INDUSTRIALIZATION BY INVITATION:

A CASE STUDY

INDUSTRIALIZATION BY INVITATION:
AN EXAMINATION OF THE JAMAICAN AND PUERTO RICAN EXPERIENCE, 1950-1967

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ABSTRAIT

L'INDUSTRIALISATION PAR INVITATION: UNE ÉTUDE DE L'EXPÉRIENCE DE LA JAMAIQUE ET DE PORTO RICO, 1950-1967

par Karl Bennett
Ph.D. Economics

Cette étude se propose d'évaluer l'effet d'une stratégie d'industrialisation qui donne une importance spéciale a l'attraction d'investissement étranger afin d'augmenter le développement d'un secteur industriel dans les petits pays en voie de développement. L'enquête a été faite selons les critères suivants: la croissance globale du secteur industriel dans la mesure où elle a contribuée a l'augmentation des salaires et à la diminution du chômage, aux changements structurels du secteur, à l'apparition d'une intégration tant à l'entérieur du secteur même qu'entre secteurs différents de l'économie et enfin au niveau de la participation locale à l'expansion du secteur.

Nous avons montré que la stratégie aussi bien que les moyens utilisés pour sa réalisation pourraient être considérés comme suffisants dans le cadre d'une économie basée sur la concurrence. Toutefois, nous montrons dans cette étude que l'exemple basé sur un système de concurrence

ne peut fournir de base convenable pour la formulation d'une stratégie pour la promotion d'un système industriel dans ce contexte. Une telle stratégie a donc peu de chances de succès. Cette conclusion a été appuyée par les preuves tirées d'une étude détaillée de l'évolution du secteur industriel à la Jamaique et au Porto Rico, deux petits pays en voie de développement qui adoptèrent cette stratégie de 1950 à 1967. On a découvert que dans ces deux pays la croissance du secteur industriel n'était accompagnée que d'une modeste contribution à l'emploi, d'une interdépendance limitée interne et externe, et d'une faible participation locale dans le secteur.

ABSTRACT

INDUSTRIALIZATION BY INVITATION: AN EXAMINATION OF THE JAMAICAN AND PUERTO RICAN EXPERIENCE, 1950-1967

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This study is concerned with evaluating the effect of an industrialization strategy which places special emphasis on the attraction of foreign investment to promote the development of a manufacturing sector in small developing countries. The evaluation was conducted on the basis of the following criteria: the overall growth of the manufacturing sector in terms of its contribution to income and employment, structural changes within the sector, the emergence of integration within the sector as well as between the sector and other sectors of the economy and finally the level of domestic participation in the expansion of the sector.

It is indicated that the strategy as well as the tools adopted for its implementation might be considered appropriate within the framework of a competitive economic model. However, it is argued in the study that the competitive model does not provide an appropriate basis for the formulation of a strategy for the promotion of a manufacturing

sector in this context. Accordingly such a strategy is not likely to be very successful. This position was supported by the evidence derived from a detailed study of the evolution of the manufacturing sector in both Jamaica and Puerto Rico, two small developing countries which adopted this strategy, over the period 1950 through 1967. It was found that in both countries the growth of the manufacturing sector was associated with modest direct contributions to employment, limited inter and intra-sectoral interdependence and limited local participation in the sector.

RESUME

L'Industrialization sur invitation: Une étude de l'expérience Jamaïcaine et Puerto-ricaine, 1950 - 1967

par Karl Bennett

Dans cette étude on s'est proposé d'evaluer la stratégie adoptée par la Jamaïque et le Puerto-Rico en vue de promouvoir le développement d'un secteur manufacturier. Cette stratégie s'est basée sur l'attraction d'investissements étranger par le moyen de stimulants d'ordre fiscal et commercial. Dans les deux pays, l'adoption d'une telle stratégie a été favorisée par l'existence d'un niveau très élevé de chômage.

Les deux pays ont réussi à attirer des entreprises manufacturières. Cependant, ce succès n'a entraîné aucune modification significative en ce qui concerne l'emploi. Dans notre évaluation nous indiquons qu'une telle stratégie n'est guère susceptible d'apporter une contribution de quelque importance à l'emploi à moins que les stimulants fiscaux et commerciaux ne soient conçus de manière à offrir des avantages aux entreprises qui recherchent les moyens d'utiliser plus abondamment les ressources domestiques. Il s'avère que les stimulants n'ont pas été employés de manière à encourager une telle tendance.

ABSTRACT

INDUSTRIALIZATION BY INVITATION: AN EXAMINATION OF THE JAMAICAN AND PUERTO RICAN EXPERIENCE, 1950-1967

by Karl Bennett

This study is concerned with evaluating the strategy adopted by Jamaica and Puerto Rico for promoting the development of a manufacturing sector. The strategy was based on the attraction of external investment by the use of fiscal and commercial incentives. In both countries the stimulus for the adoption of such a strategy was the existence of high levels of unemployment.

Both countries were successful in attracting manufacturing firms. However, this success was not associated with any significant change in the employment situation. In the evaluation, it is pointed out that this strategy is unlikely to make a significant contribution to employment, unless the fiscal and commercial incentives are formulated to make it advantageous for firms to try to find ways of increasing the use of domestic resources in their operations. It is revealed that the incentives were not employed in a way to encourage such a trend.

PREFACE

At the end of the Second World War the existence of high levels of unemployment was one of the major economic problems with which the governments of Jamaica and Puerto Rico were faced. The government of Puerto Rico and subsequently that of Jamaica decided that a solution to the unemployment problem could be found by taking action to promote a manufacturing sector. Both countries adopted a strategy for industrialization, which placed primary emphasis on the attraction of external investment through the use of fiscal and commercial incentives. The analytical basis for this strategy was outlined in detail by Professor Arthur Lewis in a series of articles in 1949 and 1950.

In evaluating the strategy adopted by these two islands, which was in essence the Lewis strategy, we were able to derive additional insights into the reasons why the success of the strategy in attracting manufacturing firms was not associated with significant improvements in the employment situation.

There is now fairly general agreement that this strategy of industrialization by invitation is not likely to be as important in meeting the employment needs of such countries as was first thought. The major portion of the critical work done in this area has tended to concentrate on

the extent to which the incentives employed have had a capital intensive bias and so limit the employment benefits to the economy. In addition, attention has also been directed to the way in which limited market size has encouraged the establishment of high cost operations with limited economic benefit. Attempts have also been made to measure the benefits and costs of incentive measures by making estimates of income and employment generated in relation to the government revenues foregone.

In this study we are concerned with showing the relationship between the incentives offered and production techniques adopted. However, we go beyond such a consideration to point out that in order to enhance the potential contribution to employment, the incentive measures should have the effect of encouraging the highest possible level of domestic resource use in manufacturing operations. One has to be concerned with the direct as well as indirect contributions which this sector can make to relieving unemployment. It is our view that in both countries policy-makers tended to overlook the potential effect of these indirect contributions and as a result the incentive measures were not designed to cope with these potential indirect effects.

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TABLE OF CONTENTS

LIST OF TABLES iv

Chapter

I. INTRODUCTION 1

Issues in Industrial Development 3
The Lewis Model 15
Evaluation of the Lewis Model 22
The Puerto Rican Incentives 34
The Jamaican Incentives 38
The Development Pattern, 1950-1967 42

II. JAMAICA: THE PRE-INDUSTRIAL SETTING 59

Introduction 59
Stage I: The Post-Emancipation Period . . . 60
Stage II: 1870-1930 69
Stage III: The Depression 77
Summary 84

III. PUERTO RICO: THE PRE-INDUSTRIAL PERIOD . . . 86

Introduction 86
Stage I: 1898-1930 89
Stage II: The Depression to World War II 95
Stage III: The Wartime Period 100
Summary 104

IV. THE EVOLUTION OF THE MANUFACTURING SECTOR IN JAMAICA IN THE POST-WAR PERIOD 108

Introduction 108
The Initial State of the Manufacturing Sector 109
Economic Growth, 1951-1967 111
Trends in the Manufacturing Sector 117
Intra and Inter-Sectoral Integration 131
The Effective Rate of Protection of the Jamaican Tariff 150
Local Participation in the Manufacturing Sector 163
The Official Position on Problems of Industrialization 167

Chapter

V. THE EVOLUTION OF THE MANUFACTURING SECTOR IN PUERTO RICO, 1950-1967 172

Introduction 172
The State of the Economy in 1950 173
Economic Growth, 1950-1967 180
Summary 194
Trends in the Manufacturing Sector 195
The Protective Effect of the Incentive Programme in Puerto Rico 212
Summary 230

VI. CONCLUSIONS 235

BIBLIOGRAPHY 254

LIST OF TABLES

Table		Page
4-1.	Employment in Manufacturing	110
4-2.	Share of Manufacturing in Gross Domestic Product	112
4-3.	Annual Rate of Growth of G.D.P. and G.D.P. in Manufacturing, 1951-1967	114
4-4.	Percentage Contribution of Industrial Sectors to Gross Domestic Product at Factor Cost, 1950-1967	116
4-5.	Percentage Distribution of Gross Domestic Product at Factor Cost in Manufacturing . . .	118
4-6.	Percentage Distribution of the Employed Labour Force	121
4-7.	Percentage Distribution of the Labour Force Employed in Manufacturing	123
4-8.	Composition of Exports of Manufactured Goods	125
4-9.	Number of Companies Operating Under Incentive Laws by Industry Group (March, 1967)	126
4-10.	Employment in Firms Operating Under Incentive Laws	128
4-11.	Capital Investment and Investment Per Employee by Firms Operating Under the Incentive Laws (J$) as at December 31, 1966	130
4-12.	Input Coefficients of the Transactions Matrix: Jamaica--1957	132
4-13.	Input Coefficients of the Transactions Matrix: Jamaica--1960	135

Table		Page
4-14.	Input Coefficients of the Transactions Matrix: Jamaica--1963	138
4-15.	Input Coefficients of the Transactions Matrix: Jamaica--1966	141
4-16.	Changes in Input Structure of Selected Activities in the Manufacturing Sector	148
4-17.	Direct and Indirect Import Input Requirements, 1957 and 1966	149
4-18.	Effective Rates of Protection, Selected Items, 1965	157
4-19.	Effective Rates of Protection for Domestic Production	161
4-20.	Percentage Distribution of Profits in Manufacturing	164
4-21.	Distribution of Firms Operating Under Incentive Laws by Ownership (1966)	165
5-1.	Gross Domestic Product at Factor Cost	174
5-2.	Gross Domestic Product at Factor Cost by Origin, Percentage Shares, 1950-1967	175
5-3.	Distribution of Employment in 1950	177
5-4.	Net Income in the Manufacturing Sector by Industry, 1950	179
5-5.	Distribution of Employment in the Manufacturing Sector, 1950	179
5-6.	Average Annual Rates of Growth of Real Gross Domestic Product, Puerto Rico	182
5-7.	Employment and Unemployment in Puerto Rico, 1951-1967	184
5-8.	Average Annual Labour Force Participation Rates, Selected Years, 1951-1967	186
5-9.	Average Annual Unemployment Rates, Males and Females, Selected Years, 1951-1967	188

Table		Page
5-10.	Employment by Sector	189
5-11.	Shipments of Merchandise from Puerto Rico to the United States, 1966	192
5-12.	Economic Classification of Merchandise Imports, 1950-1967	193
5-13.	Net Income in Manufacturing, Selected Years . .	196
5-14.	Percentage Contribution to Value Added in Manufacturing by Sector	199
5-15.	Percentage Contribution by Manufacturing Industries to Employment by Major Industry Group	201
5-16.	Net Income Originating in Manufacturing Firms Promoted by the Economic Development Administration Fiscal Years	203
5-17.	Direct Contribution to Employment by Government-Assisted Manufacturing Plants, 1950-1967	204
5-18.	Percentage Distribution of Manufacturing Output by Industry, 1963	207
5-19.	Net Capital Imports and Gross Domestic Investments, Selected Years, 1950-1966 . . .	211
5-20.	Estimated Profits and Losses of Puerto Rican Industry Based on Mainland Operating Costs and Taxes	220
5-21.	Estimates of Tariff Rates Necessary to Reduce Puerto Rican Earnings to Mainland Levels	226

CHAPTER I

INTRODUCTION

This study is concerned with an evaluation of the industrialization strategy adopted by Puerto Rico and Jamaica in the period following the end of the Second World War. The main motivating force in the drive towards industrialization in both countries was the existence of very high levels of unemployment, between 15 and 20 per cent, of the labour force. Prior to the initiation of their respective programmes for industrialization, the prevailing view was that the solution to the problem of unemployment and poverty in both countries had to be found through agricultural reform. A special Presidential commission which had been appointed in 1939 to study and make recommendations for a Federal economic policy for Puerto Rico concluded in its report that there were limited prospects for industrialization on the island.[1] The Moyne Commission, which had been established by the British Government to carry out a similar task for the British West Indian Islands, also was lukewarm towards industrialization except in the limited instances where manufacture could be based on the processing of

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[1] D. F. Ross, The Long Uphill Path (San Juan, Puerto Rico: Talleres Graficos Interamericanos, Inc., 1966), p. 40.

agricultural products.[2]

The lack of enthusiasm was understandable. There were no previous instances of similarly situated countries embarking on a programme of industrialization. Both islands apparently lacked most of the necessary prerequisites for the establishment of industry. There was a virtual absence of industrial raw materials. The labour force lacked experience in the production and marketing of industrial products. There were limited amounts of savings from existing activities to finance investment in a new sector. The population of both countries had been accustomed to importing a wide array of industrial products from the most advanced industrial countries. This then meant that not only would the local market be limited by low income levels, but the established taste pattern would create fragmentation in the market, rendering many activities uneconomic. There was, however, with respect to this last point, an important difference between the Puerto Rican situation and that in Jamaica. Puerto Rico is a part of the United States customs area. Consequently, the potential local market was that of the entire United States. This was to have an important impact on the nature of the sector as it evolved, as will be shown below.

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[2] West India Royal Commission Report, Cmd. 6607, pp. 247-50.

Issues in Industrial Development

Since the end of the Second World War emphasis has been placed on the role of processing and manufacturing industries in promoting economic development in underdeveloped areas. There are a number of reasons for the emphasis on industry in the development strategies of the post-war period. A common feature of most underdeveloped countries in the pre-war period was their extreme specialization in primary economic activities and particularly in agriculture. The experience of the fall in primary commodity prices in the 1920's followed by the virtual collapse of world trade during the depression pointed to the desirability of having a more diversified economic base.[3] Moreover, in many countries there was a serious problem of resource imbalance. Specifically, there was an inability to effectively utilize the large and rapidly expanding labour force in income yielding economic activities. This was revealed in high rates of open unemployment. At the same time the large number of partially employed people in the agricultural sector was held to indicate the existence of substantial underemployment. Apart from the desirability of achieving a greater measure of stability through

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[3]United Nations, Department of Economic Affairs, Relative Prices of Exports and Imports of Underdeveloped Countries (New York: United Nations, 1949). W. A. Lewis, Economic Survey 1919-1939 (London: Unwin University Books, 1949), Chap. XIII.

diversification, there was the need to initiate new activities to meet the requirement for additional employment.

One of the earliest formal statements of the case for industrialization was made by Prebisch in a report prepared for the United Nations Department of Economic Affairs in 1950.[4] In this report he stated that:

> Formerly, before the great depression, development in Latin American Countries was stimulated from abroad by the constant increase of exports. There is no reason to suppose, at least at present, that this will occur to the same extent, except under very exceptional circumstances. These countries no longer have an alternative between vigorous growth along those lines and internal expansion through industrialization. Industrialization has become the most important means of expansion.[5]

The categorical position outlined above was based on the following presumptions. The first was the notion that the rate of technical progress in industry in developed countries seemed to be greater than in primary production in underdeveloped countries. This should have resulted in the terms of trade moving in favour of exporters of primary products and in this manner the fruits of technical progress in industry would have been shared by the importers of these products in underdeveloped countries. However, he argued that the opposite had occurred. He pointed out that from the 1870's until the Second World War there had been a

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[4]United Nations, Department of Economic Affairs, The Economic Development of Latin America and its Principal Problems, E/CN12/89/Rev.1 (New York: United Nations, 1950).

[5]Ibid., p. 6.

secular decline in the terms of trade for exporters of primary products. The failure of relative prices to follow the trends of productivity change was explained by him in the following way. The benefits arising from productivity increases in manufacturing had been retained in developed countries due to the success of trade unions in bidding up wages and the predominantly oligopolistic characteristic of industrial production leading to administered rather than competitive pricing. On the other hand, workers were much less effectively organized in underdeveloped countries and so were not in a position to bargain effectively for wage increases in response to productivity changes. Moreover, the inelasticity of supply of primary products results in drastic reductions in prices of these products during cyclical downswings in the industrial centres. Consequently the development needs of underdeveloped countries could not be satisfied through reliance on traditional exports.[6]

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[6] Ibid., pp. 12-14. Similar arguments pointing to the secular deterioration in the terms of trade and its implications for development were also put forward by H. W. Singer, "The Distribution of the Gains between Investing and Borrowing Countries," American Economic Review, Papers and Proceedings (May, 1950). This so-called Prebisch-Singer thesis has been subject to considerable criticism on both empirical and analytical grounds. See for example G. Haberler, "Terms of Trade and Economic Development," in Economic Development for Latin America, ed. by H. S. Ellis (New York: St. Martins Press, 1961), pp. 275-97; M. June Flanders, "Prebisch on Protectionism: An Evaluation," Economic Journal (June, 1964); and T. Morgan, "The Long Run Terms of Trade between Agriculture and Manufacturing," Economic Development and Cultural Change (October, 1959).

Prebisch was here arguing for a policy of industrial promotion which would be geared to reducing the reliance on imported manufactured products.

The major obstacles to industrial development in an underdeveloped country are generally identified as being the low level of savings, the small size of the market and limited entrepreneurial resources. Advocates of the so-called "balanced growth" approach to industrial development placed particular emphasis on the market constraint.[7] It was argued that if the obstacle of the market constraint was to be overcome it must be realized that an industrial sector is highly interdependent with many activities being complementary in that they supply a market for and support each other's activities. As a result the market constraint obstacle could be overcome through a co-ordinated plan of investment in a wide variety of industrial enterprises catering for mass consumption. As Nurkse argued, the case for balanced growth rests on the need for a balanced diet.[8] Rosenstein-Rodan and Nurkse emphasized the horizontal complementarity of industrial relationships. However, as Fleming pointed out, limitations in factor supplies guarantee

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[7]P. N. Rosenstein-Rodan, "Problems of Industrialization of Eastern and South-eastern Europe," Economic Journal (June, 1943). R. Nurkse, Problems of Capital Formation in Underdeveloped Countries (Oxford: Basil Blackwell and Mott Ltd., 1953).

[8]Nurkse, op. cit., Chap. I.

that the relationship is more likely to be competitive. Accordingly, the development of industries at different stages in the same line of production would more likely afford each other mutual support than those in different lines of production.[9] Moreover, the balanced growth approach would require such large quantities of capital, entrepreneurial ability and skilled labour that if indeed such resources were available the country would hardly have been underdeveloped in the first place.[10]

A general strategy designed to overcome the obstacles to industrial development was proposed by Hirschman.[11] His major theme was that limitations on investment funds, as well as entrepreneurial talent, implied that initially steps would have to be taken to direct funds to selected industrial activities. The overall success of this approach would be determined by the extent and speed with which an initial investment could create new market opportunities and thus induce further investment. These inducements are in effect a function of the external economies associated with the initial investment. The success of such a strategy would depend on the amount, nature

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[9] J. M. Fleming, "External Economies and the Doctrine of Balanced Growth," Economic Journal (June, 1955).

[10] B. Higgins, Economic Development (New York: W. W. Norton and Company, 1968), p. 334.

[11] A. O. Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1958).

and cost of primary and processed inputs required in the production process and new opportunities created by the availability of the output of the new activity. This is what Hirschman defines as backward and forward linkages. Other things being equal, investment should initially be directed towards those activities which might generate the highest degree of backward and forward linkages. Nevertheless, in reality, investment has to be geared to production for which there exists assured markets. In practice this generally means that initially production has to be geared to meeting domestic final demand. For this reason such policies are normally initiated by the substitution of domestic production for products previously imported. Additionally, attention should be focussed on products likely to maximize the backward linkage effect.[12] With respect to exports, Hirschman's strategy is consistent with policies which seek to increase the degree of domestic processing of agricultural and other raw materials destined for foreign markets.

In Hirschman's strategy the manufacturing sector plays a pivotal role. The interdependence which stimulates the rate of growth of the sector eventually leads to a situation whereby the multiplier effect of expenditures generates activities in other sectors and therefore in the

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[12] Ibid., Chap. VI.

economy as a whole. The strategy was designed to point the way towards developing the manufacturing sector. However, there was nothing in that strategy to guarantee that these desired linkages could in fact be realized. As he pointed out, manufacturers utilizing imported inputs would not automatically switch to domestic sources of supply even if the latter were to be available at competitive prices.[13] Import substitutions of the finishing touch assembly type, however, might be frustrated by a shortage of foreign exchange required to import the necessary materials.[14] This constraint could be overcome to the degree that the necessary foreign exchange might be derived from traditional exports, foreign investment or foreign aid. Receipts from traditional exports, however, are unlikely to be sufficient given the historical instability of such earnings due to periodic supply bottlenecks and the variability if not overall deterioration in the terms of trade for these items.

Direct foreign investment is unlikely to make a significant contribution to foreign exchange reserves on a continuing basis. As Streeten points out, such a contribution will be made only if the percentage rate of growth of

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[13] Ibid., p. 118.

[14] On the question of the foreign exchange constraint see R. I. McKinnon, "Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation," Economic Journal (June, 1964). H. B. Chenery and A. M. Strout, "Foreign Assistance and Economic Development," American Economic Review (September, 1966).

foreign capital exceeds the rate of return on old capital.[15] An alternative approach measuring the foreign exchange contribution as the difference between sales generated by the investment and imported inputs for the project would be incorrect for the following reasons. The project may have utilized resources which were previously employed in activities which earned foreign exchange or had the effect of saving foreign exchange so that the net effect could be negative. Furthermore, the effect on demand may result in resources that were previously employed becoming unemployed. The result is that the new investment may neither save or earn foreign exchange. Finally, foreign exchange in support of foreign investment is used initially to support the establishment of physical plant and later flows back in the form of remitted profits.[16]

The amount of foreign aid which a country could receive is determined primarily by political considerations, for example, whether the major donor countries approve of the political structure and policies of the country, as well as attitudes among political forces in the donor countries towards the general principle of foreign assistance, rather than the economic needs of the country. Accordingly only

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[15] P. Streeten, "New Approaches to Private Investment in Less Developed Countries," in International Investment, ed. by J. Dunning (Middlesex, England: Penguin Books Ltd., 1972), p. 438.

[16] Ibid., pp. 439-40.

limited reliance can be placed on foreign aid as a means of relieving the foreign exchange constraint.

