaica, it is evident that the period 1974 to the present time is the one which, above all others, may be considered a conventional stabilization phase. Jamaica entered into its first significant IMF standby arrangement in 1977[5] and ever since, its economic experience has been overshadowed by successive agreements. It has also been argued that even before the IMF agreement of 1977, the Jamaican

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[5]Sharpley draws attention to an IMF agreement in 1973 which however was not fully pursued. See Sharpley (1984).

Government had pursued elements of a traditional stabilization policy.[6]

Devaluation has been an integral part of these stabilization programs. The exchange rate declined from 0.90 : 1.00 (J$:US$) in 1977 to 5.50 : 1.00 in 1986. The whole process of exchange-rate depreciation has been part of the stabilization policies of the period. The stabilisation aspect distinguishes these depreciations from earlier ones which, with the exception of one adopted in January 1973, were passive responses to other changes.[7] The prevalence of depreciations within a stabilization framework makes this period suitable for a study of these matters.

A third consideration is that, for most of the period 1974 to the present time, the Jamaican economy and society as a whole was characterized by on-going instability and dislocation (see chapters six and seven). The relevance of this observation to our study is two-fold. Firstly, it is typical that developing countries enter into IMF stabilization programs as a last resort and therefore usually postpone them until there is no choice.[8] Consequently, many stabilization programs are conducted against the background of severe economic crisis. Secondly, it is arguable that the behavioural responses of

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[6]See Brown (1981).

[7] Exchange rate changes against the US$ in 1967-1973 were as follows: November 21, 1967 -- 14.3% depreciation following the devaluation of the pound sterling on November 18; December 1971 -- 8.58% revaluation for realignment of currencies following revaluation of the pound sterling by 8.58% against the US$.; January 17, 1973 -- depreciation of 18.5% intended to correct an external imbalance.

[8]See Spraos (1986).

agents in the economy to policy changes such as devaluation are different under crisis conditions from what they would be under favourable conditions. As a result, it may be misleading to try to generalize the traditional analysis to the conditions which have prevailed in the 1970s and 1980s.

8.3 THE DATA

For reasons already outlined, it has been decided to base our econometric investigation on the years 1974-1985. Data on the main economic indicators are readily available with a lag of about one year and this has been a favourable aspect of the undertaking There are some shortcomings with respect to the data, however, which have to be noted.

The period 1974-85 is a short one from the point of view of the requirements of econometric time-series analysis. It would have been good if data were available on a monthly or quarterly basis. Some monthly and quarterly series exist but not enough of the variables in our exercise are covered in this way. Consequently, the small number of observations in our sample (12 at the most) imposes limitations in terms of the estimation techniques that can be used and the number of variables that can be included in any single equation being estimated.

The data used in the parameter estimations are presented in Annex (I). An area in which problems occur is with respect to price variables. A number of price indices are available including those for exports, imports (including different categories by end-use), the consumer price index and the GDP deflator. Invariably, these series are

estimates based on the splicing of two or more series raising the problem of inappropriate weights and baskets of goods being applied.

In the case of indices of import and export prices, a problem arises because the available data consist of two series covering 1969 to 1985 with a break at 1980. An estimate has to be used to achieve a continuous series. With respect to imports of consumer goods, an index exists for the years 1980-85 but for the years 1974-79, the closest counterpart is a price index of imports of non-durable consumer goods. Inevitably, these adjustments mean that the series finally adopted are not ideal but, in the circumstances, they are found to be workable.

One variable for which data are not readily available is the nominal wage rate. For this, a crude estimate was adopted by dividing the compensation of employees by the number of people employed. This measure assumes that the structure of wages is constant and there is no reason to believe that it changed in a major way over the period.

With respect to the real rate of interest, appropriate assumptions had to be made about the expected rate of inflation, the real rate of interest being deflated by the latter. One option available was to assume an adaptive model for the formation of expectations with expectations of future inflation being based on the experience of the recent past.[9] We then make the simplifying assumption that the coefficient linking expected inflation to actual inflation in the current year is equal to one and therefore we use the current rate of inflation as the deflator for the rate of interest. In symbols,

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[9]See G. S. Maddala, Econometrics, (New York: McGraw-Hill Book Company, 1977) p 144.

we may say that,

$P_t^{exp} - P_{t-1} = h(P_t - P_{t-1})$.

It can be seen that if h is assumed to be equal to unity, then the expected change in price is equal to the actual change.

Undoubtedly, this is not a very satisfactory procedure. It implies the rather unlikely situation where expectations are being continuously fulfilled giving an incongruous sense of certainty to expectations. At least, it would have been preferable to be able to take account of a few years into the past in order to represent the formation of expectations. However, the procedure we have adopted is necessitated by the rather limited nature of the data available since more complex approaches invariably involve lags requiring longer series of data than were available.

Price deflators were needed for all of the other nominal variables which had to be converted to real terms. Our theoretical model suggests that in a small open economy several price indices may be interchangeable and any differences between them should be merely statistical. This is borne out somewhat by observing that over the 1974-85 period, the CPI rose at an annual average of 19 percent compared to 22 percent for the index of export prices, not a very big difference. Our approach has therefore been to try different deflators to see which one yields the most satisfactory results.

One variable which has not been deflated is net capital receipts (NCR). The figures given are in millions of current US dollars as they were obtained from the publications of the Bank of Jamaica. It is reasoned that in this case, the risk of probable measurement errors associated with the deflators more than outweigh the possible statistical gains from deflating.

With respect to the exchange rate, we are using the average exchange rate between the US currency and the Jamaican dollar on an annual basis. The exchange rate is reflected in the relationship between prices in domestic currency and foreign currency. The treatment of the exchange rate in this way involves two main shortcomings. Firstly, it ignores the consequences of fluctuations in the US dollar relative to other major currencies. These fluctuations mean that the value of the Jamaican dollar varies with respect to currencies other than the US dollar in ways that are not taken into account. However, on the whole, these fluctuations will not severely affect our model because the shares of trade in currencies other than the US dollar are not important.

The second problem with the exchange-rate figures is that, being annual, they seek to summarize large numbers of fluctuations in years when, for example, an auction system or a system of mini-devaluations has been in force. When one considers that the very system in use will affect trading and other decisions because of expectations of future exchange rate changes, this is potentially an important factor. On the other hand, where such systems have been in use, the exchange rate has usually depreciated steadily and so it is arguable that over significant periods, expectations become uniform under such systems.

8.4 THE METHODOLOGY

8.4.1 The General Approach

The basic approach followed in estimating the parameters is to find least-squares estimates for different specifications consistent with our model. The specifications are based on the theoretical model developed in chapter five. Among the statistics used to determine the soundness of a specification, primary scrutiny is directed to the Durbin-Watson (DW) statistic along with the residuals. The DW statistic is important in detecting the presence of autoregressive errors which can jeopardize the estimation procedure. It is based on information inherent in the behaviour of the residuals. However, the residuals were inspected because they could be expected to yield information of additional interest.

The residuals are interesting in directing our attention to the peculiarities of specific years. The existence of 'outliers' (exceptionally high residuals) suggests events that warrant explanation. Unavoidably, there are some outliers for which a clear reason is not available. However, on the whole, the outliers are consistent from specification to specification, and are an added source of interest and information.

The main reason, however, for considering the residuals and the Durbin-Watson statistic is for signs of serial correlation. Serial correlation, which may be positive or negative, can undermine the estimation procedure by causing low standard errors to be generated and thereby yielding spuriously high t statistics. However, serial correlation will not affect the unbiasedness and consistency properties of least squares estimators except where there is also a lagged dependent variable in the model. Lagged dependent

variables are not much used in our estimations but wherever they are, particular attention is paid to the DW statistic. This is considered to be satisfactory to the extent that it is close to two.

Econometric theory provides several ways of correcting for the presence of serial correlation. The conventional techniques are the Cochrane-Orcutt procedure, the Hildred-Lu procedure and the Durbin procedure.[10] The Cochrane-Orcutt procedure uses the residuals to estimate the coefficient of serial correlation and through an iterative process, where this estimated coefficient is being successively reduced, eliminates some of the serial correlation. The Hildred-Lu procedure postulates a grid of possible values of the coefficient of serial correlation and uses the best one to transform the data and obtain improved estimates. The Durbin procedure estimates the coefficient of serial correlation directly as the coefficient on the lagged dependent variable and then uses it to transform the data and improve the estimation.

Unfortunately, two considerations restrict the applicability of any of these procedures in our analysis. Firstly, although it is accepted that these procedures are effective for large samples, it is admitted that "little is known about their small-sample properties."[11] Secondly, they involve the loss of observations which can hardly be afforded with the sample already very small. Not being able to resort to these techniques, it becomes all the more important to ensure that the DW is within an acceptable range to begin with.

Apart from the DW statistic, attention is paid to the t statistic to determine the

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[10]Ibid., pp. 108-113.

[11]Ibid., p. 111.

significance of the parameter estimates. A t statistic greater than about 2 (in absolute value) indicates that the null hypothesis should be rejected, i.e., it suggests that the value of the parameter is different from zero. A high R^2 is also considered favourable although less emphasis is given to this. Dummy variables are resorted to in order to take account of exceptionally large residuals. The application used here assumes that the underlying explanation for the high residuals is shifts in the functions which do not affect the values of the behavioural parameters.[12]

8.4.2 The Residuals

As a matter of convenience, we shall anticipate some of the discussion on the residuals. It will be observed that the outliers which stand out in terms of their frequency are those pertaining to the years 1977, 1983 and 1985. In addition, when we look at the equations for imports of intermediate goods, the residuals for 1974 and 1981 are exceptionally high.

High residuals for 1977 occur in estimates of almost all the equations. This may be interpreted as support for the view that 1977 may be described as a "watershed year".[13] Although the signs of impending economic crisis were evident before that, 1977 was the year when the sense of crisis was fully acknowledged. In 1977, the government succumbed to a range of pressures and entered into an agreement with the IMF. By this time, the country's holdings of international reserves had been negative

[12]See Maddala (1977), pp. 132-141.

[13]Stephens and Stephens (1986), p 60.

for over a year. The very acknowledgement of crisis and the steps taken to deal with it would have precipitated shifts in the behavioural patterns of agents in the economy and it is these changes that are being reflected by the large residuals of 1977

The large residuals in 1983 and, more so, in 1985 are less easily explained. It may be argued that they relate to the tightening of the stabilization policies surrounding the new agreement which the JLP government (in office since 1980) negotiated with the IMF. The JLP government entered into its first Standby Agreement with the IMF in 1981. The terms of that agreement seemed responsive to the need for the JLP to have a 'honeymoon' period to consolidate power. By 1983 however, it was becoming evident that tougher measures were in store. One thing signalling these changes was the effective depreciation of the currency early in the year as parallel market and CARICOM exchange-rate regimes were introduced. These were the first exchange-rate changes since May 1979 when the official exchange rate was set at J$1.78 : US$1.00.

In November 1983, the three rates were unified with a further devaluation. The official rate went from 1.78 : 1.00, to a lower limit of 3.00 : 1.00.[14] It is understandable that such drastic changes would precipitate changes in spending and production decisions as elements in the community moved to safeguard their interests The prevailing atmosphere of uncertainty would also have affected economic activity.

With respect to the high residuals for 1985, the behaviour of the exchange rate is again an undoubted contributory factor. In November 1984, the auction system determining the exchange rate was changed allowing the rate to float freely instead of

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[14]All exchange rates are quoted in terms of Jamaican dollars per US dollar.

within a prescribed band. This marked the beginning of an inexorable slide in the rate from 4.00 : 1.00 in December 1984 to 6.40 : 1.00 in October 1985. After reaching this peak, the rate appreciated to 5.50 : 1.00 by the end of the year and, nearly two years later, it is still at that rate.

Undoubtedly, the combination of the two developments, i.e., (i) the sharp slide in the rate until October, and (ii) the almost unprecedented appreciation between October and December, would account for adjustments in the behavioural patterns of the community. For one thing, there was continuous speculation as to how long the rate of 5.50 : 1.00 would hold. In addition, the exchange-rate measures were accompanied by other stabilization steps that would have effects.

With respect to the high residuals for 1974 and 1981 in the functions for imports of intermediate goods, the explanation undoubtedly lies with the oil-price shocks. Both 1974 and 1981 are years following closely on the sharpest increases in the prices of petroleum products imposed by OPEC. The changes show up in the residuals since petroleum products are the most important item of the category of intermediate goods.

8.5 THE ECONOMETRIC MODEL

Our econometric model is based essentially along the lines developed in our theoretical model of chapter five. A few modifications to the theoretical model are made and these are outlined below. To begin with, we present lists of equations and notation to facilitate the discussion. We are forced to anticipate some of the estimation analysis of later sections in terms of the specifications of some of the equations. For

example, net capital receipts which were not included in the theoretical model, proved to be a significant variable in the estimations and therefore appears in our econometric equations. At this stage, however, we omit references to dummies which are introduced later in some of the econometric equations.

The System of Equations

$$Px_t \equiv e_t P^*x_t$$

$$Pmi_t \equiv e_t P^*mi_t \qquad (1)$$

$$Pmc_t \equiv e_t P^*mc_t$$

$$S_t \equiv T_t + Sn_t \qquad (2)$$

$$Sn_t = a_0 + a_1(Px/W)_t + a_2(Px/Pmi)_t + a_3K_t + a_4(r/P)_t + u_{1t}. \qquad (3)$$

$$C_t = c_0 + c_1Y^d_t + u_{2t}. \qquad (4)$$

$$Y^d_t \equiv Y_t - Q_t. \qquad (5)$$

$$Q_t \equiv NFPA_t + TrROW_t - Dep_t. \qquad (6)$$

$$M_t \equiv Mc_t + Mi_t + Mk_t. \qquad (7)$$

$$Mc_t = b_0 + b_1Y^d_t + b_2K_t + u_{3t}. \qquad (8)$$

$$Mi_t = g_0 + g_1S_t + g_2(Pmi/Px)_t + u_{4t}. \qquad (9)$$

$$X_t \equiv S_t + Mc_t - C_t. \qquad (10)$$

All parameters are assumed to be constant. The parameters of this model are $\{a_i, b_i, c_i$ and g_i for all i$\}$.

LIST OF NOTATION

Symbol in text	Symbol in estimations	Meaning
t	-	time.
e	ER	exchange rate (J$/US$).
Px	PX	index of export prices (domestic currency).
Pmi	PMI	price index of imports of intermediate goods (domestic currency).
Pmc	PMC	price index of consumer-goods imports.
P^{exp}	-	expected price.
Px/W	PXW1	
Px/Pmi	PXPMI	
Pmc/Px	PMCPX	
Pmc/CPI	PMCCP	
-	PMCLFP	ratio of Pmc to price index of local food.
r	-	the nominal interest rate.
r/ P^{exp}	RR	the real rate of interest.
W	W, W1	the nominal wage.
S	KS, KS1	total gross output.

T	-	gross output of traditional products.
Sn	-	gross output of nontraditional products.
Y	-	GDP.
Y^*	KNDI	national disposable income.
C	KPC1	private consumption.
I	-	gross fixed capital formation.
G	-	government recurrent expenditure.
K	NCR	net capital receipts (current US$).
NFPA	-	net factor payments from abroad.
TrROW	-	other current transfers from abroad.
Dep	-	depreciation.
X	-	total exports.
M	-	total imports.
Mc	KMC	imports of consumer goods.
Mi	KMI	imports of intermediate goods.
Mk	-	Imports of capital goods.
a_i, b_i, c_i, g_i,	-	parameters.

Notes : (i) Variables with the * superscript are in US$.

(ii) All non-price variables are in constant prices unless otherwise stated.

The exogenous variables of this model are e, P*x, Px, P*mi, Pmi, P*mc, Pmc, T, W, K, r, Q, NFPA, TrRow, Dep and Mk. The exchange rate is assumed to be exogenous, being determined by government policy, and the foreign prices also, because they are determined in the international market by forces not influenced by developments in Jamaica. It follows from equation (1) that the domestic price level will also be exogenous. T is exogenous because it is assumed to be subject to the decisions of large multinationals the operations which respond to price and demand developments in the international market but are not affected by domestic values of these variables because the products are not sold in Jamaica. The wage level is assumed to be largely institutionally determined, on the basis of historical and socio-political factors affecting social relations. Q_t consists of items, all exogenous, which make up the difference between GDP (Y_t) and aggregate disposable income (Y^d_t) and is therefore exogenous. The nominal rate of interest is determined by policy reflected in announcements of the bank rate and imports of capital goods are influenced by a wide range of factors underlying investment behaviour. International capital flows are assumed to be determined overwhelmingly by the decisions of multilateral and government agencies.

Exogeneity implies that the variables are not determined by other factors in the model. For our purposes, it is particularly important for the variable to be independent of the influence of the exchange rate. Exogenous variables may change as, for example, when an oil-price shock raises the price level of imports. However, such a price change is independent of the actions of the domestic economy and of the other variables in our model.

It is evident that there may be varying degrees of interrelationship among some of the variables assumed to be exogenous. For example, a devaluation may affect wage demands as efforts are made by labour to maintain their living standards However, the relationship is sufficiently complex and indirect, involving the nature of social relations, for us to treat wages as exogenous. There may also be a relationship between net capital receipts and the likelihood of a devaluation[15] but, in the first instance, a devaluation will be subject to official policy decision. The fact that the net capital flows are predominantly official in Jamaica since the 1970s helps to ensure their exogenous character.

The properties of the disturbances are also important to the soundness of the estimators. It is assumed that they display three properties usually associated with the classical linear regression model as follows: (i) the disturbances have an expected value of zero, (ii) their variances are constant for all observations, and (iii) the disturbance terms are statistically uncorrelated.

Equation (1) indicates that some modifications are being introduced with regard to our treatment of the price variables. Some changes have been necessitated by the removal of the assumption of constancy in the terms of trade. With the terms of trade free to fluctuate exogenously, changes will take place inevitably affecting resource allocation. A salient example of such changes in recent times relates to the oil price shocks of the 1970s.