In light of the above considerations, it is apparent that developing countries will eventually approach the limits to their industrial expansion unless they are able to develop an export position in manufacturing. Consequently, if the industrial sector is not to develop as an enclave within the economy, an industrialization strategy must be geared to a dynamic optimization of resource allocation in an open economy. This means realizing the greatest possible contribution to employment and income at a minimum domestic and foreign exchange cost. This goal is unlikely to be realized if the industrialization strategy is geared solely towards the attraction of a large number of plants. Given the domestic market constraints, as well as the difficulties in entering export markets, the benefits of industrialization will be realized if special emphasis is placed on specialization and on trying to maximize the domestic content in industrial operations. The realization of the importance to be attached to the avoidance of both domestic and external bottlenecks and the special resource allocation problems which arise is revealed in the increased emphasis placed on the programme approach to industrialization by United Nations agencies as well as economic analysts such as

Chenery.[17]

These issues are of particular significance to small underdeveloped countries. The limited market size creates conditions whereby there are few manufacturing enterprises which could operate efficiently. Import restrictions, however, can permit a number of firms to manufacture for the local market using imported inputs. Nevertheless, the domestic market along with the foreign exchange constraint limits the scope of such activity. Regional economic associations among underdeveloped countries, in particular the formation of common markets involving the harmonization of commercial, fiscal, monetary and industrial policies, was increasingly advocated as the way to overcome the obstacles to industrialization created by size. Through this form of association there could be more specialization of economic activities for the regional market, which could potentially enable firms to derive the benefits of scale economies. Moreover, with larger scale operations it would be possible to establish capital and intermediate goods industries, which would help relieve the foreign exchange constraint.

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[17] United Nations, Formulating Industrial Development Programmes, E/CN.11/567. United Nations, Programming Techniques for Economic Development, E/CN.11/635. United Nations, Report of the Symposium on Industrial Development in Latin America, E/CN.12/755 (New York: United Nations, 1966). H. B. Chenery, "The Role of Industrialization in Development Programs," American Economic Review (May, 1955) and "Comparative Advantage and Development Policy," American Economic Review (March, 1961). Chenery and Strout, op. cit.

This last factor was of particular concern to the Latin Americans.[18] Apart from the question of the foreign exchange saving, importance was attached to the potentially high linkage effect associated with the production of capital goods.[19] As Griffin argued: ". . . the purpose of integration is to provide and expand several growth points, i.e. nucleii of industrial interdependencies, in the member countries."[20] There are considerable difficulties in the way of arriving at the necessary harmonization of policies which would be necessary to make a regional grouping effective. This arises in many instances from the different levels of industrial and overall economic development of the potential partners and the implications for structural adjustment and compensation.[21] Nevertheless these difficulties must be resolved if the regional approach is to be successful.

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[18] See M. C. Wionczek, "Requisites for Viable Integration," in Latin American Integration, ed. by M. C. Wionczek (New York: Frederick A. Praeger, 1966), p. 4.

[19] K. Griffin, Underdevelopment in Spanish America (London: George Allen and Unwin Ltd., 1969), p. 261.

[20] Ibid., p. 254.

[21] R. Prebisch, "Surmounting Obstacles to a Latin American Common Market," in Latin American Integration, ed. by M. C. Wionczek (New York: Frederick A. Praeger, 1966). R. F. Mikesell, "The Movement Towards Regional Trading Groups in Latin America," in Latin American Issues, ed. by A. O. Hirschman (New York: The Twentieth Century Fund, 1961).

An issue in industrial development to which increasing attention is being focussed concerns the role of the domestic entrepreneur. On a very general plane one might argue that since through industrialization it is hoped to realize a more effective mobilization of domestic economic resources, the entrepreneurial resource ought not to be overlooked. Concern with enhancing the level of domestic participation is on a more specific basis usually related to the foreign exchange costs associated with foreign direct investment discussed previously. There is, however, increasing concern with the potential constraints which might be imposed on government policy should the foreign sector become dominant. This concern is reflected by Streeten, who after dealing with the balance of payments question argues that:

> In a world in which no longer, as in the nineteenth century, a handful of countries confronts hundreds of businesses but where, instead, hundreds of countries confront a handful of companies, the repercussions upon a host of policies pursued by a government which admits private overseas investment are considerably more important than the above analysis which assumes these policies to be unaffected.[22]

On the basis of the factors discussed we will employ as criteria for evaluating the industrialization strategy of Jamaica and Puerto Rico, the contribution of industry to employment and income, the degree of interindustry and intersectoral interdependence which has emerged over time as well as the role of the domestic entrepreneur in the sector.

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[22]Streeten, op. cit., p. 440.

The Lewis Model

An overall strategy for the promotion of industry was not completely worked out in both countries until after the war. The approach adopted was heavily biased towards the attraction of direct investment from external sources to promote manufacturing activity. This policy of what we will call "industrialization by invitation" was initiated by Puerto Rico and was shortly after adopted by Jamaica. The analytical framework for this strategy in the context of the Caribbean area was outlined in its most detailed form by Professor Arthur Lewis in a series of articles in the Caribbean Economic Review in 1949 and 1950.[23] We will now proceed with an outline of the Lewis analysis.

The principal themes which are emphasized in the Lewis framework are the location of industry, the importance of markets and marketing techniques, the role of foreign and domestic capital, and the criteria to be employed in selecting the type of industries which should be established.

As far as the question of the location of industry was concerned, he placed special emphasis on the importance

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[23] W. A. Lewis, "Industrial Development in Puerto Rico," Caribbean Economic Review, I (1949); and W. A. Lewis, "The Industrialization of the British West Indies," Caribbean Economic Review, II (1950). We are not suggesting that policy makers formulated their strategies with specific reference to the Lewis model. In point of fact the Puerto Rican strategy had been developed prior to the publication of these articles. The model is essentially an analytical statement which justified the suitability of this approach for the entire region.

of external economies on the determination of industrial location. These economies would be those of a pecuniary nature.[24] Such economies are most easily realized in an area where there already exists a large number of industries. This is in large part due to the fact that in such a centre the processed inputs required for use in a variety of production processes are quite often readily available and, moreover, the existence of other plants could provide readily available markets for processed output from the plant. Furthermore, associated with an area of industrial concentration would be a collection of financial and technical services which would be of great importance to industrial operations. In his own words: "A manufacturing centre is not a collection of separate industries but a complicated pattern of interrelations and it is not until this pattern is woven that the centre is firmly established."[25]

The general criterion for success of an industrial centre was based on access to markets and raw materials, the interlacing of industries and the relationship of wages to productivity.

The problem faced by regions interested in developing an industrial sector would seem to be concentrated on

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[24]The distinction between technological and pecuniary external economies and the special significance of the latter concept in this context is emphasized in T. Scitovsky, "Two Concepts of External Economies," Journal of Political Economy (April, 1954).

[25]Lewis, "Industrial Development in Puerto Rico," p. 166.

devising means of initially breaking, what in the Lewis terminology would be, the gregarious nature of industry. In the absence of external economies there would have to be some compensating factors to make the prospects for the earning of profits particularly attractive. The following are the conditions which he considered vital for purposes of attaining this objective.

First of all, governments would have to exercise a great deal of latitude in determining the conditions under which industries could function. In other words, an elaborate system of government regulations would act as a deterrent to the establishment of industry. Consistent with this view, he argued that governments would have to break from traditional opposition to such things as the granting of temporary monopoly rights. In addition, the full range of fiscal and commercial incentives would have to be applied. This meant that tax exemptions and subsidies along with tariff protection where necessary would be required features of any programme designed to promote industries. He disparagingly dismisses opponents of such a strategy in the West Indies in the following manner:

> They discuss industrialization in terms of the close restrictions which they would like to impose on such capitalists and they oppose monopoly rights, tax holidays and other incentives which some governments are now willing to consider offering. The facts are exactly opposite to what they suppose; the West Indies does not offer a large market. There are very few manufacturers who wish to go there.[26]

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[26]Lewis, "The Industrialization of the British West Indies," p. 37.

The role of incentives of the types described for the purpose of promoting industry has been long recognized in economic literature. The various issues involved have been examined under the general heading of the infant industry thesis. In most instances the theoretical analysis is developed to indicate the circumstances which would merit the provision of incentives to establish industries, which would then provide items which were formerly imported. The Lewis view was that the limited size of the domestic market would make it impossible to promote an effective policy of import substitution. The process of industrial development would thus have to be geared to the export market.

According to Lewis, successful participation in export markets involves special competence on two levels. First, there is the obvious need to produce goods of acceptable quality. A second factor, which he apparently considered to be of equal if not greater importance, was knowledge in marketing techniques including advertising, financing and sales agencies in international centres. The establishment of effective selling arrangements would require time and experience. It was as a result of these considerations that he argued that foreign capital would have to play a central role in the development of industry, apart from the insufficiency of available local savings. He states clearly the importance he attaches to the role of foreign capital in the following manner: "The islands

cannot be industrialized to anything like the extent that is necessary without a considerable inflow of foreign capital and capitalists and a period of wooing and fawning upon such people."[27]

If foreign investment was of vital importance, this leads to the question of what would be the ideal form of such investment. Consistent with the views outlined above, Lewis argued that securing branch plants of already established enterprises would satisfy all of his conditions. In this way, not only would a region be deriving an enterprise of known technical competence in the production process, but it would also have an organization which was knowledgeable about the techniques of international marketing. Specifically, the ideal solution would be one in which foreign firms could be attracted to establish branch plants in the region and proceed to utilize these new operations as supply sources to some of their traditional export markets, instead of relying on their home-based operations. For example, in the Jamaican case, plants could be set up to supply markets in the Latin American area. In Puerto Rico, a similar result could be achieved if branches of mainland plants were established on the island and geared their operations to supply the island as well as mainland markets.

If foreign capital and capitalists, or in other words direct foreign investment, is to play the central role

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[27] Ibid.

in the development of the sector, what are the likely repercussions? This question could be answered by reference to the experience of other areas which had been the recipients of such investment. At the time when Lewis was writing, 1950, direct foreign investment had been mainly concentrated in agriculture and resource industries. This had resulted in the emergence of enclaves in the recipient countries, where the employment effect of such investment was more than offset, in the case of investment in agriculture, by the tendency towards a system of monoculture, land scarcity and the destruction of the small farmer. In the case of natural resources, the processing operations were excluded from the domestic economy and hence the benefits from the extraction of exhaustible resources were severely restricted. In substance, foreign domination had brought about a system of resource allocation and use which was not in the short and long term interests of the economy.

Lewis argued that these experiences were not relevant to a consideration of the possible repercussions of foreign investment in industry. He suggested that the main effect of foreign investment would be to raise income and introduce knowledge of industrial practices. In an expression which is somewhat reminiscent of the textbook description of the adjustment mechanism of the perfectly competitive model he suggests that ". . . once the local people have learnt the job and built up their own savings they can

go right in."[28]

The next stage in the analysis was concerned with the problem of identifying the types of industries to attract. This would involve the dual consideration of trying to decide which industries could most effectively exploit the main attractive feature of such an economy, low labour costs, and help ease its most fundamental problem, high unemployment. At the same time it would be necessary to ensure that such industries would be minimally affected by such economic drawbacks as access to markets, raw materials and fuel costs. He suggested that the following criteria should be adopted.

First, a special attempt should be made to identify and attract those industries in which the ratio of wages to gross output was high. This ratio was thought to be a good indicator of labour intensity. Additional indicators of labour intensity which could be employed were the ratio of wages to net output, net output per person employed and the amount of mechanical horsepower in use per operation. A high ratio of wages to net output would indicate that capital charges would be relatively small. In addition, low net output per person employed as well as low usage of mechanical horsepower would all be indicative of labour intensity.

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[28] Ibid., p. 39.

He suggested that adoption of the following criteria would minimize the unfavourable features of the economy. Operations which made high use of fuel and heavy raw materials should be avoided on the basis of cost. Furthermore, it was suggested that the type of operation in which the average size of establishments happened to be large would be unsuitable. This was based on the difficulties likely to be associated with administering such an establishment, as well as those associated with marketing a large volume of output. On the basis of these criteria the industries deemed to be most suitable were textiles, clothing and those involving assembly operations.

Evaluation of the Lewis Model

It is important to note that the Lewis model did not call for an industrialization strategy based on import substitution. In this respect his approach differed from that of the Latin Americans as represented in the analysis of Prebisch at about the same period of time.[29] The emphasis placed by Lewis on the importance of developing an export position in manufactured products was indicative of his feeling that the limited domestic markets would render impractical a policy based on import substitution. The relatively large size of many Latin American countries

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

apparently resulted in there being less concern about the impact that the market constraint would have on the evolution of the sector. The shortcomings in this policy became increasingly evident by the early sixties and greater emphasis was placed on the importance of developing an export position in manufactured products.[30]

In evaluating the Lewis model one has to determine whether the overall strategy is consistent with the objective of bringing about the establishment of an effective manufacturing sector. As we indicated earlier he argued that a manufacturing centre is not just a collection of separate industries. It is only effectively established when there exists a considerable degree of interdependence between the various industries.

How will this interdependence evolve from a strategy based on foreign investment? We may trace out developments towards this end in an abstract form in the following manner. Let us assume that we are operating in a world in which there are a large number of investors engaged in a multiplicity of productive activities. Furthermore, the

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[30]This recognition is revealed by Prebisch in Towards a Dynamic Development Policy for Latin America (New York: United Nations, 1963) and in Towards a New Trade Policy for Development (New York: United Nations, 1964). This was also an issue in the controversy between the "Monetarists" and the "Structuralists." See, for example, D. Felix, "Monetarists, Structuralists and Import Substituting Industrialization," in Inflation and Growth in Latin America, ed. by W. Baer and I. Kerstenetzky (Homewood, Ill.: Richard D. Irwin, Inc., 1964).

goal of the individual investor is that of profit maximization. The goal of profit maximization is further sought after in each investment activity, rather than on the overall level of investment carried out by an investor. In addition, the decision to invest in any region or country would be based solely on whether the expected return on the investment would be higher than that which could be earned from any alternative location. Given this profit criterion, investment could be attracted by creating the necessary conditions to enhance the prospects for profits. This could be done through granting monopoly rights or tariff protection, tax concessions, capital subsidies in the form of providing factory space at low rental or subsidized loans for working capital purposes, as well as labour subsidies through public absorption of recruitment and training costs, which would normally be borne by the investor. These are in essence the types of incentives which would have to be provided.

Once the appropriate level of incentives was granted the foreign firm would then locate in the region. We could assume that the foreign firm would initially be engaged in the production of final goods both for the domestic and foreign market. The initial benefits to the country would be in the form of additional income as well as employment created. Once the initial breakthrough had been made, how would the sector evolve in this context? Since these operations would be designed to supply the domestic, as well as

the international market, their rate of growth would be a direct function of global expansion in income. Growth in world markets should then lead to growth in the level of operations, giving rise to increases in employment and income. With the growth of the sector, the incentives schemes could be employed to bring about the establishment of firms which could supply processed inputs, as well as firms which would utilize output from existing plants for further processing. Such interrelationships would come about because of the existence of pecuniary external economies. In the interest of profit maximization on each unit of investment, the individual investor would switch automatically to the least cost source of supply for his inputs.

This process of integration within the sector could also be associated with an increased measure of domestic participation. The increase in income which would have been generated would have facilitated an increase in savings by residents. The ability to observe the way in which the foreign plants functioned, as well as the emergence over time of more skilled personnel both at the managerial and operational level would create an environment suitable to domestic participation in the sector. The local investor would be free to operate as a supplier of inputs to the sector as there would be no other barrier to his participation once he could overcome the cost constraint. By a similar line of reasoning, output from existing firms could be

employed by local investors in operations designed to satisfy both the domestic and foreign market. Foreign investment would then act as a catalyst in the evolution of the sector and its final form in this particular context would need not then be in the emergence of an enclave system.

The conditions we have set out, however, are not a reflection on any real world situation and we will proceed to show that when these conditions are amended the basic Lewis strategy could be revealed to be inconsistent with his stated criterion for successful evolution of the sector.

The framework outlined above would be consistent with a model of perfect competition. It is now generally agreed that it is the existence of market imperfections which encourages investment abroad by firms.[31] The system of incentives recommended by Lewis would work directly towards creating such imperfections. In the context of an imperfectly competitive model an analysis of the operations of firms, based on the naive model outlined above, would no longer be suitable. Lewis had suggested that effort should be made to attract established firms to set up branches in the area. Such a subsidiary or branch plant would likely be an integral part of the overall operations of the parent firm both in terms of supply of processed inputs, raw

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[31] C. P. Kindleberger, American Business Abroad (New Haven and London: Yale University Press, 1969), pp. 11-13.

materials and marketing of the finished product. This would likely be the case for a number of reasons. First, the basic thinking behind the strategy was that of relocating parts of operations rather than trying to change the structure of operations. Secondly, such firms would be engaged in the production and marketing of brand name products. These firms would then be concerned about maintaining standards of quality as well as the economies which might be realized through centralized operation of advertising and marketing operations.

As a result of this integration with the operations of the parent company there would likely be great difficulties in the way of the growth of interdependence within the sector. The ability to charge a competitive price would not necessarily be sufficient to enable a new firm, whether local or foreign owned, to supply processed inputs to existing enterprises. A change in supply sources might not be in the interest of the overall international strategy of the firm. Intra-company transactions provide for a measure of flexibility in the costing of inputs which allow the best earning position for the company in light of the various tax jurisdictions within which it operates.[32] By a similar line

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[32]Kindleberger, op. cit., p. 29. The question of various tax jurisdictions and the implications for costs of firms operating in various national centres, as well as the difficulty of determining the appropriate share of head office expenses to be charged to the subsidiary, is discussed extensively by Dudley Seers in "Big Companies and Small Countries: A Practical Proposal," Kyklos, XVI (1963).

of reasoning, the existence of a certain pattern of production activities would not mean that a potential investor could easily anticipate using the output of given enterprises as inputs for further stage processing since the output of such enterprises could be already committed as inputs for other branches of the parent firm located elsewhere. An expansion of output, in such cases, to meet additional demand would not be a likely occurrence, since from the point of view of the parent company the new firm would be a potential competitor in some of its established markets.

Since the intention was to have firms incorporated within a global trading system, it would appear on the surface that their expansion over time, which would be the main determinant of growth in income and employment, would be based on the overall growth in world markets. In the context of a branch plant situation such growth would not be automatically assured. The decision to expand would be taken by the parent company. That being the case, expansion would be carried out if growth was taking place in the market areas which had been designated by the parent company for its subsidiary's operations. On the other hand growth in alternative market areas, which, on the basis of an assessment of costs, could be supplied by the subsidiary, might in fact be barred to the subsidiary, in view of the fact that participation in that area would not be consistent with the overall marketing strategy of the parent company.

Lewis had argued that foreign investment would create income and employment. If local people were prepared to exercise thrift and exercise initiative, by observing industrial practices, there would be little to prevent local participation in the sector. The branch plant approach could work contrary to this trend for the following reasons. The principal source of savings for investment purposes is business and not personal savings. Since non-wage income would accrue to non-residents the potential savings for domestic investment would have to come from wages. In a very poor underdeveloped country one could expect the major part if not all increases in income initially to be devoted to consumption.

Growth in personal savings, so far as it has a role, would be a function of growth in wages and employment, which in turn would be dependent on techniques adopted, labour or capital intensive in the production process, as well as the scale of operations. Lewis had emphasized the importance of labour intensity, yet most of the recommended incentives were subsidies to capital. The prospective foreign investor could accordingly view the situation in the following way. The initial level of wages though low would likely be a transitory phenomenon. The period of tax exemption, though definitive, could only be realized to the maximum extent that profits were not repatriated in light of the standard form of double taxation agreements. It is possible that the

investor might initially be attracted to a labour intensive type of activity but over time the optimum strategy could be in the form of plowing back capital for capital deepening. As a result, even after the expiration of the tax exemption period, the level of taxable income could be offset through allowances for depreciation. Alternatively, it might be possible to argue more directly, given the proposed incentives, that there would initially be a strong incentive to establish capital intensive enterprises. Moreover, as Kindleberger suggests, the use of management, supervisory and possibly even semi-skilled personnel from the parent company introduces a bias towards the use of technology and factor proportions used in the home country.[33] This would mean the use of capital intensive technology.

Apart from the question of ability to participate through access to adequate savings, the branch plant structure would likely create difficulties in the way of participation even if the necessary funds were available. This could be the case even in those areas of productive activity of limited interest to the foreign investor, for example, the provision of items aimed directly at the local consumer market. Even here the local investor might be faced with the problem of meeting the standards of marketing practised by the established foreign firms. This could represent an

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[33] Ibid., p. 147.

additional cost burden in view of the fact that within this model the local market would be a small element in the overall operations of the subsidiary.

We indicated earlier that Lewis had placed a great deal of emphasis on the importance of exports of manufactured products. In the case of Puerto Rico, a country having free access to the entire mainland market, his package of proposed incentives were quite consistent with bringing about the establishment of firms established to supply this entire market area. However, in Jamaica, where access to international markets was far more restricted, such policies as recommended were consistent with branches of firms being established for the sole purpose of supplying the local market. In this instance firms would be faced with the problem of weighing the additional cost which could arise from transferring some manufacturing activity to the island or with the prospect of complete loss of the market should some other firm move in to provide the local market and receive the benefit of tariff protection. The additional cost likely to be involved in manufacturing solely for the local market may not be particularly significant. It would involve the shipment of components instead of the finished product to the market area. The capital costs of establishing a new plant could be offset through the tax concessions. Costs associated with underutilization of capacity and less efficient local labour would be at least partly ameliorated

by the higher prices which could be charged, given the degree of commercial protection which would be received. Overall, the costs would likely not be significant, there would be minimum disruption to the international operations of the company and moreover it would be a means of maintaining its international competitive position. The desire by international oligopolies to maintain their competitive positions has been held to account for the existence of several uneconomic plants in Latin American countries, operating with high commercial protection.[34]

The package of commercial incentive measures would not only help to promote import substitution, with its associated shortcomings of high cost, inefficiency and balance of payments problems, but would also work against the spread of industrial interdependence. The imposition of high tariff rates on finished products and low or zero tariffs on capital equipment and components creates an additional disincentive to manufacturers to try to derive inputs from domestic sources. The lower the percentage of domestic value added in the production process the greater would be the degree of protection received on local operations by the manufacturer and the higher the potential profits on his operations. There would be little interest on the part of

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[34]C. F. Diaz Alejandro, "Direct Foreign Investment in Latin America," in The International Corporation, ed. by C. P. Kindleberger (Cambridge, Mass.: The M.I.T. Press, 1970), p. 326.

initial manufacturers to engage in the production of components for its local operations. Moreover, they would have a vested interest in resisting an application for firms from any source to receive a measure of protection to engage in such production.[35]

In summary, a policy of industrialization based on the attraction of branches of foreign firms could result in such firms being integrated internationally with their foreign parents, giving rise to a situation in which there was considerable internal fragmentation of the sector. The growth in income and potential for an increase in savings allowing for an increased measure of local participation in the sector is by no means automatically assured within the context of the model. In point of fact we have suggested that growth in employment, income and savings would very likely lag behind what one would expect from an observation of overall growth in the sector. Furthermore, the increased dominance of the foreign element in the sector over time would impose a severe constraint on domestic participation should the necessary funds become available. Finally, although the importance of developing an export position in manufactured goods was realized, it was possible that Jamaica, which did not have the export possibilities open to

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[35] A. O. Hirschman, "The Political Economy of Import-Substituting Industrialization," The Quarterly Journal of Economics, LXXXII (1968), 17-18.