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[15]See Blanco and Garber (1986) for an analysis of how private capital flows may influence the timing of a devaluation.

A practical implication of exogenous price changes to the model is that we now have to include import prices and export prices separately. For example, it has been necessary to include price indices for imports of intermediate goods separately. This is observed, for example, in the supply function where we introduce the ratio of the export price to the price of intermediate goods. It is reasonable to expect that a reduction in this ratio due to exogenous changes in the terms of trade would be adverse to supply. On the question of supply, it is important to note that we are distinguishing between traditional and non-traditional goods. This is one modification of the structure of the theoretical model which is suggested by the specific circumstances of Jamaica. Jamaican exports are dominated by traditional exports including bauxite, alumina and sugar. However, the experience of the last two decades raises doubts about the extent to which these exports respond to the usual market forces. Some consideration of the marketing arrangements for these products tends to reinforce these doubts. Accordingly, traditional exports are treated as exogenous and the supply function to be estimated relates to non-traditional products.

For our purposes, traditional products will refer only to bauxite and alumina since they dominate exports. It is also assumed that production of traditional exports is totally exported. This is a realistic assumption with respect to bauxite and alumina. However, nearly half of the recent output of sugar is consumed domestically (about 100,000 tons each year)[16] and this is the main reason for including it with non-traditional products.

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[16]See Burnett (1986).

Noteworthy changes are also made in our treatment of consumption demand. We estimate a consumption function incorporating the demand for both domestic and foreign output of consumer goods. This is a departure from the theoretical model where we consider the demand for these categories of output separately. A second departure is that we distinguish between private consumption and government recurrent expenditure treating the latter as exogenous. Capital expenditure by the government is included, along with private investment, in gross fixed capital formation.

A further modification worth noting is that we are specifying the demand for consumption goods as a function of national income and are ignoring the distinction between wage income and profit income. It would be possible to incorporate these considerations into an extension of the present analysis.

As regards imports of intermediate goods, we have to consider explicitly the effects of changes in their relative price. This is necessary, for example, in order to take account of the sharp rise in the prices of petroleum products in the 1970s

Equation (10) provides an identity indicating the relationship of exports to supply, imports of consumer goods and consumption This is not a behavioural relationship although the variables on the right hand side are based on behavioural considerations One thing to note is that equation (10) implies that the economy produces no intermediate goods or capital goods that go into domestic production This assumption has been made necessary by the fact that no consistent series on these variables are available. Our formulation for exports also means that tourist expenditure is fully accounted for since it would apply to both local production and imports of final goods

With respect to capital goods, it is a fair assumption that the amount produced in Jamaica is negligible. Concern with the weakness of internal linkages in Caribbean economies provides some basis for treating domestically produced intermediate goods as negligible also. The neglect of these categories of goods do not, it is felt, alter materially our conclusions. However, it would be a matter of considerable interest to be able to include these variables in a more complete model.

The last general observation to be made at this point is with respect to net capital receipts (K_t). Net capital receipts do not figure anywhere in our theoretical model because of the focus on the trade account. However, they emerge as a significant factor in several of the equations estimated The importance of capital inflows underlines the dependent nature of the Jamaican economy. The current account is invariably in deficit and therefore the achievement of overall balance depends on capital inflows. Capital inflows are the very lifeline of the economy as the availability of imports of intermediate goods and consumer goods depends on it. This factor has become particularly critical since the early 1970s as the capacity to import has been squeezed by the combined effects of stagnant export performance and a rising national debt.

8.6 ESTIMATIONS

8.6.1 The Supply Function

It is to be recalled that traditional exports and non-traditional exports are being treated differently. Traditional exports are being treated as exogenously determined.

Therefore the supply function we are investigating is that relating solely to non-traditional products.

Our theoretical model suggests that the variables explaining gross output of non-traditional goods are (a) the price-wage ratio, (b) a variable reflecting the state of confidence in the stability of the economy. As we attempt to investigate this function empirically, a few modifications have been adopted. Firstly, we introduce the ratio of output prices to those of imports of intermediate goods as an explanatory variable to take account of exogenous changes in the terms of trade.

Secondly, given the small size of our sample, it is difficult to present a variable which convincingly reflects the confidence factor. It has therefore been decided to omit any variable designed specifically for that purpose. However, it is expected that adverse responses caused by unfavourable expectations would be reflected in the values of the estimated parameters.

Thirdly, net capital receipts, which are not included in the theoretical model, are found to be a significant influence with respect to supply This undoubtedly reflects the considerable role of foreign investment in the Jamaican economy It may also relate to the contribution of official flows, which have assumed increased importance in recent years, in supporting domestic production.

Out of a large number of least-squares estimates, a short-list of six equations has been selected for final consideration The statistics from these equations and the residual plots are presented in appendix 8A Tables S1-4 involve a measure of real gross non-traditional output using export prices as the deflator whilst tables S5 and S6 use the GDP deflator. Some experimenting was also done using the CPI as the

deflator. It is observed that while the estimates in tables S5 and S6 are not statistically significant, their signs are the same as those of tables S1-4.

With respect to the residuals, the years 1977, 1981 and 1985 show outliers except where dummies are used. Outliers are also generated in other years when dummies are used to correct for those of the years above. The outlier in 1977 is probably explained by the general crisis situation of that year to which allusion has already been made. The high residual for 1981 may be associated with the policy changes introduced by the new JLP administration. The 1985 outlier may be a reflection of further policy changes as a new standby agreement was negotiated and sharp changes in the exchange rate were experienced. Some of the estimations also yield high residuals in some other years.

In the final analysis, it has been decided to use the following statistics from table S2 in our model:

$Sn_t = 66.1 - 0.2(Px/W)_t - 16.6(Px/Pmi)_t + 0.009K_t$

t : (11.9) (-9.5) (-4.1) (2.5)

D.W. = 1.84. $R^2 = 0.92$.

The test statistics are acceptable, i.e. the D.W. statistic is within an acceptable range, and the t statistics show statistical significance indicating that the estimates do not support the hypothesis that the parameters are equal to zero at the five percent level of significance. The signs of the coefficients can be explained within the specific context that is under study. Unfortunately, one variable of interest, the rate of interest, has turned out to be insignificant. This does not suggest that this variable is unimportant but rather that the available data have been inadequate for the purpose of

properly capturing its impact.

With respect to the signs of the coefficients, two are 'perverse' and the other one is normal. The negative sign on the two relative prices are perverse insofar as we would expect them to be positive given the convention of an upward-sloping supply curve. The negative signs are, however, reflections of the perverse responses which, as has been discussed, are symptomatic of the prevalent crisis conditions. Instead of responding to a devaluation by increasing output, capitalists refrain from such action, possibly waiting to see if conditions improve in their favour on a sustainable basis. In addition, bottlenecks to production and marketing may present obstacles over the short run.

It is observed that net capital inflows are positively related to output of nontraditional products. This may reflect (a) the emphasis in World Bank programs on non-traditional exports, and (b) the importance of these inflows in financing critical imports such as raw materials.

8.6.2 Consumption Demand

The main variables tried as explanatory variables for consumption are disposable income and net capital inflows. Some of the results of our trials are presented in appendix 8B as tables C1-4.

We observe first of all that the main outliers are the residuals for the years 1976 and 1977, on the positive side, and 1978 and 1979, on the negative side. The positive residuals for 1976 and 1977 probably reflect the spending associated with the election year (1976) and a hoarding response to the uncertain economic conditions of 1977. It

is worth bearing in mind also that, for a few years leading up to this time, unusually high wage increases had been granted. The negative residuals of 1978 and 1979 may be indicative of cutbacks in private spending as the economic difficulties became more evident. People in upper income brackets were at this time notably emigrating and trying to shift their savings abroad.

Having considered all the estimations, it has been decided to adopt equation C2 for our model. The estimates of table C1 are considered inadequate because of the presence of positive autoregressive errors. This is indicated by the low Durbin-Watson statistic (1.34) and the behaviour of the residuals, especially after 1980. On the other hand, C3 and C4 show signs of negative autoregressive errors both in the movements of the residuals and the high Durbin-Watson statistics. It must be noted that the variable NCR proves not to be statistically significant, with a t statistic of 1.13. However, our knowledge of the Jamaican situation suggests that net capital inflows do affect consumption significantly and, therefore, there is good reason to include them in our manipulations. Accordingly, the ersion of the consumption function which is adopted is as follows:

$C_t = 9.96 + 0.52Y^d_t + 0.002K_t$

t : (2.39) (5.79) (1.13); $R^2 = 0.79$ D.W. = 1.60.

The values of the parameter estimates are within the acceptable range but the estimated marginal propensity to consume appears to be low (0.52). This need not imply frugality on the part of the population but quite the opposite in the particular circumstances which we are investigating. Our data suggest that the general trend of real disposable income has been downward over the period 1974-85. Out of the 12

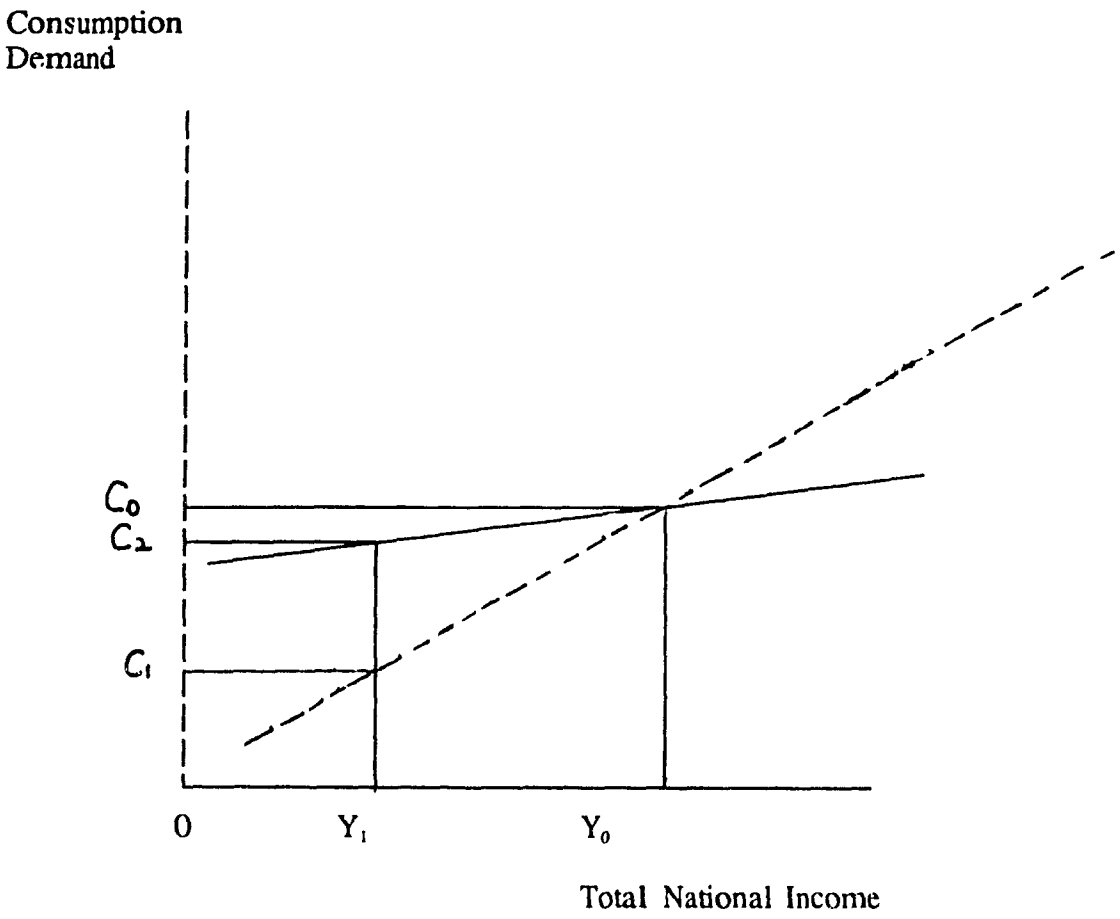

Figure 8.2 **The Consumption Function**

years, real disposable income increased only four times and in two of those years the increases were marginal (1978 and 1982).

We may therefore be observing, in the low marginal propensity to consume, the 'ratchet effect' associated with the Relative Income Hypothesis.[17] With incomes falling, the community attempts to maintain its standard of living by cutting back on savings. Ironically, the low MPC is a sign that we are observing a short-run increase in the average share of consumption as income falls. This is a specific instance indicating the need to take particular account of the behaviour of the economy in a crisis.

The behaviour of consumption during a period of falling income is illustrated by figure 8.2 where the broken line represents changes in consumption during a normal period of favourable growth and the solid line represents changes during a period of sustained decline. The MPC is higher during the time of growth than it is during the period of decline as indicated by the slopes of the respective lines. Nevertheless, it can be seen that the level of consumption reached after such a decline is higher at the corresponding level of income (Y_1) than it would have been during a period of growth. Evidently, the lower MPC when income is in decline does not reflect a lower consumption propensity but a tendency to consume more out of a reduced level of income.

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[17]See James Duesenberry, Income, Saving and the Theory of Consumer Behaviour (Cambridge, Mass.: Harvard University Press, 1949).

8.6.3 Imports of Intermediate Goods

Imports of intermediate goods go into the production of gross output and so it is expected that the latter would be an important explanatory variable. Also, exogenous changes in the relative prices of these intermediate goods should have an effect on their demand as conventional demand theory suggests.[18] Accordingly, these were the main variables on which this function was initially attempted. The estimates generated by different trials are presented in appendix 8C. Somewhat surprisingly, the gross output variable (KS1) displays low t statistics so that the statistical support for the hypothesis that it is correlated with imports of intermediate goods is lacking The weak evidence of correlation may be due to lags in the relationship which cannot be investigated here because of the short series available, or other problems of measurement. It is decided to follow our intuition about the importance of gross output to this function by including it in our calculations.

Among the other explanatory variables studied, the price ratio of imports of intermediate goods to exportables is statistically significant. As expected, the relationship between this explanatory variable and imports of intermediate goods is negative. This reflects the tendency to economize on these products when their prices rise such as when, for example, fuel prices escalated internationally. Net capital receipts, however, turn out not to be statistically significant as an explanatory variable

With respect to the residuals, the main outliers before dummies are introduced

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[18]See Edward E. Leamer and Robert M. Stern, Quantitative International Economics (Boston: Allyn and Bacon, 1970), Chapter 2.

relate to the years 1977 and 1981. The year 1974 is one of the other years when the residuals appear to be high (see table I1). The high residuals in 1974 and 1981 are undoubtedly linked to the oil-price shocks. The explanation for the high residual in 1977 follows the line already outlined in earlier sections. A high residual is observed in 1980 also. This is probably explained not only by the oil-price shock, but also by the disruptive consequences of the violence-marred elections of that year.

All things considered, it has been decided to adopt the results of estimation shown in table I2 for our manipulations. Accordingly, the function for the demand for imports of intermediate goods is:

$$Mi = 4.84 + 0.47S_t - 1.24(Pmi/Px)_t - 0.64D77 + 0.66D81$$

t : (7.92) (1.71) (-2.12) (-2.32) (2.39)

$R^2 = 0.74$ D.W. = 2.13.

It is worth noting the relatively high value of 48 percent for the estimated coefficient of the gross output variable (S_t) reflecting the high level of dependence of domestic production on imports of intermediate goods.

8.6.4 Imports of Consumer Goods

On an a priori basis, we expect the main explanatory variable to be disposable income. Accordingly, this variable was tried along with several others and the results are shown in appendix 8D as tables MC1-5. The tables of appendix 8D are presented to amplify our understanding of the behavioural characteristics of the economy.

Although the demand for imports of consumption goods is an integral part of general demand conditions within the economy, the parameters of this function do not enter explicitly into the calculation of devaluation effects. Consequently, there is no need to specify a particular choice from our shortlist of estimations. Among the points of interest generated, it is to be noted, firstly, that the main significant variables are disposable income and net capital receipts. Both of these explanatory variables show positive coefficients, as is to be expected. The magnitudes of the coefficients also seem plausible. We would expect capital inflows to be a factor in the prevailing balance-of-payments circumstances because the availability of a net inflow of capital may be critical to the capacity to import consumer goods. In addition, a practical consideration is the fact that official inflows consist partly of consumption goods.

It would normally be expected that in a demand function of this kind, the price of imported consumer goods relative to that of local produce would be a consideration[19]. It is interesting to note that the variable representing the ratio of prices of consumer-goods imports and domestic output is not significant. Several versions of this variable were tried (see tables MC3-5) and they all proved statistically insignificant. The implied inelasticity of price demand for imports of consumer goods is a noteworthy feature of Caribbean economy. It may be a result of the relative narrowness of the production base in the Caribbean and also of a marked attachment to imported goods. Finally, it may be an indication that there is no noticeable tendency for that ratio to vary, vindicating our assumption of openness.

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[19]See Leamer and Stern (1970).

As regards the residuals, the main outliers are the residuals for 1977 and 1983. The 1977 residual reflects the economic difficulties associated with that year. The 1983 outlier may be a reaction to the currency depreciations which were initiated in that year and the onset of other stabilization measures.

8.7 MANIPULATIONS AND SIMULATIONS

Having estimated the values of the parameters, we shall now apply them to see what conclusions emerge with respect to the effects of a devaluation. More detailed computations of the output and trade-balance effects which are the primary subjects of this section, are presented in appendix 8E and appendix 8F. For convenience, we present at this point, the three estimated equations which will enter into our ensuing calculations.

$Sn_t = 66.1 - 0.2(Px/W)_t - 16.6(Px/Pmi)_t + 0.009K_t$

$C_t = 9.96 + 0.52Y^d_t + 0.002K_t$

$Mi_t = 4.84 + 0.47S_t - 1.24(Pmi/Px)_t - 0.64D77 + 0.66D81$

8.7.1 Output Effects

We start with the identity that total output is equal to total absorption plus exports minus imports. Using equations (7) and (10), we find that,

$$Y_t = C_t + I_t + G_t + (S_t + Mc_t - C_t) - (Mc_t + Mi_t + Mk_t), \qquad (11)$$

where I_t and G_t are exogenous.