Puerto Rico, could end up by adopting this strategy with a manufacturing sector dominated by firms engaged in import substitution activity.

We will now proceed with an outline of the principal features of the Puerto Rican and Jamaican incentives.

The Puerto Rican Incentives

In Puerto Rico, tax exemption was the principal element in the strategy for attracting investment capital. The exemption provisions were as follows. Exemptions were granted for a ten-year period on business and property incomes. Dividend income of resident stockholders of tax exempt corporations was also exempt from personal income tax. In addition, production equipment, materials and exported products were exempt from excise taxes.[36] These provisions were designed specifically to attract investment from the continental United States. As far as the mainland investor was concerned, the direct benefits of these exemptions could only be realized if he were not liable to pay the federal income tax. This would be the case, for example, of the United States investor who moved from the mainland to Puerto Rico. Alternatively, there was a special provision in the United States Tax Law which allowed an investor who resided in the United States, but who earned 80 per cent of

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[36] H. C. Barton, "Puerto Rico's Industrial Development Program 1942-1960," p. 5. (Mimeographed.)

his income from Puerto Rico, including 50 per cent from active conduct of a business on the island, to gain an exemption on that income. Finally, earnings not repatriated would also be tax exempt.[37]

The Development Company, which had been established in 1942, was reorganized in 1950 and became known as the Economic Development Administration or Fomento. Under the general supervision of this organization other measures to attract mainland investment were administered. These included the provision of factory buildings at low rental rates, assistance in the recruitment of specially trained personnel and the negotiation of labour contracts. Finally, it was responsible for a widespread public relations programme carried out through agencies established in major American cities publicizing the profitability of island investments as well as providing guidance to prospective investors concerning the general environment of statutory regulations which would govern their activities on the island.[38]

Apart from the measures outlined above, an effort was made to publicize the general low level of island wages. The wage level was to a considerable extent beyond the

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[37]Lewis, "Industrial Development in Puerto Rico," p. 162.

[38]G. K. Lewis, Puerto Rico: Freedom and Power in the Caribbean (New York: Monthly Review Press, 1963), pp. 172-73.

control of the island government. The United States Fair Labour Standards Act, Social Security Act and minimum wage legislation was applicable on the island. Arrangements were worked out for special exemptions from the provisions of these acts in order to permit the island to retain at least on a temporary basis the advantage of its lower labour costs. The Commonwealth Minimum Wage Board functioned as the regulatory agency on the island for the control of wages.

Although an elaborate system of incentives was formulated for the purpose of attracting mainland business enterprises, no specific measures were enacted at the outset to assist residents who were considering investment in industrial enterprises. Appreciation of the special difficulties likely to be faced by the local investor and accordingly the need for special consideration was not explicitly recognized until the late fifties. A special commission[39] was established to investigate and make recommendations to stimulate local investors. It was recommended that there should be a distinct organizational separation between mainland and Puerto Rican promotions within Fomento. In addition there should be a functional division within the organization between operations and services. The operations section would have the responsibility for exploring the

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[39]Economic Development Administration, Stimulating Greater Local Investment in Manufacturing Enterprises in Puerto Rico (1960).

feasibility of individual projects for the purpose of identifying new areas for local investment or to facilitate the expansion of some existing enterprises. Feasibility studies conducted under the auspices of this agency would have to examine some of the specific barriers in the way of breaking into the mainland market. These would vary from such long range problems related to standardization, quality control, design and technological lags in operations.

It was also recommended that new arrangements should be made for the provision of financial assistance to local firms. It was suggested that a special organization should be established to lend or invest risk capital and that the procedure of applying for loans should be simplified. This would be achieved if the lending agencies were to devise procedures which could assist the prospective applicant in preparing his application, thereby reducing the time taken to accept or reject a proposal. There was a further suggestion to the effect that economy in the use of limited government funds could be realized if the development company would dispose of its investments as soon as they could be financed from other sources.

There was also a recommendation to the effect that arrangements should be made to allow new industrial ventures to operate under royalty and brand name agreements with mainland manufacturers. This would be encouraged by allowing tax exemptions on patent or royalty income paid to

companies established by mainland firms to handle such royalty or patent arrangements. In so doing, it was expected that the advantages generally associated with branch plant operations, marketing, managerial and technical would now be retained with the benefit of local ownership.

The Jamaican Incentives

In many respects the approach adopted by the Jamaican government was a piecemeal one in which amendments were made in an attempt to make the island a more effective competitor with Puerto Rico for foreign investment. The first legislation, the Pioneer Industries (Encouragement) Law of 1949 was designed to encourage both local and foreign investors to establish labour intensive industry and to encourage the retention of profits on the island. Firms operating under the act were allowed to write off their capital in five equal installments over a period extending up to eight years against their profits.[40] The basis on which pioneer status was to be granted would be determined by the number of pioneer factories already established or about to be established for the manufacture of the product in question, as well as the expected output of the factory. The speed with which the applicant expected to commence operations would also be a determining factor. Pioneer manufacturers were also

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[40]A. Brown, "Economic Development and the Private Sector," Social and Economic Studies, VII, No. 3 (1958), 110.

granted permission to import capital goods without payment of tonnage tax and customs duties for a period of five years. There was the reservation, however, that the schedule of allowable imports could be revised to exclude those capital items which in some subsequent period were being locally produced. There was no exemption for industrial raw materials.[41]

The initial legislation was eventually found to be subject to a number of shortcomings. It tended to favour the establishment of capital intensive operations. Furthermore, the special emphasis placed on pioneers meant that existing business enterprises, which may have considered expansion, would not be able to benefit from its provisions. With a view to overcoming these shortcomings the Industrial Incentives Law was passed in 1956.[42] In addition to the conditions set out in the previous legislation, approval to operate under the law was also to be based on the extent to which the enterprise would contribute to employment, as well as the size of the wage bill, the use of local raw materials and skills, the degree to which existing capacity for the manufacture of the product was sufficient to meet demand for the product and the risk element involved.[43]

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[41]D. MacFarlane, "A Comparison of Incentive Legislation in the Leeward, Windward Islands, Barbados and Jamaica," Social and Economic Studies, Supp., XIII (1964), 2.

[42]Brown, op. cit., p. 110.

[43]MacFarlane, op. cit., p. 23.

This act offered two forms of tax relief. By one option a firm could receive a seven-year tax exemption on profits. During this period a notional depreciation allowance would be taken against its assets. At the end of the period, annual depreciation allowances would be allowed on the original cost of the assets less the notional depreciation allowances already granted. Losses which had been incurred during the period and not written off could be carried forward for an additional period of six years without taking into account any depreciation of assets. The second granted a four-year tax exemption during which depreciation charges would be postponed. In the fifth and sixth years tax exemptions would be reduced to two-thirds and one-third of income, respectively. In the sixth year the company would be in a position to claim full depreciation on the value of its assets as from the date of their purchase. This legislation also adopted the Puerto Rican feature of tax exemption on dividend income for both residents and non-residents, as long as the latter were not subject to taxation on such income in their home country.[44]

In the same year, 1956, legislation was passed, which was specifically designed to promote the establishment of export industries. A firm applying to operate under this law could opt for the concessions allowed by either of the

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[44] Ibid., pp. 25-26.

laws previously discussed. The additional incentive provided by this special law was the provision for duty-free imports of raw materials in addition to capital goods. These benefits could only be received by firms whose total output would be exported.[45]

Along with the fiscal and commercial incentives the government followed the Puerto Rican pattern in the establishment of an industrial development corporation. The function of this corporation was to assist in the attraction of foreign investment through the work of public relations agencies in foreign financial centres. In addition, it was to help develop industrial estates and construct factory buildings for lease to local and foreign companies. Apart from this, it was provided with funds to participate in the ownership of enterprises and in extreme cases could assume control of failing enterprises. This last function was subsequently transferred to the Development Finance Corporation.[46]

The main part of the study is concerned with an examination of the evolution of the sector in the respective countries between 1950 and 1967, where it will be demonstrated that the pessimistic evaluation of the model outlined earlier was justified. A brief summary of the major findings is presented below.

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[45] Ibid., p. 26.

[46] Ibid., p. 30.

The Development Pattern, 1950-1967[47]

In this period both countries experienced rapid real rates of growth in Gross Domestic Product. In Puerto Rico the annual real rate of growth in G.D.P. was 6.7 per cent for the decade 1950-1960 and 9.0 per cent between 1960 and 1967. In Jamaica the real rate of growth in G.D.P. was 6.7 per cent on an annual basis. The manufacturing sector emerged over the period in both countries as being the single most important contributor to G.D.P. This sector contributed approximately 23 per cent to the value of G.D.P. in Puerto Rico and 15 per cent in Jamaica.

In 1967, there were approximately 58,000 people employed in the manufacturing sector in Jamaica. This represented 10.9 per cent of the employed labour force. This sector was ranked third in terms of its contribution to employment and lagged far behind the agricultural sector, which accounted for 43 per cent of the employed labour force. In Puerto Rico there were 130,000 people employed in the manufacturing sector. This accounted for 18.9 per cent of the employed labour force. This sector was second in importance to the service sector which provided employment for 30 per cent of the labour force. The agricultural sector which in 1950 had been the single most important source of employment, accounting for 36 per cent of the employed

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[47]The information provided is a synopsis of the findings outlined in Chapters IV and V.

labour force was in 1967 providing employment for 14 per cent of the labour force.

In Puerto Rico, exports of manufactured products had emerged over the period as being the major traded items, representing approximately 75 per cent of the island's exports. In excess of 90 per cent of the island's exports were destined for markets in the United States. The single most important export item was clothing, representing approximately 25 per cent of island exports.

Exports of manufactured goods, apart from crude sugar, had been virtually non-existent in Jamaica in 1950. By 1967, exports of manufactured products represented approximately 10.6 per cent of total island exports. Over one-third of the value of these exports consisted of clothing. The major export markets were the United Kingdom, the United States and Canada. The general picture was one of modest growth in exports of manufactured products. Unlike Puerto Rico, the industries established were mainly concerned with supplying the local market.

In spite of the rapid growth in income experienced by both countries as well as the expansion in the manufacturing sector, both countries in 1967 were still suffering from chronic unemployment. In Puerto Rico the rate of unemployment in 1967 was 12.2 per cent. There was no officially published data on unemployment for Jamaica for that year. The last date for which official information was available,

1960, revealed an overall rate of unemployment of 13.5 per cent. This estimate excluded all persons who had never held a job. However, in view of the substantial decline in out-migration since that period as well as estimated rates of growth in the labour force in relation to the number of additional jobs created, unofficial estimates place the level of unemployment in 1967 at approximately 20 per cent.[48]

The existence of continued high levels of unemployment in both countries indicates that the industrialization strategy had not worked effectively towards meeting its prime objective. The reason for this failure was in large measure due to the fact that the sector evolved along the lines suggested by the more pessimistic evaluation of the Lewis model discussed at an earlier stage in this chapter. The failure of the programme to make a more significant contribution to the unemployment problem can at least in part be related to the fact that the growth of the sector was not associated with either any trend towards interdependence within the sector or between the sector and other sectors of the economy. In Puerto Rico, there existed in many industrial sectors plants involved in different stages of processing operations. In the textile and apparel industries this was the case, yet there were virtually no inter-industry sales. These were, in fact, among the industries which

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[48] O. Jefferson, The Post-War Economic Development of Jamaica (Jamaica: Institute of Social and Economic Research, University of the West Indies, 1972), p. 32.

showed the highest percentage of exports in relation to the value of domestic production.[49] This suggests that operations on the island were integrated with mainland activities and the relationship between island firms and their mainland parents limited interrelationships in operations on the island.[50]

In Jamaica the expansion of the sector was associated with a decline in the domestic input coefficient and a corresponding increase in the import input coefficient.[51] Unlike Puerto Rico, where the market constraint was absent, Jamaican industry was in the main established for the purpose of supplying the domestic market. In other words, the effect of the policies adopted resulted in a pattern of industrialization based on import substitution. The dominance of import replacing industries was encouraged by a tariff system which provided high rates of protection for domestically produced items extending up to complete

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[49] See Chapter V, Table 5-18.

[50] In a report on industry in Puerto Rico, prepared by the Economic Research Division of the Chase Manhattan Bank, it was emphasized that the industrial future of the island depended on the degree to which industries became integrated into the economy. It was pointed out that most activities involved processing imports of raw material and semi-finished products from the United States, generally from affiliates and exports of almost all the finished products back to the mainland. In support of this statement they cited the cases of the shoe, apparel, electronics, metal products and chemical industries. Chase Manhattan Bank N.A., Economic Research Division, Industry in Puerto Rico (New York, 1967), p. 26.

[51] Chapter IV, Table 4-16.

prohibition of imports while at the same time allowing for free imports of capital goods and in some instances duty-free imports of material inputs or alternatively imposing only nominal duties on such inputs. The high effective rates of protection which the system provided, the effective rate in most instances being between two to three times the nominal rate, provided little incentive to manufacturers to try to seek out or establish local sources of supply.[52]

Although the growth of the sector mainly involved import substitution, the country was able to avoid the balance of payments crises associated with this type of industrial development in many Latin American countries. There are a number of reasons for this difference. In the first place Jamaica does not have an independent banking system. By terms of the Sterling Exchange Standard, which was in existence up to 1956, local note issue had to be backed 100 per cent by sterling assets. Local currency could be exchanged for sterling at par value and through the exchange of sterling other foreign currency could be obtained. This 100 per cent reserve system then meant that money supply changes would be determined by changes in holdings of sterling claims arising from international transactions or official grants.

The establishment of a central bank in 1961 did not bring about independence in monetary management. The 100 per cent reserve requirement was dropped but the link with

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[52]Chapter IV, Tables 4-18 and 4-19.

sterling was retained as evidenced by the decision to follow the British devaluation in 1967 and to follow the sterling appreciation in 1971.

Secondly, the commercial banking system is dominated by branches of foreign banks, predominantly Canadian commercial banks. These banks can freely transfer funds from their head offices should this be necessary to support their local operations. Thirdly, a major source of foreign exchange over the period was the capital inflows associated with investments, not only in manufacturing but more importantly in the bauxite industry. Associated with this was the fact that the bauxite companies paid their taxes in foreign exchange and converted foreign exchange to local currency for working capital purposes. Finally, the period witnessed a considerable expansion in the tourist industry, an additional source of foreign exchange. No difficulty was experienced in financing the growing trade deficit over the period. In fact between 1953 and 1968 the country's foreign exchange reserves increased more than threefold.[53] Nevertheless, under this quasi gold standard system a balance of payments crisis can be revealed in the form of a general decline in economic activity, income and employment.[54] There was some evidence of this mechanism at work in the economic slowdown in the

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[53]Jefferson, op. cit., p. 216.

[54]C. Thomas, Monetary and Financial Arrangements in a Dependent Economy (Jamaica: University of the West Indies, 1965), p. 106.

immediate pre-independence period, 1961-1962.

The early success of the Puerto Rican programme, stimulated by the Korean War boom, created a great deal of optimism on the island. By 1952, officials were predicting that severe long term unemployment for men would shortly be eliminated.[55] A more realistic appraisal of events was brought about by the slowdown in economic activity associated with the recessions of 1954 and 1958. It was realized that the goals of the programme would take somewhat longer to be realized but there were no doubts about the overall correctness of the programme. Attention was focussed on the large number of plants established, the diversity of their operations and the direct employment generated in such plants. It was pointed out that contrary to the traditional view of effective economic growth being able to take place only at the expense of low living standards for the bulk of the population, the Puerto Rican programme, based on the attraction of private capital, was able to achieve expansion of productive capacity and also of per capita living standards at the same time.[56] It was suggested that the criteria necessary for successful initiation of this approach were currency stability, which could be achieved through linking the currency of a country to that of a major country which

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[55]Ross, op. cit., p. 130.

[56]W. Baer, "Puerto Rico: An Evaluation of a Successful Development Program," Quarterly Journal of Economics, LXXIII (1959), 662-64.

would be a potential supplier of capital and at the same time entering into a long term customs agreement, something like a customs union, with this country.[57]

There was, however, a body of opinion which held that the generalized approach towards the attraction of industry would likely yield short run benefits to the economy but was not contributing towards the creation of an industrialized economic system. There was being developed, instead, a conglomeration of individual factories with no particular ties to Puerto Rico or to each other. As a result a change in circumstances could lead to a rapid disintegration of the system.[58]

Recognition of the importance which should be attached to the degree of interrelationship between industries was revealed in the establishment of a fully integrated petro chemical complex in the early sixties. It was designed to make extensive use of local raw materials, such as limestone and clay, as well as part of the output from the petroleum refineries. The refineries were to provide inputs for the production of synthetic fibres and plastic products.[59] The move towards the establishment of the industrial complex was

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[57] Ibid., pp. 665-70.

[58] Ross, op. cit., p. 151.

[59] An outline of the method to be adopted, as well as the criteria for the establishment of a successful industrial complex and the case for the particular Puerto Rican experiment can be found in W. Isard, E. Schooler and T. Vietorisz, Industrial Complex Analysis and Regional Development (Cambridge, Mass.: The M.I.T. Press, 1959).

a separate promotional feature of the programme, with there being no evidence of any effort being made to establish greater interdependence in all industrial sectors.

In Jamaica, the period from 1950 to 1960 was also one of very rapid expansion. Gross Domestic Product increased from J$11.4 million to J$48 million. Although the rate of growth of manufacturing output was impressive, the rapid growth in income was mainly due to non-manufacturing activity, mainly the bauxite industry. This activity, which started in 1953, was by 1960 contributing 9.6 per cent to G.D.P. at factor cost but less than 1 per cent to overall employment.

In spite of these impressive developments it was apparent that the country was still faced by a critical unemployment problem. The population census conducted in 1960 revealed that approximately 13.5 per cent of the labour force was unemployed. A labour force survey conducted in 1957 had revealed that unemployment was considerably higher than the national average for those members of the labour force under the age of thirty as well as being higher for females than for males.[60]

In a series of articles written for the local newspaper on economic problems faced by the island, Professor Arthur Lewis pointed to unemployment as being the single most important problem.[61] He argued that industry could

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[60] Five Year Independence Plan, 1963-1968, p. 35.

[61] W. A. Lewis, "Jamaica's Economic Problems," The Daily Gleaner, Supp., September, 1964.

make a more important contribution to the problem as many manufactured items which were then being imported could be produced locally. It was his view that the main obstacle in the way of establishing industries for the purpose of replacing imports was high local costs of production. High cost was in his view not a sufficient condition to prevent the establishment of industry, in light of the employment needs of the country. Selected industries should be provided with adequate protection. In order to ensure that such protection did not give rise to profiteering or encourage inefficiency, an independent Tariff Commission should be entrusted with the responsibility of recommending what level of protection should be provided and whether tariffs should be reduced on previously protected industries.

In the long run something would have to be done to deal effectively with the cost problem. The high costs were a reflection on the relative shortage of local people with the necessary skills for manufacturing operations. This meant that employers had to rely on foreigners and could only hope to attract such people by offering them higher levels of remuneration than they could earn from similar jobs in their home countries. The limited number of local people with the necessary skills was also favourably placed to demand relatively high salaries. Ultimately the solution to the problem in his view rested on an expansion as well as a change in the educational system to provide the economy

with a larger number of people with the necessary skills required in industry.

Lewis had taken an explicit position in favour of a policy of import substitution for Jamaica. In advocating this approach no attention was paid to the necessity of promoting a greater degree of interdependence both within the sector and between the sector and other sectors of the economy. Given the established pattern of tastes for a wide variety of name brand imported manufactured products a policy of import substitution would involve a continuation of what was already taking place, namely, production based on assembly of imported components involving limited domestic inputs. It must be pointed out, however, that Lewis saw the solution to the problem of unemployment as involving a restructuring of all sectors of the economy. The stabilization of costs, which could come about through the enactment of an incomes policy, would help to improve the competitive position of the export agricultural sector, as well as industry, and slow down the increasing capital intensity of production activities. He viewed the growth in capital intensity as a device adopted by producers to offset increasing labour costs. This in turn was used to explain why increases in output were associated with such modest increases in employment.

In a series of lectures given at McGill University in 1964,[62] William Demas conducted an extensive review of the overall problems of development faced by a small underdeveloped country as well as the difficulties which have to be overcome in the promotion of a manufacturing sector. He indicated that a policy of manufacturing development based on import substitution would have limited scope in light of the absence of a diversified resource base and the fragmented domestic market due to public identification with brand name products. Manufacturing for the export market would then be essential but in this regard he acknowledged that in order to meet international competition the use of capital intensive technology would be unavoidable. As a result, although the development of a manufacturing sector would be an essential part of the development process, this sector would be unlikely to make an effective contribution to the employment problem.[63] Demas emphasized the importance of local participation in the development of the economy. However, he thought that such participation could be reconciled with a continued flow of foreign investment and, like Lewis, argued that the key to the development of a local entrepreneural class rested on the exercise of thrift by individuals.[64]

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[62] W. Demas, The Economics of Development in Small Countries (Montreal: McGill University Press, 1966).

[63] Ibid., pp. 132-33.

[64] Ibid., p. 137.

A somewhat different approach was taken by another West Indian economist, Lloyd Best, to the unique problem of development created by size.[65] Best saw the problems created by the existing pattern of demand and inappropriate technology as being inextricably tied to the reliance on foreign investment and the dominance of international corporations in the functioning of the economy. In his view development strategy should be directed towards ending this reliance on foreign capital and establishing effective local control of the economy.

In light of the various issues outlined above there has been increased interest in adopting a regional approach to the problem. Evidence of this is seen in the participation, if somewhat reluctantly, of Jamaica in the Caribbean Free Trade Association established in 1968. It has been pointed out, however, that traditionally structured economic associations, be they of the free trade area or customs union variety, will not be adequate to overcome these basic difficulties. What will be required is a form of association which involves integration of agricultural and industrial activity on a regional basis with agreement on the path of development to be followed by the participants over time.[66]

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[65] L. Best, "Size and Survival," New World Quarterly, Guyana Independence Issue (1966), pp. 58-63.

[66] An outline of the potential framework for such an approach was provided by H. Brewster and C. Thomas, The Dynamics of West Indian Economic Integration (Jamaica: Institute of Social and Economic Research, University of the West Indies, 1967).

In most discussions of the development strategy adopted by Puerto Rico, emphasis is placed on the unique opportunities afforded the island by unrestricted access to the mainland market. As a result, the growth of the sector was associated with a great expansion in exports of manufactured products, whereas, in Jamaica, the new firms geared their operations mainly to supplying the local market. In spite of this difference the experience of both countries over the period with the common strategy adopted was very similar. Both countries experienced rates of growth in income but continued high levels of unemployment. There was no significant trend towards the growth of interdependence within the sector or between the sector and other sectors of the economy. Moreover, particularly in the case of Puerto Rico, there was no significant growth in local participation in the sector.