Equation (11) may be simplified to give,

$$Y_t = I_t + G_t + S_t - Mi_t - Mk_t. \quad (12)$$

Equation (12) may now be expanded, finally yielding

$$Y_t = I_t + G_t + (1-g_1)[a_0 + a_1(eP^*x/W)_t + a_2(P^*x/P^*mi)_t + a_3K_t + T_t] - g_0 - g_2(Pmi^*/Px^*)_t - g_3D77 - g_4D83 - Mk_t. \quad (13)$$

To obtain the effect of devaluation on output, we differentiate Y with respect to e. The result is equation (14).

$$\delta Y_t/\delta e_t = a_1(1-g_1)(P^*x/W)_t. \quad (14)$$

Evaluating equation (14), we introduce the parameter estimates. On this basis, the effect of a devaluation is found to be contractionary given the fact that a_1 is negative and $0 < g_1 < 1$:

$$\delta Y_t/\delta e_t = -0.2(0.52)(P^*x/W)_t = -0.104(P^*x/W)_t.$$

8.7.2 Balance-of-Trade Effect

The balance of trade is defined as exports minus imports in nominal terms. In keeping with our emphasis on the foreign balance as the basis for evaluating the trade effect, the trade balance is expressed as:

$$B^*_t = P^*x_t(X - M). \quad (15)$$

It is acceptable that P^*x_t should be the price applied to the difference in equation (15) given our assumption of openness, which implies that, on the whole, the ratio of prices of imports and exports is exogenously fixed.

Using equations (7) and (10), equation (14) may be expanded to give

$$B^* = P^*x_t(S_t + Mc_t - C_t) - P^*x_t(Mc_t + Mi_t + Mk_t). \quad (16)$$

Equation (16) is expanded at length, by employing substitutions from the system of equations constituting the model. Finally, an expression for the foreign balance is obtained as follows:

$$B^*_t = P^*x_t(1 - c_1)[(1 - g_1)\{a_0 + a_1(eP^*x/W)_t + a_2(P^*x/P^*mi)_t + a_3K_t + T_t\} - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t] - P^*x_t(c0 + c_2K_t + c_1I_t + c_1G_t - c_1Q_t). \quad (17)$$

To compute the effect of a devaluation, equation (17) is differentiated with respect to the exchange rate, e, in order to obtain finally

$$\delta B^*/\delta e_t = a_1P^*x_t(1 - c_1)(1 - g_1)(P^*x/W)_t. \quad (18)$$

For a detailed derivation of equation (18), attention is drawn to appendix 8F.

It is evident that equation (18) indicates a tendency for the foreign balance to deteriorate. This is the case because all the variables in equation (18) are positive except a_1 so that the overall effect is negative. To obtain an estimate of the magnitude of the balance-of-trade effect in Jamaica over the period 1974-1985, we substitute into equation (18) the estimated coefficients as follows:

$$\delta B^*/\delta e_t = -0.2 \times 0.47 \times 0.52(P^*x^2/W)_t, \quad (19)$$

$$= -0.05(P^*x^2/W)_t.$$

On the basis of Equation (19), it is possible to provide estimates of the balance-of-trade effect in selected years by incorporating figures for the exogenous variables. It is important to emphasize that no firm interpretation can be attached to the magnitudes of these estimates. Aspects of the nature of the data suggest that the absolute values of

the estimates may not be useful. However, conclusions drawn from equation (19) about the direction of the balance-of-trade effect of devaluation are robust within the context of our econometric model.

8.8 CONCLUDING REMARKS

The main findings of our econometric analysis are that the effects of devaluation on real output and the trade balance are both negative. The effects of devaluation must be distinguished from those of exogenous events such as changes in the petroleum prices and other terms-of-trade developments.

Under the assumptions of our model, it is found that the effect of devaluation on the trade balance is dominated by the supply response. Devaluation results in an increased profit rate but if that higher profit rate is not channelled into increased production in our small economy, the trade balance deteriorates. The implication of lower production is lower exports, while purchasing power is transferred from workers to capitalists and overall consumption is not affected. It is also implied that the increased profits are partly devoted to consumption.

It should be pointed out that a more interesting result is possible if the demand of capitalists and workers could be distinguished as was done in the theoretical model. It would, in principle, be possible to find that the negative supply effect would be overcome by disabsorption on the demand side yielding a positive balance-of-trade effect. Such a positive outcome is not likely in the circumstances of Jamaica and many other small countries however, because the scope for disabsorption is severely limited.

Our analysis, therefore, supports the views that a devaluation is adverse to the trade balance in a small open economy, and that the improvements in the balance of payments often observed after a stabilization program has been adopted are attributable largely to favourable developments on the capital account, as already observed in connection with the Southern Cone experiences.[20]

It is implied that the primary factor responsible for the unfavourable trade-balance effects is the sluggish response of investors to the devaluation. This is reflected in the negative estimate in the supply function (a_1). It is also possible that a rising debt burden, which has been a feature of the period under consideration, has contributed to the syphoning-off of resources, which might otherwise be devoted to the expansion of output and improvement in the trade balance. Another factor that should be stressed is expectations of a period of sustained economic stability. In order for a devaluation to have favourable supply effects, it is necessary that producers be motivated to expand operations in response to an improved profit rate, and this, in turn, will depend on their expectations.

[20]See chapter three.

Appendix 8A

ESTIMATION OF SUPPLY FUNCTION FOR NON-TRADITIONAL PRODUCTS

Table S1.

Supply of Non-Traditional Products (KSN1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	69.38	5.35	12.98
PXW1	-0.19	0.02	-10.40
PXPMI	-18.10	3.72	-4.87
NCR	0.01	0.00	2.94
RR	-0.03	0.02	-1.69

R-squared	0.94
Adjusted R-squared	0.91
S.E. of regression	1.64
Durbin-Watson stat	2.54

==========

Residual Plot	Year	R	A
| : * | :	1974	-0.26	41.75
| : | * :	1975	1.14	33.57
| : | * :	1976	1.05	34.17
| *: | :	1977	-1.91	33.69
| : | * :	1978	1.23	26.47
| :* | :	1979	-1.61	25.70
| : * | :	1980	-1.04	24.17
| : * | :	1981	-0.46	27.24
| : *| :	1982	-0.11	32.59
| : | * :	1983	1.12	37.86
| : * | :	1984	-1.27	25.49
| : | : *	1985	2.13	28.33

Table S2.

Supply of Non-Traditional Products (KSN1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	66.14	5.54	11.94
PXW1	-0.20	0.02	-9.47
PXPMI	-16.60	4.0	-4.14
NCR	0.01	0.00	2.46

R-squared	0.92
Adjusted R-squared	0.89
S.E. of regression	1 83
Durbin-Watson stat	1.84

Residual Plot	Year	R	A
: * :	1974	0.95	41.75
: * :	1975	1.59	33.57
: * :	1976	0.33	34.17
* : :	1977	-2.17	33.69
: * :	1978	1.61	26.47
: * :	1979	-1.48	25.70
: * :	1980	-0.90	24.17
* : :	1981	-2.17	27.25
: * :	1982	-1.16	32.59
: * :	1983	1.33	37.86
: * :	1984	-0.17	25.49
: : *	1985	2.24	28.33

Table S3.

Supply of Non-Traditional Products (KSN1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	66.52	4.94	13.47
PXW1	-0.23	0.02	-12.16
PXPMI	-14.79	3.71	-3.99
NCR	0.01	0.00	3.00
D85	4.16	1.98	2.10
D77	-2.68	1.66	-1.61

R-squared	0.97
Adjusted R-squared	0.94
S.E. of regression	1.39
Durbin-Watson stat	1.93

==========

Residual Plot	Year	R	A
| : | * :	1974	0.17	41.75
| : | * :	1975	0.61	33.57
| : * | :	1976	-0.58	34.17
| : | * :	1977	0.00	33.69
| : | *:	1978	1.29	26.47
| * | :	1979	-1.37	25.70
| : * | :	1980	-0.20	24.17
| *: | :	1981	-1.51	27.25
| : * | :	1982	-1.12	32.59
| : | :*	1983	1.48	37.86
| : | * :	1984	1.23	25.49
| : | * :	1985	-2.2D-15	28.33

Table S4.

Supply of Non-Traditional Products (KSN1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	69.05	4.01	17.23
PXW1	-0.22	0.01	-15.32
PXPMI	-16.01	2.94	-5.45
NCR	0.01	0.00	4.14
RR	-0.02	0.01	-2.21
D77	-2.37	1.30	-1.82
D85	4.02	1.55	2.60

R-squared	0.98
Adjusted R-squared	0.96
S.E. of regression	1.08
Durbin-Watson stat	2.29

==========

Residual Plot	Year	R	A
| : * | :	| 1974	-0.81	41.75
| : | * :	| 1975	0.26	33.57
| : |* :	| 1976	0.10	34.17
| : * :	| 1977	8.9D-16	33.69
| : | *:	| 1978	0.99	26.47
| * : | :	| 1979	-1.46	25.70
| : * | :	| 1980	-0.33	24.17
| : * :	| 1981	-0.04	27.25
| : * | :	| 1982	-0.23	32.59
| : | : *	| 1983	1.34	37.86
| : | * :	| 1984	0.18	25.49
| : * :	| 1985	-2.7D-15	28.33

Table S5.

Supply of Non-Traditional Products (KSN2)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	122.07	16.72	7.30
PXW1	-0.01	0.06	-0.10
PXPMI	-16.30	11.62	-1.40
NCR	0.03	0.01	2.57
RR	-0.07	0.05	-1.36

R-squared	0.65
Adjusted R-squared	0.45
S.E. of regression	5.14
Durbin-Watson stat	2.52

==========

Residual Plot	Year	R	A
: * :	1974	-1.40	108.43
: : *	1975	6.31	109.09
: * :	1976	-0.10	98.99
* : :	1977	-6.77	93.58
: :* :	1978	0.45	95.80
: : * :	1979	1.81	100.24
*: : :	1980	-5.50	96.24
: * :	1981	0.12	101.44
: *: :	1982	-0.55	107.59
: : *:	1983	4.35	111.41
: * : :	1984	-4.04	110.34
: : :*	1985	5.33	113.72

Table S6.

Supply of Non-Traditional Products (KSN2)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	132.84	15.69	8.47
PXW1	-0.04	0.06	-0.73
PXPMI	-22.14	10.59	-2.09
NCR	0.02	0.01	2.22
RR	-0.06	0.05	-1.36
D77	-9.68	5.34	-1.81

R-squared	0.77
Adjusted R-squared	0.59
S.E. of regression	4.47
Durbin-Watson stat	2.43

==========

Residual Plot	Year	R	A
| : * | : |	1974	-3.38	108.43
| : | : * |	1975	6.49	109.09
| : * | : |	1976	-1.52	98.99
| : * : |	1977	1.8D-15	93.57
| : * : |	1978	-0.15	95.80
| : |* : |	1979	0.62	100.24
| * : | : |	1980	-5.70	96.23
| : * | : |	1981	-0.99	101.44
| : *| : |	1982	-0.28	107.59
| : | * : |	1983	2.03	111.41
| : * | : |	1984	-1.83	110.34
| : | :* |	1985	4.72	113.71

Appendix 8B ESTIMATION OF CONSUMPTION DEMAND

Table C1.

Consumption Demand (KPC1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	10.33	4.20	2.45
KNDI	0.52	0.09	5.72

R-squared	0.76
Adjusted R-squared	0.74
S.E. of regression	1.07
Durbin-Watson stat	1.34

==========

Residual Plot	Year	R	A
: * :	1974	-0.03	38.14
: * :	1975	-0.58	37.04
: : *	1976	1.82	36.46
: : *	1977	1.06	34.96
: * :	1978	-1.34	32.62
* : :	1979	-1.83	31.80
: * :	1980	-0.86	31.35
: : * :	1981	0.37	33.72
: : * :	1982	0.18	33.83
: : * :	1983	0.27	33.54
: : * :	1984	0.24	33.17
: : * :	1985	0.68	33.49

Table C2.

Consumption Demand (KPC1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	9.96	4.15	2.39
KNDI	0.52	0.09	5.79
NCR	0.00	0.00	1.13
R-squared	0.79		
Adjusted R-squared	0.75		
S.E. of regression	1.05		
Durbin-Watson stat	1.60		

Residual Plot	Year	R	A
| : *| :	1974	-0.15	38.14
| : * | :	1975	-0.62	37.04
| : | : *	1976	1.95	36.46
| : | : *	1977	1.38	34.96
| : * | :	1978	-0.77	32.62
| * : | :	1979	-1.41	31.80
| : * | :	1980	-0.69	31.35
| : | * :	1981	0.29	33.72
| : * | :	1982	-0.41	33.83
| : | * :	1983	0.26	35.54
| : * | :	1984	-0.39	33.17
| : | * :	1985	0.5	733.49

Table C3.

Consumption Demand (KPC1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	9.12	2.30	3.95
KNDI	0.53	0.05	10.57
NCR	0.00	0.00	3.30
D67	2.18	0.47	4.62
R-squared	0.94		
Adjusted R-squared	0.92		
S.E. of regression	0.58		
Durbin-Watson stat	2.67		

Residual Plot	Year	R	A
: | * :	1974	0.09	38.14
: * | :	1975	-0.32	37.04
: | * :	1976	0.21	36.46
: * | :	1977	-0.21	34.96
: * :	1978	-0.02	32.62
* : | :	1979	-0.75	31.80
: * | :	1980	-0.19	31.35
: | *	1981	0.61	33.72
: * | :	1982	-0.44	33.83
: | :*	1983	0.61	35.54
: * | :	1984	-0.44	33.17
: | : *	1985	0.87	33.49

Table C4.

Consumption Demand (KPC1)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	9.87	2.12	4.63
KNDI	0.52	0.04	11.37
NCR	0.00	0.00	2.58
D67	1.98	0.44	4.46
D79	-1.04	0.62	-1.68

R-squared	0.96
Adjusted R-squared	0.93
S.E. of regression	0.52
Durbin-Watson stat	2.87

==========

Residual Plot	Year	R	A
: | * :	1974	0.09	38.14
: * | :	1975	-0.35	37.04
: | * :	1976	0.25	36.46
: * | :	1977	-0.25	34.96
: * | :	1978	-0.35	32.62
: | * :	1979	0.00	31.80
: * | :	1980	-0.42	31.35
: | *	1981	0.49	33.72
: * | :	1982	-0.36	33.83
: | *	1983	0.51	35.54
: * | :	1984	-0.36	33.17
: | : *	1985	0.76	33.49

Appendix 8C

ESTIMATION OF DEMAND FOR IMPORTS OF INTERMEDIATE GOODS

Table I1.

Demand for Imports of Intermediate Goods (KMI)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	5.02	0.88	5.71
KS1	0.24	0.39	0.62
PMIPX	-1.33	0.84	-1.58
R-squared	0.31		
Adjusted R-squared	0.16		
S.E. of regression	0.37		
Durbin-Watson stat	0.92		

Residual Plot	Year	R	A
: | * :	1974	0.29	4.28
: | * :	1975	0.12	4.34
: * | :	1976	-0.27	3.84
* : | :	1977	-0.60	3.29
: * | :	1978	-0.30	3.81
: | * :	1979	0.17	4.13
: | * :	1980	0.27	4.17
: | : *	1981	0.62	4.40
: | * :	1982	0.18	4.05
: * | :	1983	-0.28	3.32
: * | :	1984	-0.14	3.59
: * | :	1985	-0.06	3.33

Table I2.

Demand for Imports of Intermediate Goods (KMI)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	4.84	0.61	7.92
KS1	0.47	0.27	1.71
PMIPX	-1.24	0.58	-2.12
D77	-0.64	0.27	-2.32
D81	0.66	0.27	2.39

R-squared	0.74
Adjusted R-squared	0.60
S.E. of regression	0.25
Durbin-Watson stat	2.13

==========

Residual Plot	Year	R	A
| : | * :	1974	0.12	4.28
| : | * :	1975	0.06	4.34
| * : | :	1976	-0.31	3.84
| : * :	1977	0.00	3.29
| *: | :	1978	-0.27	3.81
| : | * :	1979	0.20	4.13
| : | : *	1980	0.32	4.17
| : * :	1981	1.1D-16	4.40
| : | * :	1982	0.22	4.05
| * | :	1983	-0.25	3.32
| : * | :	1984	-0.08	3.59
| : *| :	1985	-0.01	3.33

Table I3.

Demand for Imports of Intermediate Goods (KMI)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	4.90	0.65	7.48
PMIPX	-1.38	0.66	-2.07
KS1	0.47	0.29	1.61
NCR	0.00	0.00	0.53
D77	-0.59	0.30	-1.92
D81	0.65	0.29	2.26

R-squared	0.75
Adjusted R-squared	0.55
S.E. of regression	0.27
Durbin-Watson stat	1.85

==========

Residual Plot	Year	R	A
: | * :	1974	0.12	4.28
: | * :	1975	0.04	4.34
* : | :	1976	-0.31	3.84
: * :	1977	-2.2D-16	3.29
: * | :	1978	-0.22	3.81
: | *:	1979	0.25	4.13
: | : *	1980	0.34	4.17
: * :	1981	0.00	4.40
: | * :	1982	0.14	4.05
: * | :	1983	-0.23	3.32
: * | :	1984	-0.15	3.59
: |* :	1985	0.01	3.33

Table I4.

Demand for Imports of Intermediate Goods (KMI)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	3.44	1.48	2.31
KS1	0.09	0.39	0.25
PMIPX	-1.26	0.81	-1.55
DKMI	0.40	0.31	1.29

R-squared	0.43
Adjusted R-squared	0.21
S.E. of regression	0.36
Durbin-Watson stat	1.23

==========

Residual Plot	Year	R	A
| : | *	1974	0.37	4.28
| : |* :	1975	0.04	4.34
| *: | :	1976	-0.38	3.84
| * : | :	1977	-0.54	3.29
| : *| :	1978	-0.04	3.81
| : | * :	1979	0.20	4.13
| : | * :	1980	0.17	4.17
| : | : *	1981	0.50	4.40
| : *| :	1982	-0.02	4.05
| * | :	1983	-0.36	3.32
| : |* :	1984	0.04	3.59
| : * :	1985	0.00	3.33

Appendix 8D

ESTIMATES OF DEMAND FOR IMPORTS OF CONSUMPTION GOODS

Table MC1.