Accessibility to external markets and investors is then not sufficient. Specific action directed towards ensuring greater utilization of domestic inputs is required. This policy has been adopted by some countries, but this policy is generally not well accepted by the foreign investor, based on the fact that this condition often results in an unsatisfactory quality of processed inputs, delays in

delivery and generally adds to operating costs.[67]

A strategy based on foreign investment implies a reliance on foreign technology. The manufacturing sector in both countries revealed a capital intensive bias, a development which was clearly not in their best interests. The foreign firms utilized the techniques with which they were familiar. As Hymer argues:

> Basically, the problem seems to be that underdeveloped countries need most of all not the technology used in advanced countries, which is often ill-suited to their resources, but the ability to discover and develop techniques of their own. I am doubtful that firms whose center of gravity is the developed world will be of much use in the task. They are not truly international corporations but are really national firms and their horizons are limited by their environment.[68]

The capital intensity which tends to categorize the manufacturing operations of foreign firms carries further implications. Capital intensity usually implies high labour productivity, giving rise to a situation whereby high incomes are earned by employees. There is a tendency then towards a growing maldistribution of income. Apart from the social undesirability of this type of development, growing income inequality further complicates the problem of dealing

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[67] These issues are discussed in detail by J. Baranson, "Transfer of Technical Knowledge by International Corporations to Developing Countries," American Economic Review Papers and Proceedings, LV (May, 1966), 259-67, and W. Skinner, American Industry in Developing Countries (New York: John Wiley & Sons, Inc., 1968), Chapter VI.

[68] S. Hymer, "Progress and Transfer of Technical Knowledge," American Economic Review Papers and Proceedings, LVI (May, 1966), 277.

with the employment problem. The limited number of high income earners provides the effective market for manufactured goods. Their demand will be geared towards durable consumer goods. Thus the growing domestic market for manufactured goods will lead to further production of goods of the capital intensive variety, maintaining or enhancing the income inequality. There will be limited interest in producing labour intensive goods as there would be no effective demand for these items. It has been suggested that this could lead to an alliance between the foreign investor and local high income workers, making it very difficult on the part of government to initiate policies which would yield benefits for the community as a whole.[69]

The experience of both of these countries with their industrialization programmes indicates that attracting industries with the use of a package of incentives can lead to substantial growth in industrial output and income. However, such growth need not be associated with substantial reductions in unemployment, or growth of a domestic entrepreneurial class. In other words it was clearly not a short-cut towards self-sustained growth. The following sections of the study first trace the historical developments in each country prior to their deliberate programme of

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[69]S. Hymer, "The Efficiency (Contradictions) of Multinational Corporations," American Economic Review Papers and Proceedings, LX (May, 1970), 447.

industrialization. This is followed by an evaluation of the development of the manufacturing sector in each country over the period from 1950 through 1967. The experience of both countries reveals the shortcomings in the strategy which they adopted.

CHAPTER II

JAMAICA: THE PRE-INDUSTRIAL SETTING

Introduction

In this chapter we will conduct an examination of the evolution of the Jamaican economy over a period in the island's history, beginning with the abolition of the institution of slavery and ending at the time of the Second World War. This period is important in that not only was there the initial drastic social and economic change associated with the abolition of slavery, but the period was also characterized by a number of developments, a knowledge of which helps in understanding the nature of the problems and the response to these problems in the contemporary period.

The plantation system in Jamaica had flourished behind the protection provided by the mercantilist policies of eighteenth-century England. The rapid accumulation of wealth by the planters combined with the corrupt electoral system of the period enabled the planter class to gain a considerable amount of political power. Understandably they exercised this political power in the English Parliament to serve their own interests, specifically in securing a closed market and high prices for sugar exported from the area. The ability to exercise monopoly power in the market through

the use of political power placed them in a position where there was little incentive to try to improve the profitability of their operations through increased efficiency. Their response to weakening markets was to create an artificial scarcity through restricting their volume of output. By the turn of the nineteenth century the Jamaican plantations were already high-cost inefficient operations and the need for reform was evident even before the abolition of slavery brought about the need to adjust to wage labour. We will now proceed with an examination of developments in the economy in the immediate post-emancipation period up to 1865.

Stage I: The Post-Emancipation Period

The two occurrences which had the most far-reaching effect on the economy of the island in this period were the introduction of wage labour and the loss of a protected market for sugar. The latter development came about with the move to complete free trade by Britain by the 1850's. The introduction of wage labour had an important impact on the economy in view of the fact that the reluctance of the planters to adopt new techniques in the earlier period meant that production was highly labour intensive. Under the slave system, operating labour costs could be held to modest levels since the slaves provided the major portion of their food requirements from their provision grounds. All other things being equal, the need to pay wages then meant a very

substantial increase in the cash requirements of the plantation operators.

The absolute size of the wage bill would of course be directly dependent on the wage rate. We could look at the factors underlying the demand and supply for labour in this situation in the following way. First of all, on the demand side, with given sugar prices and techniques of production there would be little variation in the quantity of labour demanded as well as the wage rate which employers would be prepared to pay. On the supply side the quantity of labour available at various wage rates would depend on the absolute size of the labour force, the cost of imports, the alternatives to plantation work, as well as the degree of psychological resistance to any participation in plantation work. In this instance the latter two determinants were important factors in establishing the level of wages. There were alternatives to plantation work in the form of own account farming in view of the fact that the plantations had used only a part of the land suitable for agriculture. In addition, there was available land in the more mountainous parts of the island which had been left idle as it was unsuitable for plantation agriculture, but could be used for peasant farming. The psychological resistance to further work on plantations was also significant partly as a result of memories of unpleasant experiences under that system, as well as the strong desire on the part of the ex-slaves to

fully assert their new-found freedom and independence. The planters had traditionally received their cash advances from British merchant houses, which in turn were responsible for marketing the crop. By the time of emancipation a great many of the estates were already heavily mortgaged and 90 per cent of the estates were allegedly mortgaged beyond their value.[1] As a result a great deal of difficulty was experienced in raising additional working capital requirements. The planters were thus faced with a severe cash shortage which would have made the process of adjustment very difficult, even if they had been prepared to carry out any adjustments.

A factor of significance in an evaluation of the economic adjustment in this period was the economic philosophy of the planter class. As Curtin points out, "Belief in the essential disequilibrium between Jamaican land and labor became the central point in the economic creed of the planting class: it was used to explain their failure in much the same way as it was used to predict that failure."[2]

The slow rate of population growth in the period of slavery together with the land area available for agriculture could be used to indicate the possibility of the emer-

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[1] G. Eisner, Jamaica 1830-1930 (Manchester: Manchester University Press, 1961), p. 196.

[2] P. D. Curtin, Two Jamaicas (Cambridge, Mass.: Harvard University Press, 1955), p. 133.

gence of labour scarcity with a move to free labour. However, as Hall points out, the belief that there was a very large amount of free land was based on inadequate surveying and an overestimation of the size of the island.[3]

There were two aspects to the labour shortage situation. One was the cost of hiring labour and the second was the difficulty in maintaining a regular work force. The problem of labour continuity arose from the fact that many workers who were prepared to do plantation work also had their own lands on which they wanted to devote their time. The planters' response to the problem of cost and continuity was to try to exercise monopoly power by working out an agreement whereby long term employment contracts would be mandatory as well as by attempting to restrict land sales for small settlements. This latter measure would reduce the options open to workers and place the planters in a position where they would be better able to enforce lower wages.[4]

These measures failed for the following reasons. The terms of the employment contracts were so severe that

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[3]D. Hall, Free Jamaica 1838-1865 (New Haven: Yale University Press, 1959), pp. 17-18.

[4]The unwillingness to utilize wage incentives as a means of overcoming labour shortages has been cited by Myrdal as being a reflection on the retention by employers in the colonial period of mercantilist notions of the sixteenth and seventeenth centuries. A central feature of this philosophy was that a plentiful supply of cheap and docile labour was in the national interest. G. Myrdal, An Approach to the Asian Drama (New York: Random House, 1970).

workers were reluctant and in turn were advised by missionaries to avoid entering any contractual arrangements with the planters. There was also a failure to prevent land sales for small settlements. There were always a few planters desperately short of cash who would be prepared to sell part of their property as a means of raising cash to salvage a crop.[5]

If the problem of the quantity and cost of labour could not be resolved by regulating the labour force, one alternative would be to try to introduce immigrant labour. This alternative was in fact attempted but met with minimal success. The policy failed because the local Assembly was unable to reach agreement in the matter. There was a substantial divergence of views among members of the Assembly with respect to the rationale and proper means of financing such immigration. The small settlers and missionaries were opposed to immigration designed to bring about lower wages. The merchants and officials felt that the sugar planters should bear the entire cost of any such measure, since they would be the main beneficiaries. The sugar planters at the same time wanted immigration at the cost of general revenue.[6] Consequently, this three-way split prevented the passage of any effective immigration legislation.

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[5]Curtin, op. cit., pp. 127-28.

[6]Ibid., p. 139.

The planters then failed to deal adequately with the factors influencing the supply and cost of labour. We will now turn to an examination of efforts which they made to maintain or increase sugar prices. Their efforts in this direction also ended in failure. There were two factors which prevented the planters from achieving any success in securing favourable sugar prices. The first was the loss of political influence mentioned previously and the second and more important reason was the growth in strength of the free trade group in the British Parliament. The power of this group was revealed in the move to free trade by the early 1850's. The planters' response to the free trade sentiment followed two paths. The first argument they raised was that having accepted the moral responsibility of a free labour system they were entitled to protection in light of the extra cost involved in operating under these new conditions. The second argument also couched in quasi moral tones was that by opening the London market to imports from countries like Cuba, which was at the time still using slave labour, would mean that the free trade system would be supporting a system of social and economic organization abhorrent to majority sentiment in England.[7] They were able to gain some support in England for this latter line of reasoning. Nevertheless, the acceptance of the laisser-faire doctrine,

[7] Ibid., pp. 148-50.

and the belief in the invisible hand operating through free markets to secure the common good, became too strongly entrenched. The passage of the Sugar Duties Act in 1846 spelled the end of sugar protection for the rest of the nineteenth century. The act was initially designed to equate all duties on sugar entering the British market by 1852 with quality and not country of origin being the determinant of the amount of duty to be paid. The measure in fact did not become fully effective until 1854.

The loss of protection raised further doubts about the viability of the plantations, with the result that London merchants were no longer prepared to make cash advances for working capital or for new capital investment in plantations.[8]

In summary the planters failed to adjust adequately to the new situation and it is hardly surprising that the period witnessed a decline in plantation agriculture. The decline in plantations was associated with a growth in peasant farming. This was a direct reflection on the inability of plantation operators to control the labour supply. Between 1836 and 1846, 157 sugar estates were abandoned. By the latter date there were in excess of 19,000 holdings of less than ten acres.[9] The expansion in peasant

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[8]Hall, op. cit., p. 90.

[9]Eisner, op. cit., pp. 198 and 220.

agriculture was also revealed in terms of the composition of total agricultural output. Whereas in the pre-emancipation period export agriculture accounted for over 70 per cent of total agricultural output, by 1850, ground provisions, which were the main produce of the peasant farmer, almost equalled the share of export agriculture in total agricultural output.[10]

In the preceding section we outlined the efforts made and the failure of these efforts to preserve the plantation system in its traditional form. Official groups in the country had fully expected that abolition would give rise to the emergence of peasant cultivation. Moreover, the transformation of a large group of people from a position of dependence to one of independence meant that something would have to be done to make sure that these people would be able to support themselves and contribute to society at large. Facing up to the wider responsibilities, for example in such areas as education and communications, would have required an acceptance on the part of official groups that the traditional plantation system was not the sole means of economic survival for the country.

It was evident, however, that official groups in the country, although realizing the inevitability of economic change, were not prepared to face up to the responsibility

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[10] Ibid., p. 168.

of change. It was their view that the provision of adequate educational facilities and improved communication networks for the new peasant settlements would only increase the difficulty of securing plantation workers and hence was not to be encouraged. The Assembly failed to match the grants made initially by the Imperial Government for the provision of educational facilities. This resulted in education being left to missionary and philanthropic groups. Since these groups had limited funds at their disposal, there were inadequacies both in terms of curricula and number of teachers. The limited funds set aside for communications were spent mainly in servicing the plantation areas.[11] With the loss of protection arising from the passage of the Sugar Duties Act the attitude of the Assembly became even more negative. Between 1849 and 1853 no revenue bills were passed. The feeling of betrayal by the British Government and the responsibility of that government to solve the economic problems of the island gave rise to a malaise which precluded any imaginative legislation. This continued until the problem of land scarcity for further peasant settlement culminated in the social upheavals of 1865 and the return of the island to Crown Colony status.[12]

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[11] Ibid., pp. 327 ff.

[12] Ibid., p. 237.

Stage II: 1870-1930

In this period there were a number of major developments in the economy. First of all there was a further slump in the sugar market and the market remained depressed until the return to protection at the time of the First World War. Secondly, there emerged a new export staple in the form of bananas. Thirdly, there was a continued growth of peasant agriculture with the sector becoming an important contributor to exports. Finally, there was evidence of the emergence of a labour surplus situation in the economy as compared with the belief in the chronic shortage of labour in the earlier period.

The decline in sugar prices in this period was not so much due to free trade and competition from other cane sugar producers as it was from the expansion of beet sugar cultivation in continental Europe. Beet sugar cultivation had expanded rapidly under an elaborate system of state subsidies and import restrictions. The subsidies allowed the European producers to market their sugar at prices lower than cane sugar operators. It was estimated that the production of beet sugar more than doubled between 1882 and 1894.[13] Since very little had been done to improve the efficiency of plantations in the period discussed above, there was a further abandonment of estates on the island and

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[13] Report of the West India Royal Commission 1897, p. 6.

by the mid-nineties it was estimated that the number of estates had been reduced by one-half of what they had been thirty years earlier.[14]

In this period, however, the economy adjusted along lines which were more consistent with what one would expect from the workings of a competitive market system. The decline in one line of activity due to a structural market change was associated with the emergence of a new important export crop, bananas, which utilized the lands which were freed by the declining activity, sugar cultivation. The banana estates were financed mainly from local funds and were either individually financed or operated on the basis of partnerships. The new landowners were drawn mainly from men who had accumulated savings from earnings derived from the trades and professions. These were both very lucrative areas of earnings given the structure of the economy. High professional earnings were possible because of the scarcity of skilled professionals. In the area of trade the overwhelming specialization in agriculture meant that heavy reliance had to be placed on a wide variety of imported products. Important among these were many basic items of food and clothing. Consequently there was a considerable opportunity for traders to make profits serving as middlemen in the community.

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[14] Eisner, op. cit., p. 201.

Banana cultivation suffered from malpractices similar to those which had afflicted the cultivation of sugar. No attempt was made to preserve soil fertility through the use of artificial fertilizers or crop rotation. The planters, adopting the short view, did not use a part of the profits earned to improve efficiency. This short-sightedness eventually gave rise to a situation in which the crops became very susceptible to disease. The effect of this neglect was revealed when disease began to make serious inroads into the crop after the turn of the century.[15]

This period witnessed at least token appreciation of the importance of the role of peasant agriculture in the welfare of the island. Official steps taken to improve the quality of peasant cultivation, such as through the introduction of agricultural training in school curricula and the appointment of extension officers, were generally ineffective. Nevertheless the growing importance of peasant cultivation could be seen in the fact that by 1890, 39 per cent of the export crops were cultivated by peasants.[16] Peasant cultivation was mainly in the area of bananas, coffee and logwood. Capital requirements along with the weak state of the market limited their participation in the area of sugar production.

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[15] Ibid., p. 305.

[16] Ibid., p. 234.

This was the period as mentioned earlier when there was evidence of a labour surplus situation emerging on the island. This situation came about largely as a result of the emergence of banana cultivation which required much less labour per acre under cultivation, rather than as a result of improved agricultural efficiency or rapid growth in population. At the same time, although an improved land settlement policy had been enacted, there was a scarcity of land for further settlement. The economic adjustment to this situation was along the following lines. Beginning in the 1880's there was a substantial out-migration of labour. It was estimated that in the decade 1881-1890 approximately 24,000 people left the island. Over the next twenty-year period another 43,000 left and the peak period was between 1911 and 1920 when approximately 77,000 people left the island.[17] These migrants left the island to take advantage of job opportunities created by railway construction in Central America, the expansion of banana cultivation in Costa Rica, the construction of the Panama Canal and in the last period for work on sugar plantations in Cuba. The fact that large numbers of Jamaican workers were prepared to go to Central America and Cuba to work as agricultural labourers is of particular interest in light of the popular view that island workers were not interested in performing such work.

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[17] Ibid., p. 148.

Apart from out-migration the other adjustment was in the form of increasing numbers of people entering petty trading occupations and domestic service. It was estimated that the number of women performing domestic service increased from approximately 22,000 in 1871 to slightly in excess of 62,000 by 1921. The number of shopkeepers and petty traders was estimated at 3,300 in 1871 and by 1921 there were 7,700 persons engaged in these activities.[18] There was also a rapid increase in the number of people engaged in crafts such as dressmaking, tailoring and shoemaking.

Although in the latter part of the nineteenth century there was some evidence of the economy accommodating itself somewhat more readily to the impact of market forces, the response was still somewhat slow. Many of the weaker estates were still continuing in sugar production although their cost structure together with the weak state of the sugar market implied a clear need for some crop diversification. The continued reliance on sugar together with the weak condition of the market created an underlying weakness in the economy throughout the latter part of the nineteenth century.

A Royal Commission established at the end of the century to examine the economic conditions prevailing in the

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[18] Ibid., p. 162.

islands of the West Indies devoted a great deal of its time trying to determine what could be done to save the sugar industry. The debate essentially revolved around whether the British Government should re-establish a protected market for sugar.. At this time the debate was not being carried on between advocates and opponents of free trade as was the case in the 1840's. The principal competitors to Caribbean sugar exporters were the continental beet sugar producers who had gained a prominent position in world markets with the assistance of an elaborate system of state protection. In other words the Europeans had broken the rules of the free trade game, so under the circumstances it was legitimate to raise the question of whether the British Government should take steps to offset the unfair advantage gained by the continental producers.

The following factors were taken into consideration in trying to resolve the issue. First of all, the imposition of countervailing duties would result in higher sugar prices for the British consumer. However, in deciding whether the acceptance of these higher prices would be justified there was the more important question which concerned whether such price adjustments would be sufficient to save the industry. It was the majority view of the commissioners that the inefficiency and resulting high cost of operations and the cost and time which would be required to bring about significant improvements in the industry was such as to make

a return to a system of partial protection in the London market an inefficient means of trying to save the industry.[19] They saw agricultural diversification as being essential to the economic viability of the country. This would involve in their view an abandonment of weaker estates and the expansion of peasant settlements producing items for the local market. This latter measure would also have the short run effect of easing the unemployment problem.[20] One could summarize their views along the following lines. The sugar industry was beyond recovery and steps should be taken to phase out sugar operations, starting with the weakest operating units so that ultimately only a few efficient producers or possibly none at all would be continuing operations on the island.[21]

In spite of the gloomy views of the Commission with regard to the prospects for sugar there was a recovery in the industry starting in the period immediately preceding the commencement of the First World War. The recovery was facilitated by the modernization of the industry as well as by more favourable prices. Modernization required capital and the main stumbling block in this regard had been how

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[19] Report of the West India Royal Commission 1897, pp. 14-17.

[20] Ibid., p. 18.

[21] The Commission Chairman submitted a minority report supporting countervailing duties on continental sugar.

sufficient external finance could be derived for this purpose, when the prospects for the industry were so poor. At this time, however, the necessary funds were derived mainly from internal sources. This was possible as a result of the success of banana cultivation. It was the profits from banana cultivation which were employed to finance the modernization of the industry. The necessary funds were sometimes raised by switching from sugar to banana cultivation for a short period of time and then reverting to sugar or by combining sugar and banana cultivation.[22] The improvement in operations helped to ensure greater stability in earnings from sugar production in view of the fact that as long as the maximum quantity of cane juice was extracted profits could be made from rum sales even if there was some decline in the volume of sugar which could be sold.

The advent of the First World War brought about a return to a policy of commercial protection on the part of the British Government. An immediate consequence of this was higher prices for sugar. The higher prices helped to encourage more investment in sugar. Moreover sugar production was less susceptible to the vagaries of weather and disease than bananas. The modernization of the industry was associated with considerable consolidation of estates. This consolidation was necessary to make optimum use of the

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[22]Eisner, op. cit., p. 207.

manufacturing equipment required to make estate operations economical. In 1890 there were 162 estates with an average size of 187 acres. By 1930 there were in comparison 39 estates with an average size of 661 acres.[23]

Stage III: The Depression

The world-wide economic recession of the 1930's had a severe effect on the economy of Jamaica as was the case for most countries which depended to a great extent on primary exports. The markets for tropical agricultural exports were declining at the same time at which there was a growing world supply. An increase in the rate of population growth combined with the closure of immigration outlets, a scarcity of land for further settlement and the modernization of the sugar industry added to the problem of unemployment.

In this period, unlike the nineteenth century, the island was able to secure preferential treatment for its principal export crops. As far as the sugar industry was concerned, the modernization mentioned above gave rise to a substantial increase in output in this period. Production rose from 62,500 tons in 1928 to 106,000 by 1938-1939. Negotiations to devise price stabilization policies in light of the weakening market situation were culminated in the International Sugar Agreement. Preferential assistance amounting to about 40 per cent of the price received by the

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[23] Ibid., p. 203.

colonial producers resulted from this agreement. This preference was associated with a cost, namely, the imposition of quotas on sugar exports from all colonial territories.[24]

Bananas emerged as the most important export crop by the end of the period, accounting for over 50 per cent of the total value of exports. The industry had prospered under the special protection provided by the Canadian and Imperial Governments. The price received by growers was related to the existing wholesale price in London in accordance with a sliding scale with a guaranteed minimum price per bunch. It was estimated that the prices received during this period were usually one-third higher than those received by growers in places like Costa Rica.[25]

The industry, nevertheless, experienced serious difficulties. One of the most significant was the outbreak of leaf spot disease. Methods of controlling the disease were known but their application would add considerably to operating costs. It was estimated that the cost of spraying, even for large estates, would amount to something like one-quarter of the price normally received by the grower.[26] Moreover, a great part of the crop was produced by peasant

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[24] West India Royal Commission Report 1938, pp. 25-28.

[25] Ibid., pp. 18-19.

[26] Ibid., p. 19.

farmers, who in many cases were farming in very hilly areas where the spraying costs would have been prohibitive. The solution would then seem to rest in these peasant cultivators switching from banana cultivation.

The other important agricultural export was citrus. Expansion had been facilitated by government finance in the establishment of a packing house and in marketing facilities. However, the industry was hampered by growing oversupply conditions in the world market. This competition could only be faced through substantial investment in improving the general level of cultivation as well as more orderly marketing and aggressive sales policies.

Once again a period of economic crisis raised the issue of the economic response of the country. Once more a Royal Commission was appointed to examine conditions and make recommendations for resolving the problems of the area. The overriding issue on this occasion was the problem of unemployment.

In light of the world market situation at that time it is hardly surprising that the Moyne Commission of 1938 recognized that less emphasis would have to be placed on export agriculture. The Commission recommended that specialization by peasant farmers on export crops, such as bananas, should be replaced by mixed farming designed to satisfy the varied food requirements of the population. Mixed farming of this type would require investment in the establishment

of marketing agencies to ensure a fair return to the farmer. They also suggested that existing estates should transfer some of their lands being used for the production of export crops into mixed farming activities.[27]

It was also suggested that the Imperial College of Tropical Agriculture should play a leading role in support of the programme of agricultural rationalization. The College was expected to deal with the broad problems of husbandry, including such things as systems of mixed farming, cultivation, drainage and use of manures. In addition it would be expected to undertake surveys of peasant and estate agriculture, studies of agricultural credit and marketing arrangements, as well as producers' associations. It would also handle specific scientific problems such as soil surveys, land utilization, soil erosion, plant breeding, sugar technology, food storage and plant diseases and pests.[28]

As was the case in 1897, a Royal Commission had pointed to agricultural diversification as the main method of resolving the economic problems of the island. In this labour surplus situation another method of adjustment could have involved the establishment of a manufacturing sector. At that time there existed a few small-scale manufacturing

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[27] Ibid.

[28] Ibid., p. 302.

operations. These were mainly small plants engaged in the production of tobacco products and mineral waters. These enterprises were heavily dependent on local raw materials derived from the agricultural sector. There are a number of factors which could be pointed out as accounting for the small scale of many operations. We have already indicated the slow response by economic groups in the country to changing market conditions. Under these circumstances one would not expect to see such groups willingly undertaking the risks inherent in new manufacturing enterprises. Apart from this general factor, which could be classified as a psychological constraint, the establishment of a manufacturing sector would require savings for capital formation. For the greater part of the nineteenth century it was estimated that not more than 5 per cent of national income was available for investment. Between 1870 and 1930, approximately 45 per cent of the limited amounts invested was devoted to residential construction. At the same time investment in agriculture barely accounted for more than 1 per cent of total investment outlays.[29] There was then very limited amounts of funds for investment activity in manufacturing and that amount which was available was heavily concentrated in residential construction, reflecting both the low standards of housing and the great security of this type of investment.

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[29]Eisner, op. cit., pp. 307-308.

The limited manufacturing activity had been financed mainly from the savings of new immigrant groups. It was argued that since they were outsiders they were isolated from the patterns of social life of the resident community characterized as it was by lavish consumption spending. Their savings were initially utilized to take advantage of the substantial opportunities for profits which existed in the area of retail trading. A part of the earnings from this trading activity was subsequently employed in manufacturing enterprises.[30]

If funds were not available for investment in manufacturing from internal sources then the obvious alternative was foreign investment. Given the limited size of the market an attractive return on such investment would have required commercial protection. In view of the dominance of the free trade philosophy for the greater part of the period under consideration such protection would not have been provided. That being the case the better prospects for investment in England and in both North and South America would make the island have limited interest for the foreign investor.

Although the thirties was a period characterized by extensive restrictions on the international movement of money and commodities, the belief in the fundamental

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[30] Ibid., p. 315.

correctness of the principles and benefits to be derived from free trade based on an international division of labour still had a strong influence on the Commission of 1938. They saw limited scope for the promotion of manufacturing activity. Their scepticism rested on the traditional arguments of availability of resources and technical ability. They were prepared to accept the idea that some potential might exist for such activity if it were to be based on the processing of agricultural products. This type of activity would have the added advantage of helping to stabilize the prices of the products. Protection for such activities in their view would be justified as long as the measures adopted were designed in such a way as to avoid increases in the cost of living and loss of revenue to the government. To secure these ends it was recommended that the domestic market should be protected by quantitative restrictions on imports. Having received such protection the producer would be required to establish a minimum price for the local suppliers of inputs while at the same time agreeing to maintain product prices at existing levels. The government would then recoup the revenue normally derived from imports through the imposition of an excise tax at an equivalent rate. They were at the same time opposed to government initiation of industrial enterprises. This was based on the belief that the revenue situation did not place it in a position where it could afford to take the risk inherent in

such activities. For those limited lines of activity which appeared to them to be feasible, it was their position that a British manufacturing concern engaged in the same line of production should be encouraged to operate the enterprise.[31]

Summary

A recurrent theme in the history of the Jamaican economy from the time of emancipation to the beginning of the Second World War had been the weakness of the agricultural sector. This weakness in the earlier period arose from the failure of the planters to adjust to a new set of costs and marketing conditions. In later periods it arose from the inability to fully grasp the need for diversification when changes in global supply conditions led to a reduction in markets. The need to undertake major steps in the direction of agricultural diversification was fully appreciated in official circles before the end of the nineteenth century as witnessed by the recommendations of the Royal Commission of 1897. Yet forty years later another Commission had to stress the same theme.

The ability to adjust was in part within the realm of possibility of the dominant economic groups. In the earlier period there was the feeling on their part of being betrayed by the British Government with the loss of protection and this feeling of moral indignation impaired any real

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[31] West India Royal Commission Report 1938, pp. 247-50.

imaginative action on their part. Later on short-sightedness as revealed by malpractices in both sugar and banana cultivation limited their scope for either accumulating funds on their own or establishing the type of reputation which would enable them to attract funds for improvement and new ventures. At the same time their problems were not made any easier by the long economic decline in the latter part of the nineteenth century. When some modernization did in fact take place the economy was then hit by the great depression of the 1930's.

Given the problems of the dominant sector in the economy it is clear that it would not be in a position to generate the type of surplus necessary for investment in manufacturing even if we were to temporarily ignore other constraints on the establishment of such a sector. At a later stage we will be looking at the means adopted for promoting industry on what was essentially a very weak agricultural base.

CHAPTER III

PUERTO RICO: THE PRE-INDUSTRIAL PERIOD

Introduction

It was suggested in the previous chapter that an examination of economic development in the period preceding the emergence of an industrial sector can provide meaningful insights into the nature of the industrialization process. As far as Puerto Rico is concerned it would seem that the relevant period for such an examination would commence with the end of Spanish rule in 1898 and the transfer of political authority to the Government of the United States.

Unlike Jamaica, the institution of slavery had never been a particularly significant feature of economic life in Puerto Rico. Up to the middle of the eighteenth century there were only approximately 5,000 slaves in a total population estimated to be about 45,000.[1] The Puerto Rican experience to that period seemed to support the view of Dr. Eric Williams that a plantation system could only function effectively in a situation where there was plenty of available land, when slave labour was employed and extensive agriculture practised. It was his contention that free

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[1] H. S. Perloff, Puerto Rico's Economic Future (Chicago, Ill.: University of Chicago Press, 1950), p. 13.

labour, given the existence of available land, would tend to opt for working on their own account.[2] Alternatively one could suggest that this situation would impose a great burden on plantation operators to adopt efficient practices so that they would be in a position to pay wages sufficiently attractive to retain labour.

Between 1750 and the time of the American takeover at the end of the nineteenth century there was a substantial increase in the population of the island. This growth in population in the nineteenth century necessitated the bringing of more land under cultivation. Associated with this was a substantial expansion in commercial agriculture. Sugar and coffee production emerged as the major agricultural activities superseding the subsistence crops. Between 1830 and 1896, the amount of land utilized for the production of subsistence food crops increased by about 20 per cent. At the same time there was a sixfold increase in land utilized for the growth of coffee and a threefold increase in land devoted to sugar. The overall result was that almost twenty times as much of the new lands brought under cultivation was devoted to commercial agriculture.[3]

This expansion in commercial activity meant that by the end of the nineteenth century the island bore the same

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[2]E. Williams, Capitalism and Slavery (New York: Russell and Russell, 1944).

[3]Perloff, op. cit., p. 15.

economic characteristics of other territories in the area. The economy rested on the cultivation of two crops for export markets and there was the same reliance on a wide variety of basic imports. In 1895 sugar and coffee accounted for over 85 per cent of total Puerto Rican exports. At the same time over 40 per cent of the value of imports consisted of agricultural products. The rest of the import bill consisted of basic clothing, furniture and processed foodstuffs.[4] Unlike Jamaica, however, there was not the heavy reliance on a single market source for both exports and imports. It was estimated that on the export side, Spain and Cuba each accounted for 25 per cent of export sales, 16 per cent was marketed in the United States and approximately 11 per cent was sold in each of the markets of France and Germany. On the import side, the principal supplier, Spain, provided 33 per cent, the United States and the United Kingdom were next in order of importance with 25 and 12 per cent, respectively, and the remaining 30 per cent was shared by a wide variety of countries.[5] As a result, even though the economy had been transformed from a closed subsistence form to one of extreme openness, the variety of markets for its exports reduced somewhat the

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[4] Ibid., pp. 16-18.

[5] T. Hibben and R. Pico, Industrial Development in Puerto Rico and the Virgin Islands of the United States (Port of Spain, Trinidad: Caribbean Commission, 1948), p. 1.

elements of instability which one would expect to arise from a condition of external dependence.

We will now turn to an examination of developments in the post-American occupation period, concentrating first on what took place in the years up to the time of the great depression.

Stage I: 1898-1930

The transfer of political authority from Spain to the United States meant that the island was now under the control of a country which was on the verge of becoming the dominant economic power in the world. That being the case one could ask what might happen when a relatively backward country becomes a part of a dynamic developed economy. On a general plane one could argue that this should bring about a relief in some of the constraints which would inhibit the economic development of the country. Specifically the savings or capital constraint could be eased as well as the limitations in technical know-how. In addition the country would now have access to a very large market area for its goods and its surplus labour would be free to move to secure employment in the more developed areas. These are all the factors which would seem ideal for promoting economic development. There would be the necessary finance and knowledge for reorganizing the principal economic activities, in this case agriculture, along the most efficient lines. All the

necessary requirements, finance, technology, and markets, would be available for the promotion of industry. All these factors could contribute towards a rapid increase in employment and income.

On the other hand when one looks at the issue in a more specific manner it is possible to visualize a number of problems which could arise and cloud the somewhat rosy picture painted above. First of all funds from the developed region would have to be attracted to the underdeveloped region by the prospect of profits. That being the case one could expect that incoming funds at least in the initial stages would be concentrated in those areas where prospects of high profits were best. This concentration could give rise to a situation in which the weaker participants in these areas would find themselves driven out of business by foreign competitors. This might not necessarily be a bad thing if these weaker operators could be absorbed into the labour force at higher wages. However, the technology associated with the inflow of mainland capital would likely be of the capital intensive variety. Hence the prospect of employment, even if there was a willingness on the part of the independent operators to switch to wage labour, would not be very good. The preceding comments may be summarized to suggest that growth in income under these circumstances could be associated with severe economic dislocation.

Finally, there is the possibility that attachment to a developed area could give rise to a situation in which overwhelming emphasis is placed on accommodating the economy of the underdeveloped area to that of the developed one. The resulting high degree of dependence would not necessarily present any difficulties as long as there was general economic expansion. However, in a period of economic difficulties the tying in of the two economies would remove the necessary element of flexibility for adjustment to new markets which is so important to economic stability when such circumstances arise.

We will now examine developments in the period to determine to what extent the actual occurrences supported either of the two general hypotheses outlined above.

It was suggested that the change in political status should help to relieve the capital constraint. Developments in this period seemed to support this contention. By 1930 it was estimated that outside private capital investment in the island amounted to $120 million. At the same time an amount in excess of $50 million was provided in the form of public loans for improving education and building up other segments of social capital.[6] In spite of the substantial amounts invested in the island there was a great deal of concentration in the areas selected for investment. In fact

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[6]Perloff, op. cit., pp. 27-28.

most of this capital was directed towards investment in sugar. It was suggested that the concentration of investment by United States investors in sugar and the limited interest shown by investors in coffee, an important crop during the period of Spanish control, was a reflection on a view that the United States consumer was believed to be addicted to non-Puerto Rican coffee. Consequently the crop languished and was not even afforded the protection of the United States tariff. At the same time the new political status of the island meant that there was no longer easy access to European markets.[7] By 1930 sugar exports accounted for 65 per cent of all products exported and capital invested in the industry was five times the amounts invested in the coffee and tobacco industries combined.[8]

The very large investment in sugar resulted in a substantial increase in the efficiency of sugar production. Production was reorganized around the centralized factory.[9] This reorganization had the effect of forcing the small farmers out of sugar production. This improvement in efficiency was then at least in part offset by the displacement of small farmers who were forced to join the labour force. This development would have been relatively unimportant if

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[7] G. K. Lewis, op. cit., p. 89.

[8] Ibid.

[9] Ibid., p. 90.

it were possible to secure jobs easily. There were, however, a number of factors which limited the number of job opportunities. One factor was the very rapid increase in population over the thirty-year period. The rate of natural increase rose from 15.2 per thousand from 1910 to 1920 to 19.2 per thousand between 1920 and 1930.[10] In addition the emergence by 1930 of what was effectively a system of monoculture based on a capital intensive system of sugar production not only limited the absolute amount of potential jobs, but also created a substantial amount of seasonal unemployment. It was estimated that the average Puerto Rican could find gainful employment only four days per week.[11]

Since the reorganization of the agricultural sector brought about a much smaller requirement for labour, the existence of a large number of unemployed workers could provide a cheap labour pool for industrial employment. Given the existence of mainland residents with the necessary capital and experience one could have expected these investors to exploit the opportunities for profit by employing these workers in manufacturing enterprises. In this way the unemployment problem created by the reorganization of the agricultural sector could have been alleviated. The island government had taken steps to encourage the establishment of

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[10] Perloff, op. cit., p. 197.

[11] Ibid., p. 30.

industry when an act was passed in 1919 which exempted new industries from payment of taxes including income taxes.[12] This measure did not have any significant effect in terms of the promotion of factory production. The type of activity, given indigenous skills, which was the most attractive to the mainland investor was the needlework industry, which was carried out mainly at home. Of the 98,000 people estimated to be engaged in manufacturing activity in 1930, 42,000 were involved in needlework. The remainder were mainly engaged in food processing or operations based on the processing of agricultural raw materials, such as tobacco. Moreover, the regularity of employment normally expected from manufacturing operations was not realized as it was estimated that over 50 per cent of those employed in the sector were on a part-time or seasonal basis.[13]

In spite of the substantial influx of United States capital and some improvement in efficiency of the agricultural sector, particularly in the case of sugar, the emergence of a system of monoculture, the severe unemployment problem and the reduction in local participation in the economy suggest that there was no real development in the Puerto Rican economy in the first thirty years of United States control. What in fact had occurred was the emergence

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[12] G. K. Lewis, op. cit., p. 91.

[13] Hibben and Pico, op. cit., p. 5.

of a major degree of economic dependence on the United States. In the next section we will trace the consequences of this dependence when the world-wide economic depression set in during the thirties.

Stage II: The Depression to World War II

The economic depression which started in 1930 reached its low point in the United States in 1933. As could be expected the trend in Puerto Rican export receipts followed a similar downward trend over this period. Receipts from exports reached a low of $75 million in 1933 as compared with the previous high of $107 million in 1927. Export receipts rose from that time with the partial recovery on the mainland but the 1927 values were not attained until 1937.[14] In view of the fact that at that time exports accounted for over 40 per cent of national income the drastic decline in export receipts brought about an absolute decline in the level of national income between 1929 and 1933. On a per capita basis income fell from $122 to $86 and it was not until 1940 that the former level of income was once more attained.[15]

In spite of the developments on the export side indicated above, the island was able to maintain a surplus on its trading balance throughout most of the depression

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[14] Perloff, op. cit., p. 30.

[15] Ibid., p. 160.

period. One partial explanation of this could be that the decline in income was so drastic that only the most essential items were purchased from foreign sources. In addition the structure of the island's commodity trade together with the retention of a protected market for its major exports could also account for this occurrence. The island was in part insulated from the overall world decline in prices of agricultural products, its major export. This was due to the fact that 90 per cent of its exports was sold in the United States and were allowed the benefits of price supports. At the same time there was a substantial decline in the prices of its major imports, food products and raw materials.[16]

The period witnessed a virtual cessation of funds from private sources entering the island. This was to be expected in light of the economic situation in the United States. Nevertheless, a factor of particular interest in this period was that in spite of the economic decline bank deposits increased while loans and investments tended to decline. Between 1934 and 1939 deposits increased from $31 million to $57.4 million. Loans and investments stood at $34.8 million in 1934, declined to $25.9 million in 1936 and were $31.9 million in 1939. It was suggested that the underutilization of funds was based on a Puerto Rican reluctance

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[16] Ibid., p. 133.

to invest in corporate enterprises accustomed as they were to individual partnerships or family operations.[17] Alternatively one could argue that Puerto Rican investors were as pessimistic about the future as investors in many other countries during this same period where there was also evidence of underutilization of funds.

The economic difficulties of the period were made worse by the continued rapid increase in population. There was an overall increase in population of 325,000 between 1930 and 1940. It was estimated that the labour force grew by 100,000 during the same interval while only 10,000 additional jobs were created.[18] The continuing problem of unemployment became even more critical at this time. Outmigration as a partial solution was impractical in view of the high rates of unemployment in the United States at that time. However, the island benefited from its mainland association by receiving relief funds with the coming into being of the "New Deal" era in the United States. The Puerto Rican Emergency Relief Administration was established in 1934. It proceeded to tackle the massive problem of unemployment and poverty by carrying out a programme of public works projects. Nevertheless, as Lewis pointed out, that type of relief measure was unsuited to an economy which was

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[17]Hibben and Pico, op. cit., p. 20.

[18]Perloff, op. cit., p. 23.

simply not just suffering from the effect of an economic recession.[19] Overriding this factor was the basic underlying weakness of an economy characterized by monoculture and extensive absentee landownership resulting in a scarcity of land for peasant settlement. In other words relief would ease the problem, but there was a pressing need for an overall restructuring of the economy.

This need was recognized in official circles and initial steps taken in this direction with the establishment in 1935 of the Puerto Rican Reconstruction Administration. The elements of the reconstruction programme were contained in the so-called "Chardon Plan." The main features of the plan were as follows. First of all it was decided to restrict land purchases by mainland residents. In 1917 the Government of the United States had enacted the so-called 500-Acre Law designed to restrict land purchases by mainland residents to that limit. The measure had never been rigidly enforced. It was then decided to try to enforce the provisions of that act through land purchases by a semi-public corporation. Secondly, the lands gained through enforcement of the act would be employed to promote rural settlement. Thirdly, agricultural diversification would be encouraged as a means of breaking the dependence on sugar. In addition, these last two measures were to be facilitated through the

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[19] G. K. Lewis, op. cit., p. 125.

encouragement of co-operatives and a programme of rural electrification. Efforts were also to be directed at rehabilitation of the stagnant coffee and tobacco areas. The plan also included the purchase by the government of at least one sugar mill to be operated as a model for regulating the future relationship between colonos and millowners. Finally it was decided to sponsor the establishment of a local cement plant.[20]

Between 1935 and the time of American entry into the Second World War, when funds for the programme were cut off, a total of $57 million was spent. Over 50 per cent of this amount was spent on labour and personal services.[21] As a result most of the goals of the plan were not realized. In 1940 it was estimated that six-tenths of 1 per cent of the farms occupied 31 per cent of all farmlands and accounted for 44 per cent of the total value of farmlands, buildings and equipment on the island.[22]

Lewis summarizes the reason for the failure of the programme in the following fashion:

> In some measure, it was because the New Deal at home was not a coherent plan to reshape American society root and branch so much as it was a hasty and empirical response to a sudden crisis; and it could be no more abroad in a dependent territory than it could be at home. In some measure it was because the Rooseveltian policy, funda-

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[20] Ibid., p. 125.

[21] Ibid., p. 128.

[22] Perloff, op. cit., p. 34.

> mentally weakest in any sense of theoretical content or direction, sought to do no more than patch up an anarchic capitalism, so that private ownership of the means of production was left substantially untouched. The economic and cultural dominance in industry was therefore repeated in Puerto Rico in the form of the dominance of the sugar complex.[23]

Stage III: The Wartime Period

At the time of the American entry into the Second World War the situation on the island was critical. Between 1941 and 1942, unemployment increased from 99,100 to 237,000 and over the same period there was a 53 per cent increase in prices.[24] The wartime period witnessed for the first time an attempt on the part of Puerto Ricans themselves to bring about changes in the structure of the island's economy. The effort in this direction came about as a result of the success of Munoz Marin and the Popular Party in the election of 1940 and the willingness of Governor Tugwell, who was appointed in 1941, to co-operate with the progressive forces in the legislature. Prior to this period the dominant groups in island politics had been pretty much committed to maintenance of the status quo, as they were by and large representative of landed and business interests. With the change in the political situation many elements of the Chardon Plan which never came into fruition were passed into law in 1942.

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[23] G. K. Lewis, op. cit., p. 129.

[24] C. F. Goodsell, Administration of a Revolution (Cambridge, Mass.: Harvard University Press, 1965), p. 21.

One of the first areas to which the new administration addressed itself was in the enforcement of the 1917 law limiting landholdings to 500 acres. A special land authority was established to acquire lands from corporations which had holdings in excess of these limits. A feature of the land reform programme attributed to the influence of Governor Tugwell was the provision for what were called proportional benefit farms. This scheme was designed to meet the need for settling more people on the land while at the same time retaining the advantages of large-scale cultivation. These farms ranged in size from 100 acres to some which were in excess of 500 acres. The large farms were leased to managers on a salary and percentage of the profit basis. The manager's share would range between 1 and 15 per cent and the rest would be shared among the workers according to the numbers of days worked and wages received. The land authority mentioned above would be in overall control of the operation, providing operating capital, conducting audits and receiving up to 3 per cent of gross income on the investment. The rest of the land was to be divided into smaller lots ranging from twenty-five acres to a minimum of one-quarter acre, the latter designed to provide for subsistence farming for landless peasants.[25]

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[25]Perloff, op. cit., p. 38.

Apart from the agricultural reform measures, a Minimum Wage Board was established and new authorities were set up to carry out a reorganization of transportation and communications, water resources and housing. These measures all met with very strong opposition from the more conservative elements in the legislature and in many instances the attacks were levelled at the Governor, rather than the group which was really responsible, Munoz Marin and his supporters in the Popular Party. This, it is alleged, was based on the belief that it would be strategically wiser to attack the appointed Governor rather than the democratically elected political leader.[26]

Of equal importance to the decision to proceed with a programme of agrarian reform was the decision to promote the development of an industrial sector. This was based on the fact that the employment needs of the country could not be satisfied only by reforms in the agricultural sector. With this in mind an Industrial Development Corporation was established in 1942 for the purpose of providing investment capital on easy credit terms.