Demand for Imports of Consumption Goods (KMC)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	-4.07	0 67	-6.06
KNDI	0.11	0.01	7.79
NCR	0.00	0.00	1.72

R-squared	0 87
Adjusted R-squared	0.84
S.E. of regression	0.17
Durbin-Watson stat	1.95

==========

Residual Plot	Year	R	A
: | * :	1974	0.04	2.13
: | * :	1975	0.13	2.08
: | * :	1976	0.07	1.33
* | :	1977	-0.18	0.86
: | * :	1978	0.05	1.06
: |* :	1979	0.02	0.98
: | * :	1980	0.14	0.86
: | * :	1981	0.04	1.07
: | * :	1982	0.11	1.32
* : | :	1983	-0.38	1.04
: * | :	1984	-0.10	0.96
: | * :	1985	0.04	0.95

Table MC2.

Demand for Imports of Consumption Goods (KMC)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	-4.18	0.29	-13.99
KNDI	0.11	0.00	18.15
NCR	0.00	0.00	2.92
D83	-0.45	0.07	-5.69
D77	-0.25	0.08	-3.16

R-squared	0.98
Adjusted R-squared	0.97
S.E. of regression	0.07
Durbin-Watson stat	2.17

==========

Residual Plot	Year	R	A
| : * | :	| 1974	-0.03	2.13
| : | * :	| 1975	0.05	2.08
| : |* :	| 1976	0.00	1.33
| : * :	| 1977	-1.1D-16	0.86
| : * | :	| 1978	-0.03	1.06
| : * | :	| 1979	-0.05	0.98
| : | : *	| 1980	0.08	0.86
| : * :	| 1981	0.00	1.07
| : | : *	| 1982	0.09	1.32
| : * :	| 1983	-1.1D-16	1.04
| * : | :	| 1984	-0.12	0.96
| : * :	| 1985	0.00	0.95

Table MC3.

Demand for Imports of Intermediate Goods (KMC)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	-4.21	0.47	-8.83
KNDI	0.12	0.01	11.75
PMCPX	-0.18	0.36	-0.49
NCR	0.00	0.00	2.46
D83	-0.40	0.13	-2.98

R-squared	0.95
Adjusted R-squared	0.93
S.E. of regression	0.11
Durbin-Watson stat	2.32

==========

Residual Plot	Year	R	A
| : * :	1974	-0.00	2.13
| : | * :	1975	0.03	2.08
| : | * :	1976	0.03	1.33
| * : | :	1977	-0.21	0.86
| : | * :	1978	0.02	1.06
| : *| :	1979	-0.01	0.98
| : | *	1980	0.12	0.86
| : | * :	1981	0.02	1.07
| : | * :	1982	0.06	1.32
| : * :	1983	5.6D-17	1.04
| * : | :	1984	-0.13	0.96
| : | * :	1985	0.05	0.95

Table MC4.

Demand for Imports of Intermediate Goods (KMC)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	-4.12	0.47	-8.72
KNDI	0.12	0.00	12.52
NCR	0.00	0.00	2.82
PMCLFP	-0.24	0.26	-0.92
D83	-0.45	0.11	-3.81

R-squared	0.95
Adjusted R-squared	0.93
S.E. of regression	0.11
Durbin-Watson stat	2.43

==========

Residual Plot	Year	R	A
| : *| :	1974	-0.01	2.13
| : | * :	1975	0.05	2.08
| : | * :	1976	0.04	1.33
| * : | :	1977	-0.22	0.86
| : | * :	1978	0.02	1.06
| : * :	1979	-0.00	0.98
| : | *:	1980	0.09	0.86
| : |* :	1981	0.01	1.07
| : | * :	1982	0.03	1.32
| : * :	1983	0.00	1.04
| * | :	1984	-0.10	0.96
| : | *:	1985	0.09	0.95

Table MC5.

Demand for Imports of Consumption goods (KMC)
(1974-1985)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.
C	-4.11	0.32	-12.61
KNDI	0.11	0.00	17.06
PMCPX	-0.16	0.24	-0.67
NCR	0.00	0.00	2.74
D83	-0.42	0.09	-4.62
D77	-0.25	0.08	-3.02

R-squared	0.98
Adjusted R-squared	0.96
S.E. of regression	0.07
Durbin-Watson stat	2.34

Residual Plot	Year	R	A
: *| :	1974	-0.01	2.13
: | * :	1975	0.02	2.08
: |* :	1976	0.00	1.33
: * :	1977	-6.9D-17	0.86
: * | :	1978	-0.03	1.06
: * | :	1979	-0.06	0.98
: | :*	1980	0.08	0.86
: * :	1981	0.00	1.07
: | *	1982	0.07	1.32
: * :	1983	-8.3D-17	1.04
* : | :	1984	-0.12	0.96
: | * :	1985	0.03	0.95

Notes: Residuals with the letter 'D' in them are extremely small and should be treated as zero.
R - residual. A - actual.

APPENDIX 8E: The Output Effect

Total output is given by the sum of domestic absorption and the trade balance. Employing equations (7) and (10), this is expressed as,

$$Y_t = C_t + I_t + G_t + (S_t + Mc_t - C_t) - (Mc_t + Mi_t + Mk_t)$$

$$= I_t + G_t + S_t - Mi_t - Mk_t. \quad \text{(E1)}$$

Substituting equation (9) into (E1) gives

$$Y_t = I_t + G_t + S_t - g_0 - g_1S_t - g_2(Pmi/Px)_t - g_3D77 - g_4D83 - Mk_t. \quad \text{(E2)}$$

$$= I_t + G_t + (1 - g_1)S - g_0 - g_2(Pmi/Px)_t - g_3D77 - g_4D83 - Mk_t.$$

We may now expand, using equation (3) in the above expression. We arrive at:

$$Y_t = I_t + G_t + (1 - g_1)[T_t + a_0 + a_1(eP^*x/W)_t + a_2(eP^*x/eP^*mi)_t + a_3K_t] - g_0 - g_2(eP^*mi/eP^*x)_t - g_3D77 - g_4D83 - Mk_t. \quad \text{(E3)}$$

Differentiating equation (E3) with respect to the exchange rate, e, leads finally to

$$\delta Y/\delta e_t = a_1(1 - g_1)(P^*x/W)_t. \quad \text{(E4)}$$

APPENDIX 8F: Foreign-Balance Effect

The foreign balance is defined as the nominal value of exports minus imports, denominated in foreign currency. An appropriate expression for this is

$$B^* = P^*x_t(X - M). \quad (F1)$$

Resorting to equations (7) and (10), (F1) may be expanded to give

$$B^* = P^*x_t\{(S_t + Mc_t - C_t) - (Mc_t + Mi_t + Mk_t)\}.$$

$$= P^*x_t(S_t - C_t - Mi_t - Mk_t). \quad (F2)$$

At this point, it is useful to collect all the terms with S_t in them. As a step in that direction, we substitute equation (9) into (F2), obtaining

$$B^* = P^*x_t[S_t - C_t - g_0 - g_1S_t - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t]$$

$$= P^*x_t[(1 - g_1)S_t - C_t - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t]. \quad (F3)$$

Substituting equation (4) for C_t, we obtain

$$B^* = P^*x_t[(1 - g_1)S_t - c_0 - c_1Y^d_t - c_2K_t - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t]. \quad (F4)$$

We need to unravel the term for disposable income and so we substitute equations (5) and (E2) into (F4) as follows:

$$B^* = P^*x_t[(1 - g_1)S_t - c_0 - c_1\{I_t + G_t + (1 - g_1)S_t - g_0 - g_2(P^*mi/Px)_t - g_3D77 - g_4D83 - Mk_t - Q_t\} - c_2K_t - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t]. \quad (F5)$$

After rearranging equation (F5), we obtain

$$B^* = P^*x_t(1 - c_1)[(1 - g_1)S_t - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - Mk_t] - P^*x_t(c_0 + c_1I_t + c_1G_t - c_1Q_t + c_2K_t). \quad (F6)$$

As a final step toward obtaining an appropriate expression for the trade balance, we replace S_t in equation (F6) by equations (2) and (3) to arrive at:

$$B^* = P^*x_t(1 - c_1)[(1 - g_1)\{a_0 + a_1(eP^*x/W)_t + a_2(P^*x/P^*mi)_t + a_3K_t + T_t\} - g_0 - g_2(P^*mi/P^*x)_t - g_3D77 - g_4D83 - \dot{M}k_t] - P^*x_t(c_0 + c_1I_t + c_1G_t - c_1Q_t + c_2K_t). \quad (F7)$$

Finally,to obtain the effect of devaluation on the trade balance, we differentiate (F7) with respect to the interest rate, leading to

$$\delta B^*_t/\delta e_t = a_1P^*x_t(1 - c_1)(1 - g_1)(P^*x/W)_t. \quad (F8)$$

Chapter 9

9. CONCLUDING OBSERVATIONS

The analysis of devaluation has tended to distinguish between the effects with respect to output and those with respect to the trade balance. Views concerning the effects of devaluation on output fall into two main groups. There are those analyses which avoid the issue by assuming that full employment prevails or that any departure from full employment is temporary and therefore of slight interest. On the other hand, a growing section of the literature argues that devaluation is contractionary when, as is usually the case, devaluation is undertaken whilst the trade balance is in deficit. The redistribution of income from workers to capitalists is also a factor to which the contraction of output is attributed.