The Corporation was initially established with a capital provision of $500,000. It also got title to a $2 million cement plant set up under the Puerto Rican Reconstruction Administration. In its decisions with regard to

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[26]Goodsell, op. cit., p. 38.

what projects to finance, the Corporation favoured projects which could make the greatest use of labour and local raw materials, given the availability of a large local market. The Corporation also subsequently undertook to construct industrial plants for lease to private investors. By 1947 an amount of $20 million had been invested in plants acting as subsidiaries of the development company. These plants were engaged in the manufacture of glass containers, paperboard, structural clay products and sanitary ware. In addition to these direct subsidiaries the promotional work of the Corporation was successful in bringing about the establishment of thirteen plants.[27]

These efforts to finance and attract industry were complemented by the sponsorship of handicraft projects in such areas as the making of furniture, ceramics and fibre textiles. These projects were under its products design division. Finally, it initiated a labour training and technical research programme.[28]

Overall the Industrial Development Corporation experienced only limited success in meeting its prime objective, that of providing for the expanding labour force which could not be absorbed in the agricultural sector. After five years of operation and the expenditure of $20 million,

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[27]Barton, op. cit., p. 8.

[28]Ibid., p. 9.

less than 2,000 actual and potential factory jobs had been created, whereas it was estimated that something in the order of 100,000 was required. Barton, in making a crude extrapolation on the basis of this experience, concluded that an outlay of $2 billion would have been required to meet the objectives set by the programme.[29]

In the period 1945-1947 the pressure of unemployment was relieved to a far greater extent by out-migration than by either of the measures described above. Migration was stimulated by the post-war boom in the mainland economy as well as by the desperate economic situation on the island. Net out-migration was 14.8 thousand in 1945, 23.7 thousand in 1946 and 35 thousand in 1947.[30] In a three-year period over 70,000 people left the island. Nevertheless as of March, 1947 there were 60,000 unemployed workers in a labour force of 702,000.[31]

Summary

The survey conducted in this chapter indicates that the incorporation of Puerto Rico into the economy of the United States did very little to generate overall prosperity on the island up to the end of the Second World War. In

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[29] Ibid., p. 11.

[30] Perloff, op. cit., p. 201.

[31] Hibben and Pico, op. cit., p. 103.

fact the incorporation complicated the economic difficulties of the island over this period.

As was indicated the island was successful in attracting substantial amounts of capital from both private and public sources from the mainland. These large amounts of capital did not generate any significant development on the island, as revealed by the emergence of a system of monoculture and the existence of chronic unemployment. The reasons for this become apparent when one considers what would motivate the individual mainland investor to invest in the island. The motivating force would of course be the expectation of profits. In examining investment opportunities on the island it is not surprising that investors would be initially attracted to the principal economic activities on the island. These were at the outset coffee and sugar production. For reasons stated previously investment in coffee was not considered suitable, and this left sugar as the principal area for investment.

The realization of a good return on an investment in sugar required a reorganization of production. It was known at that time that centralized factory operations were the most efficient way to run the industry. Full utilization of the factory facilities required the consolidation of large holdings around the centralized factories. That being the case the land monopoly and the overwhelming dominance of sugar in the economic life of the country was the logical

result. Large capital inflows resulted in monoculture and a scarcity of land for small settlements.

These developments were detrimental to the island for a number of reasons. First of all it meant that the economic welfare of the island was wholly dependent on a single crop which was marketed in one area. Any weakness in that market area could have disastrous consequences for the economy. This was clearly evident during the thirties. In addition the reorganization of the sugar industry on what were clearly more profitable lines resulted in a reduced demand for agricultural labour. Those workers who were successful in securing employment had to suffer the consequences of seasonal unemployment. This condition was particularly critical for the island in view of the fact that the rapidly increasing population created an imperative need for the provision of more jobs. The profits from the sugar operations could not be used to compensate for these effects since they went to the benefit of mainland residents.

Since the basic economic weakness of the country was in large measure a reflection of the degree of United States dominance, the process of adjustment was made all the more difficult in that there were strong vested interests in maintaining the basic structure of the system. Evidence for this is provided by the long delay in enforcing the 500-Acre Law.

An economic association of this type will not automatically result in mutual benefits through the operation of market forces. Such benefits can only be realized when specific steps are taken to ensure a reconciliation of the interests of both sides in the association. Realization of the need for specific measures to bring about this condition became evident during the Second World War. In a subsequent section an evaluation of the effectiveness of these measures will be undertaken.

CHAPTER IV

THE EVOLUTION OF THE MANUFACTURING SECTOR IN JAMAICA IN THE POST-WAR PERIOD

Introduction

In the introductory chapter we outlined the theoretical framework behind a strategy for industrialization in the Caribbean. At this stage an attempt will be made to determine whether the criticism made of this basic strategy was justified in terms of the developments in Jamaican manufacturing since the Second World War. The industrialization strategy was initiated with the passage of special legislation between 1947 and 1949 discussed in the introductory chapter and consequently our evaluation will be centred on the country's experience since that time. The success of the strategy of industrialization has to be evaluated with regard to several criteria, including the contribution of manufacturing industry to national income and employment, the development of local participation, the degree of interdependence within the manufacturing sector and other sectors of the economy. We will begin by setting out the position of manufacturing activity at the time the strategy was initiated.

The Initial State of the Manufacturing Sector

In 1951 the value of output of the manufacturing sector measured in current prices amounted to $18.4 million, representing approximately 11 per cent of Gross Domestic Product at factor cost.[1] There were at that time 627 factories in operation providing employment for 23,098 people with an average employment per plant of 36.8. Table 4-1 provides information on the numbers employed in various manufacturing activities. As can be seen from the table approximately 16,000 of the 23,000 were engaged in operations concerned with the processing of agricultural products and almost 7,000 of these were employed in the sugar industry.

The dislocation of normal trading patterns caused by the war had provided a stimulus to local manufacturing activities. Firms had been established to produce edible oils, lard, margarine and soap. There was also an expansion of activity in older firms engaged in the production of cigarettes, matches, alcoholic and non-alcoholic beverages. The manufacture of knitted cotton and rayon goods was also initiated with the use of imported yarn.[2] The manufacturing

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[1]Government of Jamaica, A National Plan of Development for Jamaica 1957-1967 (Kingston: The Government Printer, 1957), p. 6.

[2]Colonial Office, Development and Welfare in the West Indies 1943-1944, Colonial No. 189.

TABLE 4-1

EMPLOYMENT IN MANUFACTURING

	1951	1957	1960	1967
Sugar	6,809	5,850	5,540	6,195
Beverages	937	1,326	1,450	1,501
Other Food Products	6,922	9,867	12,042	11,643
Tobacco	1,407	1,035	1,170	1,945
Textiles and Clothing	1,406	5,345	7,080	13,462
Footwear	324	1,987	2,550	2,985
Furniture and Fixtures	429	. .	2,580	3,376
Wood and Wood Products	688	3,982	650	1,018
Paper and Paper Products	. .	. .	370	433
Printing and Publishing	1,092	1,450	2,250	2,227
Leather Products	104	390	260	180
Rubber Products	. .	. .	100	148
Chemical Products	1,018	463	960	1,715
Non-Metallic Mineral Products	. .	1,782	2,570	3,844
Metal Products, Machinery Products and Repairs	1,445	1,833	4,430	5,504
Petroleum Products	. .	. .	. .	123
Miscellaneous Manufactures	517	622	406	2,117
Total	23,098	35,932	44,408	58,416

Sources: International Bank for Reconstruction and Development, The Economic Development of Jamaica (Baltimore: The Johns Hopkins Press, 1958), pp. 204-205; and Headley Brown, "The Import Substitution Process as a Model of Development. A Case Study of the Jamaican Economy 1957-1967" (unpublished Ph.D. thesis, University of the West Indies, Mona, Jamaica, 1970), Table V-25.

activity which was being carried out at the time was of the simplest form and was of marginal significance in terms of its direct contribution to employment providing 23,000 jobs for a labour force which was estimated at the time to be 600,000.[3] Information with regard to the national level of unemployment at that time is not available. It is however unlikely that the rate at the time would have been less than the wartime estimate of 18 per cent. This would seem a reasonable position when one takes into consideration the growth in population and the reduction of job opportunities for migrant labour in the United States which had existed during the war with the easing of the labour shortage in that country at the end of the war. We will start our evaluation by examining some of the overall developments in the economy up to 1967.

Economic Growth, 1951-1967

Table 4-2 provides annual estimates of Gross Domestic Product (G.D.P.) and the contribution of the manufacturing sector to G.D.P. In 1967 G.D.P. was $685.6 million as compared with $163.4 million in 1951. Manufacturing G.D.P. was $103.4 million in 1967 as compared with $18.4 million in 1951. If the value of output from sugar, rum and molasses was to be excluded from the domestic product of the

[3] International Bank for Reconstruction and Development, The Economic Development of Jamaica (Baltimore: The Johns Hopkins Press, 1953), p. 152.

TABLE 4-2

SHARE OF MANUFACTURING IN GROSS DOMESTIC PRODUCT
(Current Values J$ Millions)

	(1) Gross Domestic Product Total	(2) Gross Domestic Product Manufacturing	(3) G.D.P. Excluding Sugar, Rum and Molasses	(4) Column (2) as Percentage of Column (1)	(5) Column (3) as Percentage of Column (1)
1950	140.2	15.8	11.4	11.3	8.1
1951	163.4	18.4	13.6	11.2	8.3
1952	190.0	19.2	17.4	12.2	9.2
1953	213.4	29.6	21.8	13.8	10.2
1954	239.4	33.6	25.4	14.1	10.6
1955	272.8	36.6	28.4	13.4	10.4
1956	317.0	41.4	33.0	13.1	10.4
1957	384.2	48.8	38.6	12.7	10.0
1958	397.4	47.6	39.0	12.5	9.8
1959	395.8	54.6	44.8	13.8	11.3
1960	430.8	58.8	48.0	13.6	11.2
1961	461.4	65.4	51.8	14.2	11.2
1962	480.2	65.8	54.0	13.7	11.2
1963	510.0	78.2	61.4	15.3	12.0
1964	547.4	83.6	69.8	15.3	12.7
1965	594.2	89.2	76.2	15.0	12.7
1966	646.0	99.2	84.6	15.4	13.1
1967	685.6	103.4	92.4	14.9	13.5

Sources: Government of Jamaica, Department of Statistics, National Accounts: Income and Expenditure; and Government of Jamaica, Central Planning Unit, Economic Surveys.

manufacturing sector, the value of output would be $92.4 million for the terminal year and $13.6 million at the start of the period under consideration.

This period was one of rapid economic growth for the economy as a whole. The data indicates an annual average growth rate of G.D.P. of about 8.5 per cent. The rate of growth of output for the manufacturing sector was even greater at approximately 11 per cent. The rate of growth in manufacturing excluding the traditional activities of sugar, rum and molasses was also 11 per cent.

On an annual basis the highest rates of growth in G.D.P. were attained in the period 1951 through 1957. The year 1957 witnessed the highest annual growth rate for the entire period at 21.2 per cent. These rates, as set out in Table 4-3, can be attributed to the commencement of the new sector, mining, and the expansion of manufacturing activity. There was a substantial decline in growth rates in 1958 and 1959. In the latter year there was in fact a slight decline in absolute output. From 1960 through 1967 growth rates have averaged around 7 per cent with a low of 4.1 per cent in 1962.

The annual growth rate for the manufacturing sector as a whole fluctuated to a considerable degree throughout the period. This instability was to a great extent a reflection of the performance of the sugar industry. Excluding sugar, rum and the manufacture of molasses the

TABLE 4-3

ANNUAL RATE OF GROWTH OF G.D.P. AND G.D.P. IN MANUFACTURING, 1951-1967[a]

	Gross Domestic Product	Manufacturing	
		Including Rum	Excluding Rum
1951	16.6	16.5	19.3
1952	16.3	4.4	27.9
1953	12.3	54.2	25.3
1954	12.2	13.5	16.5
1955	14.0	8.9	11.8
1956	16.2	13.1	16.2
1957	21.2	17.9	17.0
1958	3.4	-2.3	1.0
1959	-0.4	14.7	14.9
1960	8.6	7.7	7.1
1961	7.1	11.2	7.9
1962	4.1	0.6	4.3
1963	6.2	18.8	13.7
1964	7.3	6.9	13.7
1965	8.6	6.7	9.2
1966	8.7	11.2	11.0
1967	6.1	4.2	9.2

[a]Computed from data in Table 4-2.

annual rate of growth for the sector follows a pattern similar to that for overall G.D.P. There were very high rates in the period up to 1957, which at least in part is a reflection on the initial small size of these activities. There was a slump in 1958 and overall very high rates for the rest of the period with the exception of 1962 when the rate was 4.3 per cent..

In 1967 the manufacturing sector was the most important contributor to G.D.P. at factor cost. The manufacturing share in that year was 14.9 per cent. As indicated in Table 4-4, this position of dominance was attained in 1963 when it overtook the distribution sector which since 1957 had emerged as the most important contributor to G.D.P. Prior to 1957, the agricultural sector had been the dominant sector in the economy. Throughout the period there was a steady decline in the importance of the agricultural sector to national output. From a high of 27 per cent in 1951 the sector's contribution to G.D.P. declined to 11.4 per cent in 1967.

The period then witnessed a substantial expansion in output. Moreover, the expansion was associated with a reduction in the dominance of any single sector in the economy. These results are in accordance with what one would expect in this instance where specific efforts were made to promote the development of the economy through facilitating expansion in new areas of activity. Since the promotion of

TABLE 4-4

PERCENTAGE CONTRIBUTION OF INDUSTRIAL SECTORS TO GROSS DOMESTIC PRODUCT AT FACTOR COST, 1950-1967

Industrial Sector	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Agriculture, Forestry and Fishing	20.8	27.0	27.2	21.2	20.1	19.2	16.2	13.8	13.5	13.3	12.1	12.0	12.0	13.4	11.6	11.6	11.6	11.4
Mining, Quarrying and Refining				2.4	4.0	4.8	5.5	8.8	8.8	8.2	9.6	9.6	9.6	8.9	9.8	9.7	9.6	9.6
Manufacturing including Sugar	11.3	11.2	12.2	13.8	14.1	13.4	13.1	12.7	12.5	13.8	13.6	14.2	13.7	15.3	14.9	15.0	15.4	14.9
Construction and Installation	7.6	10.9	10.8	9.6	8.7	9.5	12.7	13.6	12.3	12.2	11.9	11.5	11.3	10.5	10.8	10.7	10.7	10.8
Electricity, Gas and Water	1.1	1.0	1.0	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.0	1.2	1.2	1.2	1.4	1.3	1.4	1.4
Transportation, Storage and Communication	7.1	6.6	5.9	6.5	6.9	7.0	6.7	6.4	6.4	7.7	7.8	8.0	8.0	7.4	7.4	7.4	7.5	7.4
Distribution	15.2	15.9	16.3	17.2	16.8	16.8	16.2	16.6	16.8	17.8	18.1	16.5	16.0	15.1	14.7	14.4	14.1	13.9
Financial Institutions[a]									5.9	4.0	3.8	4.4	4.5	3.7	4.4	4.4	4.6	4.6
Ownership of Dwellings	5.9	5.3	4.9	4.9	4.8	4.4	3.9	3.3	3.3	3.1	3.1	3.2	3.3	3.4	3.5	3.4	3.4	3.3
Public Administration	6.1	6.8	6.3	6.5	6.3	6.6	7.1	6.5	6.6	6.0	6.2	6.5	7.2	7.3	7.5	7.5	7.8	8.9
Miscellaneous Services	15.0	15.2	15.4	17.1	17.7	17.5	17.9	17.3	12.9	12.9	12.8	12.9	13.2	13.7	14.0	14.4	13.9	13.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Until 1958 Financial Institutions were included in Miscellaneous Services.

Sources: Government of Jamaica, Department of Statistics, National Accounts: Income and Expenditure; and Government of Jamaica, Central Planning Unit, Economic Survey.

manufacturing activity was a central part of the development strategy, we will now turn to an examination of developments in that sector over the period.

Trends in the Manufacturing Sector

As mentioned above, the manufacturing sector had emerged over the period as the single most important contributor to G.D.P. In light of the industrialization programme a factor of importance in considering the growth of the sector would be whether there was evidence of significant structural change within the sector. The traditional activities had been food processing and the manufacture of sugar, rum and other alcoholic and non-alcoholic beverages and tobacco products. As can be seen from Table 4-5 these operations continued to be the most significant in the sector throughout the period under consideration and in 1967 accounted for approximately 45 per cent of G.D.P. in manufacturing. A significant development in these traditional activities was the very sharp decline in the importance of sugar and rum manufacturing. Whereas in the earlier period these activities accounted for more than 25 per cent of the value of output for the sector, by 1967 they accounted for only 10.5 per cent. This decline in importance can be partly attributed to the growth in importance of other activities, but the main factor was the secular deterioration in production and marketing conditions for sugar.

TABLE 4-5

PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC PRODUCT
AT FACTOR COST IN MANUFACTURING

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Food	27.0	26.5	25.6	25.1	24.7	25.3	23.3	22.6	20.0	20.8	19.2	19.2	21.2	20.9	21.5
Sugar, Rum and Molasses	26.2	24.6	22.3	20.3	21.0	15.7	17.1	18.3	20.8	17.8	21.4	16.4	14.6	14.7	10.5
Beverages	5.8	5.6	5.8	6.3	5.1	5.4	4.7	7.8	7.8	8.5	8.7	9.0	8.4	8.3	8.3
Tobacco	5.8	5.5	5.5	5.7	4.6	4.4	5.2	3.8	4.0	4.8	5.5	7.0	5.0	4.8	4.8
Textiles and Garments	4.7	4.5	5.1	5.8	6.0	6.1	6.3	6.2	6.5	7.4	6.9	7.7	7.8	7.5	8.3
Footwear	0.9	1.0	1.3	1.4	1.3	1.8	1.8	2.4	1.9	2.0	1.6	1.7	1.6	1.7	1.7
Wood and Wood Products	3.0	2.3	2.5	2.7	2.6	3.0	2.5	2.8	2.7	2.8	2.4	2.3	2.5	2.5	2.5
Furniture and Fixtures	6.7	8.4	9.6	9.4	9.8	10.6	11.1	5.0	4.8	4.7	4.2	4.1	4.1	4.0	4.2
Printing, Publishing and Advertising	3.9	4.3	4.6	5.2	5.3	5.9	5.2	6.2	6.1	6.1	8.4	9.1	6.6	6.9	7.7
Leather and Leather Products	0.7	0.5	0.5	0.5	0.6	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.5
Chemical and Chemical Products	3.1	3.2	3.4	4.1	4.0	4.0	4.9	4.5	4.4	4.5	4.2	4.3	5.1	5.3	6.6
Cement and Clay Products	5.7	5.5	5.7	5.9	6.4	7.5	7.3	7.0	7.0	6.6	5.4	6.4	7.7	7.7	7.4
Metal Products and Repairs	5.2	6.2	6.2	6.0	6.9	7.8	8.2	10.4	11.3	11.2	9.4	10.2	12.6	13.0	13.4
Miscellaneous	. .	1.8	1.8	1.8	1.7	1.8	1.6	2.5	2.3	2.4	2.3	2.3	2.3	2.3	2.8

Source: Government of Jamaica, Department of Statistics, National Accounts: Income and Expenditure.

Food processing and other traditional activity revealed a much smaller decline and still accounted for more than 20 per cent of value of output of the sector in 1967. This decline could be attributed to the growth of other activities but it must also be pointed out that food processing operations were influenced in part by the incentive features of the industrialization programme. The other traditional activities, beverages and tobacco manufacture, together maintained their relative position in the sector, with the former improving its overall position. The rise in the contribution of beverages to output of the sector could in part be attributed to the expansion in bottling operations of foreign brands of alcoholic beverages encouraged by the incentive programme.

Among the non-traditional activities the most significant change took place in the category metal products and repairs, which was contributing in excess of 13 per cent of the value of output for the sector in 1967 and in the manufacture of chemical products where the contribution was in excess of 6 per cent in 1967. The only other non-traditional activity of importance in 1967 was textile and garment manufacture where the contribution to output of the sector was in excess of 8 per cent.

In spite of the growth in significance of the sector over the period there emerged only three new important activities within the sector, namely, metal products,

textiles and garments and chemicals. Furniture manufacturing, which contributed in excess of 11 per cent of the sector's contribution to G.D.P. in 1959, declined drastically in 1960 and at the end of the period its contribution was 4 per cent. The manufacture of footwear also reached a peak in terms of its contribution to G.D.P. in 1960 and declined subsequently and remained for most of the sixties in approximately the relative position it had gained in 1958.

The level of employment in the sector was approximately two and one-half times in 1967 what it had been in 1951. There were in 1967 58,416 persons employed in manufacturing activities. Since the employed labour force at that time was estimated at 533,672, employment in manufacturing accounted for 10.9 per cent of the employed labour force. In spite of the fact that the manufacturing sector was the most important contributor to G.D.P. agriculture, the fourth ranked sector in 1967, provided jobs for 43 per cent of the employed labour, as indicated by Table 4-6. Within the sector itself textile and clothing operations were the largest single source of employment. As can be seen in Table 4-1 these operations provided employment for 13,462 people. The activity which ranked next in terms of employment was food processing employing 11,643, followed by sugar and metal products. In the case of sugar, employment was actually less in 1967 than it had been in 1951. For the period covered employment in sugar reached its lowest level

TABLE 4-6

PERCENTAGE DISTRIBUTION OF THE EMPLOYED LABOUR FORCE

		1957	1960	1967
1.	Agriculture	48.5	45.6	43.0
2.	Mining, Quarrying and Refining	.4	.8	.9
3.	Capital Activity	5.9	7.5	7.7
4.	Manufacturing	12.7	8.3	10.9
	(a) Food Products	. .	3.4	3.6
	(b) Textiles and Clothing	. . .	1.8	2.8
	(c) Wood, Cement and Furniture	. .	2.1	3.0
	(d) Other Manufacturing	. .	1.2	1.5
5.	Public Utilities	.5	.6	1.2
6.	Distribution	10.2	10.1	9.3
7.	Transportation and Communication	2.5	3.4	2.8
8.	Miscellaneous Services	18.8	22.9	24.2
9.	Unspecified	.5	.8	. .
	Total	100.0	100.0	100.0

Source: Brown, op. cit., Table V-24.

in 1960. The employment pattern was consistent with the trends outlined above in terms of its contribution to G.D.P. in manufacturing.

It is interesting to note, however, that in many instances the contribution to employment was inversely related to output contribution to the sector. The textile industry provided for 23.1 per cent of those employed in the sector in 1967 (see Table 4-7), while its share of value of output of the sector was only 8.3 per cent. The manufacture of footwear provided employment for 5.1 per cent while its contribution to output was 1.7 per cent. At the same time the production of beverages provided employment for 2.6 per cent while its contribution to output was 8.3 per cent. Metal products, fourth ranked at 9.4 per cent in terms of its contribution to employment, was second ranked at 13.4 per cent in terms of its contribution to output from the sector.

The growth of the sector during the period was associated with a substantial change in the structure of employment within the sector. The traditional manufacturing activities, sugar, food processing and tobacco, accounted for approximately one-third of the employment within the sector compared with approximately 70 per cent at the outset. The dominant sectors in 1967 were textiles and clothing, furniture, metal products and new activities falling under the heading of miscellaneous manufacturing.