Even where it is acknowledged that devaluation is contractionary, the reactions to this situation may vary. On the one hand, it is argued that the external imbalances giving rise to the need for devaluation imply that the economy is living beyond its means and therefore that the contraction is part of the solution. A slight variant of this position is the view that emphasizes the over-valuation of the exchange rate and therefore sees the contraction as tolerable pain for the long-term gain of achieving a sustainable external position. On the other hand, it is argued, by reference to the experiences of Southern Cone countries, that contraction as a result of devaluation, accompanied by repressive monetary and fiscal policies have jeopardized the success of

stabilization programs while imposing additional hardships on the working class. In this connection, questions have been raised about the monetarist assumptions which underly these programs.

The analysis of the effects of devaluation on the trade balance has been less controversial. On the whole, it is widely agreed that a devaluation tends to improve the trade balance in foreign exchange terms. The reduction in real wages causes substantial disabsorption and hence reduction in imports. In addition, there is growing optimism about the likelihood of an expansion in exports, especially manufactured goods.

There still remains some scepticism about the usefulness of the devaluation instrument. There are theoretical and practical problems in determining what is the appropriate exchange rate to adopt and, therefore, how large a devaluation to undertake. It is argued that increased attention should be paid to the need for financial support as an element of a stabilization program.

Our theoretical analysis places explicit emphasis on the supply aspects of devaluation, contrary to orthodox analysis. It is argued that in the circumstances of small developing countries undertaking stabilization programs, serious account should be taken of factors which can frustrate the stimulus to the expansion of output. Such factors include bottlenecks in the availability of foreign exchange for imports of intermediate goods, skilled labour and ready access to foreign markets. Substantial problems may be anticipated in trying to compete and satisfy the demands of the foreign market often with new products. Among the difficulties encountered, we place emphasis on the instability in expectations of capitalists as a devaluation may

underscore a break in the momentum of growth and stability that the country might formerly have experienced. Doubts are raised in the minds of capitalists about the likelihood that a new stability will be sustainable and they may refrain from the expansion of output especially when what is required is a commitment of resources to new and unfamiliar production lines.

The uncertainties and instabilities surrounding a devaluation are all the more significant when it is considered that a devaluation is often introduced during a period of economic crisis. It is usual for countries to treat devaluation as a last resort and to postpone it until other options have been exhausted or until pressed to by the IMF.[1] This has two kinds of implications which are to be highlighted. Firstly, it means that devaluation may be preceded by conditions of repressed inflation and severely depleted reserves. It may also mean that imports have already been reduced to minimum levels and any further action in this direction would have disruptive effects. Secondly, in these conditions, the expectations especially of the capitalist sector may be described as unstable and pessimistic. This pertains to the confidence of the capitalist sector that the advantages of the devaluation are sustainable and that it is not simply the beginning of a series of devaluations. In these circumstances, potential investors may be very guarded in their actions. Instead of expanding the output of tradables in response to the expected increase in profits, they may prefer to acquire safe foreign securities, aggravating any tendency to capital outflows. This may be an explanation of contractionary effects. Its relevance has been noted in the context of a high level of

[1]See Spraos (1986).

foreign investment where it is manifested in increased outflows of investment income.[2]

Another dimension of this analysis has been to emphasize the real wage implications of devaluation. The real wage is the central relative price around which the model revolves. A devaluation, by reducing the real wage, should affect the supply side through an increased rate of profit while, on the demand side, it causes disabsorption and reduced demand. What happens to output growth and the trade balance depends critically on the supply response because the room for the contraction of demand and imports through disabsorption is limited. A major obstacle to reduced absorption is investment demand which tends to be highly import-intensive in a small developing countries. With the demand of the working class reduced, increased production makes more goods available for export.

On the other hand, for reasons already mentioned, capitalists may choose to refrain from investment or be hindered in their efforts and may increase their own consumption or remit profits abroad, neither action being favourable to the trade balance. Deterioration in the trade balance after a devaluation is not an unlikely scenario. It has been observed that improvement in the balance of payments after a stabilization program involving devaluation is often attributable to capital account developments rather than improvements in the trade balance.

The empirical application of our model to Jamaica over the period 1974-1985 reinforces our scepticism about devaluation as both the output effect and the trade-balance effect are found to be unfavourable. These negative effects are attributed

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[2]See Barbone and Rivera-Batiz (1987), and Girvan et al. (1980).

largely to bottlenecks in production as well as unfavourable expectations affecting the willingness of capitalists to commit resources to major expansion of production. It is significant to note that the period chosen was characterized by a climate of political and economic instability as shown in chapters six and seven.

The empirical analysis was subject to significant shortcomings. The length of the time series available was shorter than desired (twelve years), and there were questions concerning the quality of the data. These problems presented obstacles to the use of techniques for ensuring the most reliable estimates such as the employment of lags, corrections for autoregressive errors and the use of two-stage least squares. Some of the assumptions employed were also rigid, notably the exclusion of locally-produced intermediate goods. It would have provided a more interesting analysis if it had been possible to present capitalist and worker consumption demands separately in the demand functions. The resolution of these problems and shortcomings provides opportunities for interesting and fruitful extensions of this work.

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DATA ANNEX

Year	Current GNP J$m.	NDI J$m.	NCR US$m.	CE J$m.	CPI
1974	2210.9	2035.2	243.2	1196.5	31.5
1975	2620.2	2408.7	208.9	1485.6	37.0
1976	2627.1	2380.6	126.7	1566.7	40.6
1977	2856.4	2589.6	34.3	1693.7	45.1
1978	3585.9	3266.3	-78.5	1997.7	60.8
1979	4019.8	3750.4	-10.2	2243.9	78.6
1980	4432.1	4154.7	107.1	2496.8	100.0
1981	4981.5	4726.7	225.4	2799.4	112.7
1982	5563.2	5256.8	465.6	3207.0	120.1
1983	6757.8	6508.3	190.5	3657.9	134.0
1984	8478.9	8041.0	482.7	4536.6	171.3
1985	10109.7	10000.7	237.1	5122.5	215.3

KEY
NDI: national disposable income.
NCR: net capital receipts.
CE: Compensation of employees, including that accruing from abroad.
CPI: consumer price index.

Year	S	SN	T	L	E R
	J$m.	J$m.	J$m.	(000)	
1974	4537.9	4174.6	363.3	650.6	0.9
1975	5492.0	5072.8	419.2	684.3	0.9
1976	5500.0	5108.0	392.0	679.1	0.9
1977	5899.5	5418.1	481.4	699.2	0.9
1978	7800.7	6974.6	826.1	702.1	1.4
1979	9537.2	8500.4	1036.8	663.4	1.8
1980	10972.4	9623.5	1348.9	737.3	1.8
1981	12335.0	10976.3	1358.7	761.4	1.8
1982	13699.4	12782.2	917.2	756.3	1.8
1983	16123.7	15319.0	804.7	742.3	1.9
1984	22416.6	20688.9	1727.7	778.9	3.9
1985	28182.3	26655.3	1527.0	781.7	5.6

KEY
S: Total gross output.
SN: gross output of nontraditional products including sugar.
T: gross output of bauxite and alumina.
L: Total number employed.
ER: Exchange rate (J$/US$).

Year	PX	PIG	PMC	R	PC
				(%)	J$m.
1974	100.0	100.0	100.0	9.0	1468.6
1975	151.1	113.8	102.2	8.0	1722.5
1976	149.5	121.5	112.2	9.0	1881.5
1977	160.8	154.7	116.0	9.0	2024.2
1978	263.5	199.0	174.3	9.0	2375.3
1979	330.7	285.5	215.9	9.0	2696.8
1980	398.2	359.0	272.2	11.0	3135.7
1981	402.9	399.7	314.2	11.0	3649.3
1982	392.2	362.3	309.3	11.0	4019.2
1983	404.7	453.1	384.3	11.0	4887.1
1984	811.7	802.0	670.2	16.0	6219.4
1985	940.9	1171.9	916.9	21.0	7851.0

KEY

PX: index of domestic currency prices of exports.
PIG: index of prices of imports of intermediate goods.
PMC: Index of prices of imports of consumer goods.
R: interest rate (central bank rate).
PC: private final consumption expenditure at current prices.

Sources: STATIN, National Income and Product, several issues;
The Labour Force
Statistical Abstract
Price Indices

BOJ, The Balance of Payments, several issues.
IMF, International Financial Statistics.