TABLE 4-7

PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE EMPLOYED IN MANUFACTURING[a]

	1951	1957	1960	1967
Sugar	29.5	16.3	12.5	10.6
Beverages	4.0	3.7	3.3	2.6
Other Food Products	29.9	27.5	27.1	19.9
Tobacco	6.1	2.9	2.6	3.3
Textiles and Clothing	6.1	14.9	15.9	23.1
Footwear	1.4	5.5	5.7	5.1
Furniture and Fixtures	1.9	. .	5.8	5.8
Wood and Wood Products	3.0	11.1	1.5	1.7
Paper and Paper Products	. .	. .	0.8	0.7
Printing and Publishing	4.7	4.0	5.1	3.8
Leather Products	0.5	1.1	0.6	0.3
Rubber Products	. .	. .	0.2	0.3
Chemical Products	4.4	1.3	2.2	2.9
Non-Metallic Mineral Products	. .	5.0	5.8	6.6
Metal Products, Machinery Products and Repairs	6.3	5.1	10.0	9.4
Petroleum Products	. .	. .	. .	0.2
Miscellaneous Manufactures	2.2	1.7	0.9	3.6
Total	100.0	100.0	100.0	100.0

[a]Computed from data in Table 4-1.

The growth of the sector over the period was also associated with an increase in the share of non-agricultural manufactured products in total exports. In 1967 these items accounted for 10.6 per cent of total exports as compared with 2.7 per cent eleven years earlier in 1957. As indicated by Table 4-8, the most important export items were clothing accounting for 34.2 per cent and mineral fuels accounting for 25.9 per cent. These two items along with essential oils accounted for more than 70 per cent of the value of exports. It has been estimated that approximately 94 per cent of clothing exports went to markets in the United Kingdom, the United States and Canada, with the United States absorbing 60 per cent of total exports. Since 1963, the imposition of quotas has restricted exports to the United States.[4]

Having looked at general developments in the economy and in the manufacturing sector, we will now turn to an examination of those developments in the manufacturing sector which could be directly attributed to the incentive programme.

The main measures in the industrialization strategy were the Pioneer Industries Encouragement Law (P.I.E.L.), the Industrial Incentives Law (I.I.L.) and the Export Industries Encouragement Law (E.I.E.L.). As at the end of 1966 there were 149 firms operating with the assistance provided by these laws. The largest number, as shown by Table 4-9,

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[4]Jefferson, op. cit., p. 140.

TABLE 4-8

COMPOSITION OF EXPORTS OF MANUFACTURED GOODS
(Percentage)

	1957	1960	1961	1962	1964	1965	1966	1967
Tobacco Products	32.4	17.2	11.5	8.2	8.8	5.4	4.3	4.5
Mineral Fuels, Lubricants, etc.					15.1	35.2	35.0	25.9
Chemical Elements and Compounds	3.7	1.7	0.5	0.3	0.2	0.4	0.9	1.1
Dyeing and Tanning Materials	11.0	9.3	6.8	6.3	6.5	4.3	5.0	6.0
Medicinal and Pharmaceutical Products	0.7	0.8	0.6	0.5	0.6	0.5	1.1	1.6
Essential Oils, Polishing and Cleansing Preparations	14.6	10.3	7.6	9.3	8.2	8.8	12.6	11.0
Paper and Paper Products	2.5	2.2	1.2	1.7	1.6	1.1	1.0	0.8
Textile and Textile Products	15.0	4.7	7.9	4.6	10.5	5.9	1.3	1.8
Portland Cement	0.8	3.4	2.2	3.7	4.2	4.5	4.3	4.7
Metal Products	9.4	9.0	7.2	14.6	2.3	2.5	2.6	2.4
Machinery			1.1		0.8	0.5	0.5	0.8
Clothing	7.6	35.6	32.5	45.6	37.1	28.0	27.3	34.2
Footwear	2.2	6.0	21.0	5.2	4.0	2.8	4.0	5.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage of Total Exports	2.7	5.0	7.2	7.8	8.9	10.2	11.2	10.6

Sources: Estimated from Brown, op. cit., Table VI-7; Government of Jamaica, Department of Statistics, National Accounts: Income and Expenditure; and Government of Jamaica, Central Planning Unit, Economic Survey.

TABLE 4-9

NUMBER OF COMPANIES OPERATING UNDER INCENTIVE LAWS BY INDUSTRY GROUP (MARCH, 1967)

Industry Group	I.I.L.	P.I.E.I.L.	E.I.E.L.	Total
Metal Products	26	2	. .	28
Non-Metallic Mineral Products	5	3	. .	8
Chemical Products	12	7	. .	19
Rubber Products	3	. .	. .	3
Plastic Products	16	2	. .	18
Paper Products	4	. .	. .	4
Containers and Packaging Materials	11	2	. .	13
Clothing	. .	. .	18	18
Textiles	3	. .	. .	3
Food Products	3	3	. .	6
Pharmaceuticals and Toilet Preparations	4	. .	. .	4
Tobacco Products	. .	. .	1	1
Wood and Fibres	2	. .	. .	2
Electrical Products	4	1	. .	5
Miscellaneous Products	7	. .	10	17
Total	100	20	29	149

Source: Government of Jamaica, Industrial Development Corporation, Statistical Report of Manufacturing Enterprises Approved and Operating Under Industrial Incentive Laws (1967).

were operating under the I.I.L. with the E.I.E.L. ranking second in importance. Most of the firms (26) operating under the I.I.L. were engaged in the manufacture of metal products with the manufacture of plastic products (16), chemical products (12), containers and packing materials (11) being the other important activities. The dominance of metal products manufacturing is consistent with the fact that it was third ranked in terms of its contribution to G.D.P. of the sector in 1966. The majority of firms, 18 of 29, operating under the E.I.E.L. were engaged in the manufacture of clothing. This is reflected in the fact mentioned previously that by the end of the period under consideration, clothing was the single most important manufacturing export. The P.I.E.L. which was effectively superseded by the I.I.L. was utilized by the smallest number of firms (20) of which 7 were engaged in the manufacture of chemicals.

Data on employment received from approximately 95 per cent of the firms operating under the three incentive laws indicated that as at the end of 1966, 9,133 persons were employed. Of this number there was practically an even split as indicated by Table 4-10 between numbers employed in firms operating under the P.I.E.L. and I.I.L. and those operating under the E.I.E.L. This estimate suggests that approximately 20 per cent of those employed in manufacturing activities were in plants receiving assistance under the incentive laws.

TABLE 4-10

EMPLOYMENT IN FIRMS OPERATING
UNDER INCENTIVE LAWS

	I.I.L. and P.I.E.L.	E.I.E.L.	Total
Metal Products	660		660
Non-Metallic Mineral Products	356		356
Chemicals	498		498
Plastic Products	227		227
Containers and Packaging	1,173		1,173
Electrical Products	275		275
Food	144		144
Clothing		3,090	3,090
Leather Products		1,050	1,050
Miscellaneous Manufacturing	1,193	467	1,660
Total	4,526	4,607	9,133

Source: Government of Jamaica, Industrial Development Corporation, Statistical Report of Manufacturing Enterprises Approved and Operating Under Industrial Incentive Laws (March 31, 1967).

The value of sales from these enterprises, domestic and foreign, amounted to $56.6 million in 1966 representing approximately 67 per cent of G.D.P. of the sector, excluding sugar, rum and molasses. The value of exports alone, $16.2, was approximately 92 per cent of the value of non-traditional exports, i.e., excluding sugar, rum and molasses.

Total capital investment for all firms operating with the aid of incentives amounted to approximately $31.8

million, indicating a capital investment of $3,491.0 per employee in these plants. There was, however, a considerable difference in the capital intensity of firms operating with the assistance of the P.I.E.L. and I.I.L. as compared with those operating under the E.I.E.L. Capital investment per worker for firms operating under the I.I.L. and P.I.E.L. amounted to $6,366.2 as compared with $333.0 with respect to those firms operating under the E.I.E.L. The very high capital intensity in the case of the former was mainly due to the very high levels of investment in the chemical and container and packaging industries. As indicated by Table 4-11 investment in these two sectors amounted to $20 million or 69 per cent of capital investment for all firms operating under these two laws. Capital investment per worker in the chemical industry amounted to $29,307.6 and in the container and packaging industry $4,624.2. As can be seen from the table the only activity in which capital investment was less than $2,000 was in the case of electrical products.

In summary, the information provided above indicated that there was substantial growth in the economy in the period under consideration as well as the emergence of the manufacturing sector as the most important contributor to G.D.P. Evidence was also provided which indicated the importance of the manufacturing sector in exports and the growth in its contribution to overall island employment. In spite of these developments the real test of the success of

the programme of promoting the development of the manufacturing sector has to be based on the extent to which there has emerged a high measure of interdependence within the sector itself as well as between that sector and other sectors of the economy. In the following section an attempt will be made to determine how far these conditions were satisfied.

TABLE 4-11

CAPITAL INVESTMENT AND INVESTMENT PER EMPLOYEE BY FIRMS OPERATING UNDER THE INCENTIVE LAWS (J$) AS AT DECEMBER 31, 1966

Industry Group	P.I.E.L. and I.I.L.		E.I.E.L.	
	Capital Investment	Investment /Employee	Capital Investment	Investment /Employee
Metal Products	1,624,974	2,462.0		
Non-Metallic Mineral Products	2,295,740	6,448.8		
Chemicals	14,595,200	29,307.6	-	
Plastic Products	626,024	2,757.8		
Containers and Packaging	5,424,074	4,624.2		
Electrical Products	337,694	1,228.0		
Food	810,976	5,631.8		
Clothing			1,100,312	356.0
Leather Products			274,872	261.8
Miscellaneous Manufacturing	3,099,522	2,598.0	159,696	342.0

Source: Government of Jamaica, Industrial Development Corporation, Statistical Report of Manufacturing Enterprises Approved and Operating Under Industrial Incentive Laws (March 31, 1967).

Intra and Inter-Sectoral Integration

In carrying out this part of the exercise reliance was placed on the input coefficients computed from an 18 by 18 input-output matrix of the Jamaican economy for the years 1957, 1960, 1963 and 1966 (see Tables 4-12 to 4-15). Starting with 1957, an examination of the input coefficients for the manufacturing sector, Table 4-12, provides clear evidence of the limited degree of inter-industry purchases carried out by the industries listed. Taking into consideration the value of purchases from other manufacturing activities as well as those inputs from the activity itself entering output, as a percentage of the value of output, the highest estimate was 19 per cent in the case of the manufacture of beverages. For tobacco products and chemicals it was 18 per cent. It was 15 per cent approximately for non-metallic mineral products and 12 per cent approximately for both footwear and metal products and for the remaining activities substantially less than 10 per cent.

As far as inter-sectoral integration was concerned, that is, purchases from domestic agriculture, construction and the service sector, an examination of the input coefficients reveals that with three exceptions such interrelationships were very limited. The three exceptions were in sugar and rum, where in excess of 56 per cent of the value of output represented cane purchases, food processing, where approximately 24 per cent of the value of output represented

TABLE 4-12

INPUT COEFFICIENTS OF THE TRANSACTIONS MATRIX: JAMAICA--1957[a]

	Domestic Agriculture (1)	Sugar Cane Growing (2)	Other Agricultural Exports (3)	Mining and Quarrying (4)	Other Manufacturing[b] (5)	Miscellaneous Manufacturing (5.1)	Sugar and Rum Distilling (5.2)	Beverages (5.3)	Tobacco Products (5.4)	Petroleum Products (5.5)
Agriculture	.0500	. .	.0059	.0080	.0228	.0814	. .	.0030	.0630	. .
Sugar Cane Growing	. .	. .	. .	. .	.2976	. .	.5626	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	. .	.0023	.0997	. .	. .	. .	. .
Other Manufacturing	.0070	.0004	.0030	.0200	.0585	.0079	.0048	.1900	.1820	. .
Chemicals	.0005	. .	. .	. .	. .	. .	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	.0013	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	. .	. .	. .	.0010	. .	. .	. .	. .	. .
Capital Activity	.0350	.1100	.0500	.0550	.0263	. .	.0379	.0141	.0071	. .
Public Utilities	.0050	.0059	.0029	.0013	.0116	.0066	.0100	.0370	.0040	. .
Transportation and Communications	.0600	.0749	.0399	.0514	.0351	.0604	.0290	.0440	.0600	. .
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0229	.0155	.2600	.0060	.0194	.0643	.0065	.0093	.0091	. .
Miscellaneous Services	.0140	.0200	.0239	.0025	.0055	.0052	.0030	.0031	.0031	. .
Financial Services	.0004	.0151	.0099	.0034	.0054	.0066	.0040	.0091	.0031	. .
Imports of Goods (Competitive)	.0309	.0670	.0044	.0169	.0643	.1207	. .	.0252	.1904	. .
Imports of Goods (Non-Competitive)	.0072	.0067	. .	.0354	.0404	. .	.0054	.0757	.0044	. .
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Indirect Taxes	.0153	.0118	. .	.0626	.0769	. .	. .	.2773	.2240	. .
Employment Income	.1847	.5388	.3124	.1189	.1991	.2126	.1298	.1364	.1179	. .
Interest and Rent	.4853	.1043	.2144	.4962	.1513	.3228	.1671	.1296	.1263	. .
Depreciation	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Profits	.0370	.0296	.0733	.1224	.0312	.0118	.0399	.0453	.0056	. .
Business Transfer	.0448	. .	. .	. .	. .	. .	. .	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	. .

[a]Each entry represents direct purchases from sector named at left by sector named at top.

[b]Other Manufacturing is inclusive of Miscellaneous Manufacturing, Sugar, Rum, Molasses, Beverages, Tobacco Products, Petroleum Products, Footwear, Leather and Leather Products, Wood and Wood Products, Furniture and Fixtures, Paper and Paper Products, Printing and Publishing, Rubber and Rubber Products.

Source: Brown, op. cit., Chapter V.

TABLE 4-12--Continued

	Footwear (5.6)	Leather and Leather Products (5.7)	Wood and Wood Products (5.8)	Furniture and Fixtures (5.9)	Paper and Paper Products (5.10)	Printing and Publishing (5.11)	Rubber and Rubber Products (5.12)	Chemicals (6)	Textiles and Clothing (7)	Non-Metallic Mineral Products (8)
Agriculture	. .	. .	.0708	.0781	. .	. .	. .	.0630	.0628	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	. .	. .	. .	. .	. .	. .	.1550
Other Manufacturing	.1242	.0621	.0074	.0217	.0022	.0239	. .	.0921	.1029	.1459
Chemicals	. .	. .	. .	. .	. .	. .	. .	.0980	.0026	. .
Textiles and Clothing	. .	. .	. .	.0117	. .	. .	. .	. .	.0941	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	.0788	. .	. .	. .	. .	. .	. .	. .	. .
Capital Activity	.0262	.0215	.0320	.0278	.0130	.0088	. .	.0170	.0189	.0690
Public Utilities	.0030	.0119	.0043	.0111	.0022	.0044	. .	.0071	.0129	.0099
Transportation and Communications	.0126	.0382	.0209	.0139	.0346	.0642	. .	.0439	.0139	.0523
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0427	.1671	.0609	.0420	.0346	.0334	. .	.0609	.0270	.0304
Miscellaneous Services	. .	.0190	.0080	.0088	.0216	.0164	. .	.0221	.0071	.0090
Financial Services	.0058	.0072	.0191	.0006	.0043	.0123	. .	.0079	.0039	.0145
Imports of Goods (Competitive)	.3880	.2005	. .	.0133	. .	.1364	. .	.2072	.3046	.0048
Imports of Goods (Non-Competitive)	.0398	. .	.3422	.0376	.1316	.0901	. .	.0901	. .	.0202
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Indirect Taxes	.0501	.0500	.0505	.0698	.0605	. .	. .	.0939	.0499	.0181
Employment Income	.2196	.1766	.3034	.4511	.5162	.4528	. .	.1074	.1804	.2726
Interest and Rent	.0124	.1590	.0670	.1905	.1360	.1196	. .	.0644	.1006	.1390
Depreciation	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Profits	.0252	.0072	.0135	.0225	.0432	.0384	. .	.0200	.0323	.0585
Business Transfer	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	. .	1.0000	1.0000	1.0000

TABLE 4-12--Continued

	Metal Products (9)	Machinery Products and Repairs (10)	Food Processing (11)	Capital Activity (12)	Public Utilities (13)	Transportation and Communication (14)	Ownership of Dwellings (15)	Distribution (16)	Miscellaneous Services (17)	Financial Services (18)
Agriculture	. .	. .	.2398	.0039	. .	.0040	. .	. .	.0246	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	.0638	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	.0297	. .	.0090	. .	. .	. .	. .
Other Manufacturing	.1151	. .	.0168	.0093	.0070	.0960	.2040	.0044	.0223	.0037
Chemicals	. .	. .	.0004	.0041	. .	. .	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	.0454	. .	. .	. .	. .	. .	. .
Metal Products	.0119	. .	. .	.0205	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	. .	.0690	. .	. .	. .	. .	. .	.0345	. .
Capital Activity	.0170	. .	.0226	.0119	.0659	.0200	. .	.0487	.0219	.0037
Public Utilities	.0050	. .	.0082	.0020	.0201	.0020	. .	.0313	.0137	.0027
Transportation and Communications	.0170	. .	.0302	.0385	.0322	.0300	. .	.1496	.0200	.0167
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0249	. .	.0362	.0545	.0653	.1030	.0009	. .	.0569	.0079
Miscellaneous Services	.0080	. .	.0082	.0020	.0140	.0170	.0072	.0278	.0127	.0212
Financial Services	.0199	. .	.0045	.0020	.0665	.0200	.0506	.0417	.0052	.0114
Imports of Goods (Competitive)	. .	. .	.0475	. .	. .	. .	. .	.0337	.0667	.0249
Imports of Goods (Non-Competitive)	.3271	. .	.1083	. .	.0955	.1765	. .	.0017	.0038	.0107
Imports of Building Materials	. .	. .	. .	.3342	.0904	. .	. .	. .	. .	. .
Imports of Services	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Indirect Taxes	.0570	. .	.0453	.0310	.0041	.0167	. .	.1322	.0073	.0208
Employment Income	.3150	. .	.1452	.3114	.2093	.2954	. .	.2643	.4309	.2472
Interest and Rent	.0753	. .	.1274	.0678	.2630	.1158	.5407	.2399	.2195	.0836
Depreciation	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Profits	.0066	. .	.0206	.0318	.0602	.0866	.1966	.0183	.0210	.0078
Business Transfer	. .	. .	. .	. .	. .	. .	. .	.0064	. .	. .
Total	1.0000	. .	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-13

INPUT COEFFICIENTS OF THE TRANSACTIONS MATRIX: JAMAICA--1970[a]

	Domestic Agriculture (1)	Sugar Cane Growing (2)	Other Agricultural Exports (3)	Mining and Quarrying (4)	Other Manufacturing[b] (5)	Miscellaneous Manufacturing (5.1)	Sugar and Rum Distilling (5.2)	Beverages (5.3)	Tobacco Products (5.4)	Petroleum Products (5.5)
Agriculture	.0484	. .	.0067	.0088	0127	.0057	. .	.0031	.0196	. .
Sugar Cane Growing	. .	. .	. .	. .	.2495	. .	.5930	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	.0004	. .	. .	. .	.0107	. .	. .	. .	. .
Other Manufacturing	.0069	. .	.0025	.0205	.0651	.0082	.0181	.1921	.1824	. .
Chemicals	. .	. .	. .	. .	.0016	. .	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	.0016	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	.0157	. .	. .	. .	.0013	. .	. .	. .	. .	. .
Capital Activity	.0353	.1189	.0504	.0641	.0249	. .	.0383	.0181	.0069	. .
Public Utilities	.0047	.0070	.0032	.0013	.0122	.0058	.0104	.0379	.0004	. .
Transportation and Communications	.0626	.0768	.0447	.0531	.0294	.0610	.0298	.0436	.0063	. .
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0092	.0289	.2633	.0060	.0175	.0659	.0017	.0054	.0091	.7500
Miscellaneous Services	.0160	.0192	.0202	.0025	.0053	.0039	.0030	.0002	.0004	. .
Financial Services	.0007	.0150	.0109	.0035	.0062	.0066	.0045	.0098	.0030	. .
Imports of Goods (Competitive)	.0504	.0434	.0647	.0414	.0570	. .	.0007	.0230	.1085	. .
Imports of Goods (Non-Competitive)	.0007	.0194	.0008	.0562	.0601	.1928	. .	.0652	. .	. .
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	.0006	. .	. .	.0172	. .	.0041	. .	. .	. .	. .
Indirect Taxes	.0159	.0162	.0079	.1848	.1129	.0181	.0029	.3162	.4455	. .
Employment Income	.2117	.4857	.3189	1466	.1602	.2133	.1097	.1021	.1074	.2500
Interest and Rent	.0193	.0107	.0150	.0260	.0175	.0294	.0794	.0072	.0114	. .
Depreciation	.0245	.0446	.0264	.1147	.0620	.0190	.0446	.0372	.0372	. .
Profits	.4705	.1138	.1507	.2832	.1027	.2743	.0362	.1299	.0839	. .
Business Transfer	.0069	. .	.0087	.0001	.0103	. .	.0047	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

[a]Each entry represents direct purchases from sector named at left by sector named at top.

[b]Other Manufacturing is inclusive of Miscellaneous Manufacturing, Sugar, Rum, Molasses, Beverages, Tobacco Products, Petroleum Products, Footwear, Leather and Leather Products, Wood and Wood Products, Furniture and Fixtures, Paper and Paper Products, Printing and Publishing, Rubber and Rubber Products.

Source: Brown, op. cit., Chapter V.

TABLE 4-13--Continued

	Footwear (5.6)	Leather and Leather Products (5.7)	Wood and Wood Products (5.8)	Furniture and Fixtures (5.9)	Paper and Paper Products (5.10)	Printing and Publishing (5.11)	Rubber and Rubber Products (5.12)	Chemicals (6)	Textiles and Clothing (7)	Non-Metallic Mineral Products (8)
Agriculture	. .	. .	.0710	.0567	. .	. .	. .	.0640	.0479	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	. .	. .	. .	. .	. .	. .	.1562
Other Manufacturing	.1244	.1408	.0009	.2269	.0024	.0279	.0156	.0191	.0022	.0090
Chemicals	. .	. .	. .	. .	. .	. .	. .	.0735	. .	. .
Textiles and Clothing	. .	. .	. .	.0230	. .	. .	. .	. .	.0761	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	.1368
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Capital Activity	.0262	.0235	.0327	.0204	.0158	.0101	.0260	.0179	.0151	.0695
Public Utilities	.0031	.0117	.0037	.0081	.0024	.0054	.0104	.0071	.0702	.0110
Transportation and Communications	.0139	.0376	.0220	.0104	.0341	.0733	.0355	.0444	.0151	.0553
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0432	.1667	.0617	.0499	.0341	.0365	.0990	.0610	.0837	.0026
Miscellaneous Services	. .	.0023	.0080	.0055	.0219	.0203	.0104	.0216	.0050	. .
Financial Services	.0067	.0070	.0196	.0003	.0049	.0145	.0156	.0081	.0071	.0090
Imports of Goods (Competitive)	.4437	.2089	. .	.0736	. .	.0455	.0313	.3061	.2628	.0169
Imports of Goods (Non-Competitive)	. .	. .	.3911	.0277	.4988	.1815	.3906	.0360	.0049	. .
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	.0005	. .	. .	. .	. .	.0016	. .	. .	. .	.0076
Indirect Taxes	. .	.0211	.0014	.0092	.0037	.0030	.0052	.0194	.0027	.0016
Employment Income	.2509	.2653	.2486	.3199	.1910	.2033	.2563	.1350	.2017	.2074
Interest and Rent	.0314	.0142	.0132	.0227	.0146	.0380	.0408	.0125	.0343	.0153
Depreciation	.0262	.0305	.0196	.0159	.0491	.0246	.0573	.0191	.0276	.0736
Profits	.0298	.0704	.1065	.1316	.1472	.1065	.0260	.1350	.2036	.1717
Business Transfer	. .	. .	. .	. .	. .	.1949	. .	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-13--Continued

	Metal Products (9)	Machinery Products and Repairs (10)	Food Processing (11)	Capital Activity (12)	Public Utilities (13)	Transportation and Communication (14)	Ownership of Dwelling (15)	Distribution (16)	Miscellaneous Services (17)	Financial Services (18)
Agriculture	. .	. .	.2882	.0032	. .	.0044	. .	. .	.0281	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	.0479	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	.0071	. .	.0224	. .	.0010	. .	. .	. .	. .
Other Manufacturing	.0147	.0102	.0055	.0142	.0069	.0169	. .	.0277	.0096	.0104
Chemicals	. .	. .	. .	.0055	. .	. .	. .	. .	.0027	. .
Textiles and Clothing	. .	. .	. .	.	. .	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	.0592	. .	. .	. .	. .	. .	. .
Metal Products	. .	. .	.0193	.0210	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	.0274	. .	.0577	. .	. .	. .	. .
Food Processing	. .	. .	.0838	. .	. .	. .	. .	. .	.0517	. .
Capital Activity	.0185	.0141	.0252	.0096	.0656	.0207	.2258	.0290	.0257	.0100
Public Utilities	.0052	.0081	.0098	.0016	.0016	.0023	. .	.0182	.0136	.0035
Transportation and Communications	.0167	.0219	.0397	.0238	.0326	.0378	. .	.0863	.0226	.0187
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	.	. .	. .	. .
Distribution	.0496	.1055	.0320	.0319	.1286	.0937	.0001	. .	.0726	.0284
Miscellaneous Services	.0085	.0038	.0037	.0016	.0144	.0170	.0008	.0164	.0154	.0043
Financial Services	.0017	.0124	.0046	.0016	.0003	.0208	.0564	.0243	.0097	.0135
Imports of Goods (Competitive)	.0733	.0024	.0224	. .	.0126	. .	. .	.0231	.0389	.0182
Imports of Goods (Non-Competitive)	.3122	.4021	.1382	. .	.0151	.1193	. .	.0023	. .	.0063
Imports of Building Materials	. .	. .	. .	.3289	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	.0014	. .	. .	.0230	.0034	. .	.0037	.0052
Indirect Taxes	.0010	.0160	.0058	.0336	.0111	.0232	.0319	. .	.0030	.0269
Employment Income	.1135	.1955	.1180	.2893	.2642	.2134	. .	.3971	.4546	.2681
Interest and Rent	.0130	.0291	.0116	.0184	.1578	.0243	.1276	.0703	.0232	.1042
Depreciation	.0224	.0205	.0202	.0189	.0310	.0764	.1930	.0367	.0213	.0181
Profits	.3472	.1010	.1118	.0829	.2002	.2423	.3610	.2676	.1484	.3590
Business Transfer	.0025	. .	.0012	. .	.0082	.0008	. .	. .	.0182	.0047
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-14

INPUT COEFFICIENTS OF THE TRANSACTIONS MATRIX: JAMAICA--1963[a]

	Domestic Agriculture (1)	Sugar Cane Growing (2)	Other Agricultural Exports (3)	Mining and Quarrying (4)	Other Manufacturing[b] (5)	Miscellaneous Manufacturing (5.1)	Sugar and Rum Distilling (5.2)	Beverages (5.3)	Tobacco Products (5.4)	Petroleum Products (5.5)
Agriculture	.0472	.0002	.0065	.0090	.0244	.0466	. .	.0025	.0591	. .
Sugar Cane Growing	. .	. .	. .	. .	.2933	. .	.6121	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	.0008	. .	. .	. .	. .	. .	. .	. .	. .
Other Manufacturing	.0072	. .	.0022	.0036	.0567	.1429	.0020	.1033	.1294	.4444
Chemicals	. .	. .	. .	. .	.0039	.0327	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	.0014	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	.0002	. .	. .	. .	.0049	. .	. .	.0302	. .	. .
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	.0039	. .	. .	. .	. .	. .	. .
Food Processing	.0248	. .	. .	. .	.0009	. .	. .	. .	. .	. .
Capital Activity	.0335	.0700	.0555	.0654	.0247	.0099	.0336	.0168	.0106	. .
Public Utilities	.0047	.0112	.0028	.0014	.0076	.0070	.0076	.0105	.0003	. .
Transportation and Communications	.0508	.0759	.0443	.0517	.0314	.0325	.0305	.0474	.0105	. .
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0082	.0118	.1966	.0075	.0171	.0548	.0022	.0064	.0078	.2222
Miscellaneous Services	.0160	.0201	.0257	. .	.0060	.0052	.0030	.0100	.0057	.1111
Financial Services	. .	.0205	.0110	.0037	.0030	.0280	.0044	.0117	.0024	. .
Imports of Goods (Competitive)	.0569	.0470	.0887	.0408	.0512	. .	.0142	.0485	.1057	. .
Imports of Goods (Non-Competitive)	.0001	.0333	.0028	.0473	.0375	.0828	. .	.0300	.0045	. .
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	.0008	. .	. .	.0125	.0002	.0047	. .	. .	. .	. .
Indirect Taxes	.0163	.0185	.0140	.1639	.1076	.0274	.0028	.3741	.4040	. .
Employment Income	.2038	.4342	.3214	.1476	.1550	.2332	.1146	.1205	.0631	.1111
Interest and Rent	.0199	.0158	.0130	.0178	.0170	.0292	.0149	.0111	.0208	. .
Depreciation	.0217	.0330	.0251	.1266	.0427	.0264	.0396	.0402	.0100	. .
Profits	.4678	.1327	.1902	.2719	.1090	.2227	.0939	.1295	.1439	.1112
Business Transfer	.0061	. .	.0002	.0204	.0021	. .	.0046	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

[a]Each entry represents direct purchases from sector named at left by sector named at top.

[b]Other Manufacturing is inclusive of Miscellaneous Manufacturing, Sugar, Rum, Molasses, Beverages, Tobacco Products, Petroleum Products, Footwear, Leather and Leather Products, Wood and Wood Products, Furniture and Fixtures, Paper and Paper Products, Printing and Publishing, Rubber and Rubber Products.

Source: Brown, op. cit., Chapter V.

TABLE 4-14--Continued

	Footwear (5.6)	Leather and Leather Products (5.7)	Wood and Wood Products (5.8)	Furniture and Fixtures (5.9)	Paper and Paper Products (5.10)	Printing and Publishing (5.11)	Rubber and Rubber Products (5.12)	Chemicals (6)	Textiles and Clothing (7)	Non-Metallic Mineral Products (8)
Agriculture	. .	. .	.3416	. .	.0006	. .	. .	.0699	.0323	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	. .	. .	. .	. .	. .	. .	.1170
Other Manufacturing	.0218	. .	.0150	.2202	.0031	.1410	.0170	.0240	.0024	.1134
Chemicals	. .	. .	. .	. .	. .	. .	. .	.0987	. .	. .
Textiles and Clothing	. .	. .	. .	.0256	. .	. .	. .	. .	.0225	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	.0916
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	.1506	. .	. .	. .	. .	. .	. .	. .	. .
Capital Activity	.0261	.0104	.0296	.0197	.0135	.0120	.0238	.0163	.0136	.0775
Public Utilities	.0032	.0104	.0037	.0076	.0037	.0066	.0136	.0070	.0064	.0049
Transportation and Communications	.0138	.0909	.0191	.0106	.0288	.0537	.0374	.0359	.0137	.0549
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0346	.0571	.0548	.1041	.0594	.0199	.0913	.0203	.0409	.0838
Miscellaneous Services	.0069	.0026	.0065	.0053	.0196	.0158	.0034	.0151	.0048	.0038
Financial Services	.0069	.1455	.0170	.0012	.0141	.0107	.0170	.0087	.0072	.0104
Imports of Goods (Competitive)	.2929	.3221	.1429	.0482	.1224	.0275	. .	.2400	.3255	.0152
Imports of Goods (Non-Competitive)	.2535	. .	. .	.0670	.3745	.1264	.4286	.1233	.0179	.0075
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	.0016	. .	. .	. .	. .	.0013	. .	. .	.0015	. .
Indirect Taxes	. .	.0312	.0014	.0041	.0049	.0102	. .	.0132	.0023	.0046
Employment Income	.2513	.1195	.2290	.3189	.1940	.4210	.2586	.1571	.2131	.1823
Interest and Rent	.0309	.0104	.0122	.0223	.0239	.0268	.0170	.0118	.0316	.0245
Depreciation	.0266	.0182	.0174	.0165	.0316	.0319	.0612	.0185	.0256	.0663
Profits	.0299	.0311	.1098	.1237	.1059	.0932	.0306	.1347	.1738	.1702
Business Transfer	. .	. .	. .	. .	. .	. .	. .	. .	. .	.0035
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-14--Continued

	Metal Products (9)	Machinery Products and Repairs (10)	Food Processing (11)	Capital Activity (12)	Public Utilities (13)	Transportation and Communication (14)	Ownership of Dwelling (15)	Distribution (16)	Miscellaneous Services (17)	Financial Services (18)
Agriculture	. .	. .	.2691	.0032	. .	.0053	. .	. .	.0110	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	.0415	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	.0192	. .	.0010	. .	. .	. .	. .
Other Manufacturing	.0138	.0069	.0106	.0142	.0099	.0346	. .	.0229	.0342	.0091
Chemicals	. .	. .	.0003	.0068	. .	. .	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	.0651	. .	. .	. .	. .	. .	. .
Metal Products	. .	.0536	.0172	.0311	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	.0220	.0263	. .	.0238	. .	.0606	. .	. .	. .	. .
Food Processing	. .	. .	.0706	. .	. .	. .	. .	. .	.0514	. .
Capital Activity	.0194	.0140	.0252	.0096	.1327	.0128	.2258	.0161	.0211	.0082
Public Utilities	.0048	.0081	.0099	.0016	.0016	.0036	. .	.0030	.0129	.0036
Transportation and Communications	.0172	.0219	.0419	.0256	.0316	.0384	. .	.0803	.0244	.0176
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0401	.0561	.0221	.0431	.0228	.0626	. .	.2410	.0646	.0218
Miscellaneous Services	.0092	.0038	.0083	.0016	.0077	.0123	. .	.0080	.0165	.0171
Financial Services	.0019	.0124	.0021	.0016	.0166	.0168	.0565	.0040	.0093	.0094
Imports of Goods (Competitive)	. .	.0022	.0434	. .	. .	. .	. .	.0170	.0003	.0078
Imports of Goods (Non-Competitive)	.4116	.4677	.1244	. .	.0254	.1305	. .	.0026	.0030	. .
Imports of Building Materials	. .	. .	. .	.3077	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	.0031	. .	. .	.0211	. .	.0016	.0024	.1094
Indirect Taxes	.0012	.0192	.0344	.0275	.0035	.0262	.0464	.0402	.0076	.0105
Employment Income	.1140	.1508	.1301	.2945	.2845	.2915	. .	.2490	.4333	.1984
Interest and Rent	.0134	.0278	.0117	.0161	.1617	.0295	.1277	.0031	.0218	.2819
Depreciation	.0241	.0205	.0205	.0196	.1022	.0934	.1930	.0242	.0200	.0167
Profits	.3072	.0987	.1074	.0361	.1968	.2006	.3506	.2411	.1015	.2915
Business Transfer	. .	. .	.0012	. .	.0030	.0004	. .	.0030	.0032	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-15

INPUT COEFFICIENTS OF THE TRANSACTIONS MATRIX: JAMAICA--1966[a]

	Domestic Agriculture (1)	Sugar Cane Growing (2)	Other Agricultural Exports (3)	Mining and Quarrying (4)	Other Manufacturing[b] (5)	Miscellaneous Manufacturing (5.1)	Sugar and Rum Distilling (5.2)	Beverages (5.3)	Tobacco Products (5.4)	Petroleum Products (5.5)
Agriculture	. .	. .	. .	.0056	.0153	.0378	. .	. .	.0270	. .
Sugar Cane Growing	. .	.0001	. .	. .	.1696	. .	.5667	. .	. .	. .
Agricultural Exports	. .	. .	.0031	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	.0007	.0003	. .	. .	. .	. .	. .	. .	. .
Other Manufacturing	.0086	. .	.0011	.0201	.0770	.0710	.0038	.1638	.1229	.0003
Chemicals	. .	. .	. .	. .	.0003	.0094	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	.0017	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	.0048	. .	. .	.0239	. .	. .
Metal Products	. .	. .	. .	. .	.0039	. .	. .	. .	. .	.0744
Machinery Products and Repairs	. .	. .	. .	.0060	. .	. .	. .	. .	. .	. .
Food Processing	.0262	. .	. .	. .	.0008	. .	. .	. .	. .	. .
Capital Activity	.0319	.0586	.0630	.0629	.0210	.0103	.0341	.0209	.0071	.0080
Public Utilities	.0046	.0095	.0065	.0038	.0074	.0072	.0077	.0130	.0002	.0095
Transportation and Communications	.0588	.0635	.0582	.0518	.0283	.0468	.0327	.0409	.0087	.0169
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Construction	.0089	.0041	.1376	.0059	.0207	.0733	.0071	.0269	.0164	.0010
Miscellaneous Services	.0137	.0168	.0236	.0110	.0060	.0058	.0043	.0087	.0041	.0019
Financial Services	.0020	.0175	.0123	. .	.0056	.0084	.0054	.0096	.0024	.0013
Imports of Goods (Competitive)	.0600	.0318	.0056	.0026	.0705	.2717	.0007	.1254	.0750	. .
Imports of Goods (Non-Competitive)	. .	.0052	.0002	.0613	.1342	. .	.0282	. .	.0046	.7448
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	.0001	.0134	.0015	.0049	. .	. .	. .	.0028
Indirect Taxes	.0567	.0041	.0206	.1788	.1319	.0319	.0029	.3089	.5024	. .
Employment Income	.1970	.5548	.3022	.1508	.1460	.2209	.1314	.1043	.1041	.0219
Interest and Rent	.0193	.0112	.0136	.0173	.0146	.0279	.0151	.0071	.0214	. .
Depreciation	.0200	.0486	.0389	.1246	.0355	.0283	.0604	.0510	.0113	.0316
Profits	.4956	.1235	.2028	.2811	.0996	.2087	.0930	.1165	.0909	.0774
Business Transfer	.0073	. .	.0001	. .	.0013	.0003	.0045	. .	. .	. .
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

[a]Each entry represents direct purchases from sector named at left by sector named at top.

[b]Other Manufacturing is inclusive of Miscellaneous Manufacturing, Sugar, Rum, Molasses, Beverages, Tobacco Products, Petroleum Products, Footwear, Leather and Leather Products, Wood and Wood Products, Furniture and Fixtures, Paper and Paper Products, Printing and Publishing, Rubber and Rubber Products.

Source: Brown, op. cit., Chapter V.

TABLE 4-15--Continued

	Footwear (5.6)	Leather and Leather Products (5.7)	Wood and Wood Products (5.8)	Furniture and Fixtures (5.9)	Paper and Paper Products (5.10)	Printing and Publishing (5.11)	Rubber and Rubber Products (5.12)	Chemicals (6)	Textiles and Clothing (7)	Non-Metallic Mineral Products (8)
Agriculture	. .	. .	.3354	. .	.0004	. .	. .	.0693	.0659	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Other Manufacturing	.0422	.1053	.1399	.2051	.0028	.1400	.0165	.0113	.0017	.1179
Oil Refining	. .	. .	. .	. .	. .	. .	. .	.1035	.0022	.1694
Textiles and Clothing	. .	. .	. .	.0313	. .	. .	. .	. .	.0641	. .
Non-Metallic Mineral Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Metal Products	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Machinery, Products and Repairs	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Food Processing	. .	.1053	. .	. .	. .	. .	. .	. .	. .	. .
Capital Activity	.0265	.0119	.0314	.0192	.0130	.0118	.0247	.0163	.0159	.0581
Public Utilities	.0033	.0035	.0033	.0076	.0012	.0084	.0124	.0052	.0032	.0034
Transportation and Communications	.0139	.0187	.0177	.0109	.0260	.0547	.0371	.0342	.0142	.0507
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0176	.0475	.0069	.1023	.0055	.0365	.0371	.0092	.0285	.0605
Miscellaneous Services	.0074	.0034	.0057	. .	.0190	.0173	.0021	.0157	.0051	.0040
Financial Services	.0070	.0050	.0168	.0005	.0138	.0111	.0165	.0035	.0040	.0145
Imports of Goods (Competitive)	.5436	.2665	. .	.0976	. .	.0948	.0866	.2111	.4291	.0488
Imports of Goods (Non-Competitive)	. .	. .	.0875	.0403	.5744	.0308	.4021	.1421	.0403	.0081
Imports of Building Materials	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Imports of Services	. .	. .	. .	.0052	. .	.0009	. .	.0058	.0013	.0009
Indirect Taxes	. .	.0340	. .	.0028	.0039	.0076	. .	.0183	.0031	.0145
Employment Income	.2512	.2580	.2329	.3103	.1804	.4281	.2556	.1019	.2307	.1329
Interest and Rent	.0311	.0232	.0099	.0213	.0205	.0503	.0114	.0527	.0242	.0242
Depreciation	.0265	.0221	.0150	.0155	.0292	.0316	.0598	.0194	.0212	.0050
Profits	.0297	.0900	.0966	.1240	.1059	.0976	.0289	.1242	.1008	.1551
Business Transfer	. .	. .	. .	. .	. .	. .	. .	. .	. .	.0007
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TABLE 4-15--Continued

	Metal Products (9)	Machinery Products and Repairs (10)	Food Processing (11)	Capital Activity (12)	Public Utilities (13)	Transportation and Communication (14)	Ownership of Dwelling (15)	Distribution (16)	Miscellaneous Services (17)	Financial Services (18)
Agriculture	. .	. .	.2543	.0024	. .	. .	. .	. .	.0434	. .
Sugar Cane Growing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Agricultural Exports	. .	. .	.0413	. .	. .	.0008	. .	. .	. .	. .
Mining and Quarrying	. .	. .	. .	.0211	. .	.0011	. .	. .	. .	. .
Other Manufacturing	.0592	.0726	.0272	.0167	.0086	.1224	. .	.0281	.0280	.0172
Chemicals	. .	. .	.0304	.0115	. .	. .	. .	. .	. .	. .
Textiles and Clothing	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Non-Metallic Mineral Products	. .	. .	.0029	.0730	. .	. .	. .	. .	. .	. .
Metal Products	. .	.0199	.0472	.0284	. .	. .	. .	. .	. .	. .
Machinery Products and Repairs	.0268	.0234	. .	.0292	. .	.0598	. .	. .	. .	. .
Food Processing	. .	. .	.0691	. .	. .	. .	. .	. .	.0461	. .
Capital Activity	.0186	.0147	.0258	.0102	.2220	.0139	.2258	.0175	.0239	.0101
Public Utilities	.0043	.0080	.0100	.0010	. .	.0025	. .	.0059	.0141	.0040
Transportation and Communications	.0190	.0240	.0414	.0327	.0222	.0294	. .	.0563	.0279	.0199
Ownership of Dwellings	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Distribution	.0759	.1025	.0206	.0319	.0117	.0727	. .	.2814	.0742	.0215
Miscellaneous Services	.0106	.0034	.0061	.0020	. .	.0128	. .	.0096	.0192	.0081
Financial Services	.0012	.0120	.0064	.0010	. .	.0278	.0564	.0094	.0102	.0102
Imports of Goods (Competitive)	. .	.0023	.1303	. .	. .	. .	. .	.0157	.0460	.0281
Imports of Goods (Non-Competitive)	.3383	.3757	.0180	. .	.0245	.0503	. .	.0019	.0092	.0055
Imports of Building Materials	. .	. .	. .	.3546	. .	. .	. .	. .	. .	. .
Imports of Services	.0005	. .	.0047	. .	. .	.0227	. .	.0021	.0184	.1036
Indirect Taxes	.0009	.0164	.0109	.0308	. .	.0229	.0464	.0092	.0015	. .
Employment Income	.1148	.1829	.1336	.2406	.1854	.2585	. .	.2557	.4431	.2624
Interest and Rent	.0123	.0301	.0126	.0183	.0935	.0259	.1273	.0207	.0281	.0978
Depreciation	.0242	.0215	.0210	.0180	.1593	.0381	.1930	.0241	.0282	.0105
Profits	.2929	.0906	.1104	.0706	.2728	.1935	.3506	.2494	.1204	.3569
Business Transfer	. .	. .	.0008	. .	. .	. .	. .	. .	.0002	.0670
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

purchases from domestic agriculture, and in the production of non-metallic mineral products where the corresponding estimate of approximately 16 per cent represented purchases from local mining and quarrying operations.

Not surprisingly the very limited degree of intra and inter-sectoral purchases by the sector was associated with a large import content in the majority of cases. An examination of the input coefficients reveals that in the case of footwear manufacture, imported inputs represented approximately 43 per cent of the value of output. For wood products the corresponding estimate was 34 per cent, it was 33 per cent for metal products, 30 per cent for textiles and clothing, 29 per cent for chemicals and 20 per cent for leather products and approximately the same for tobacco products. The lack of interdependence within the sector and with other sectors cannot be considered particularly surprising given the early stage of development of the sector at that time. We will now proceed with an examination of the input-output structure in 1966 to determine whether there were any significant changes in the situation outlined above.

An examination of the input coefficient for intra-sectoral purchases for the manufacturing sector in 1966, Table 4-15 indicates that the situation at that time was not significantly different from that described with respect to the earlier period. Furniture and fixtures had the highest

level of intra-sectoral purchases in terms of value of output, 23 per cent, followed by leather products, 21 per cent, and beverages and non-metallic mineral products, 19 per cent each. For wood products, food processing and tobacco products, printing and publishing, intra-sectoral purchases varied between 12 and 14 per cent. There were substantial increases in intra-sectoral purchases as compared with the earlier period in the case of furniture and fixtures from 3 to 23 per cent, wood and wood products from less than 1 to 14 per cent as was the case also for printing and publishing. There were more modest increases for leather products, 14 to 20 per cent, and non-metallic mineral products from 15 to 19 per cent.

There were at the same time substantial reductions in such purchases for a number of activities: tobacco products from 18 to 12 per cent, footwear from 12 to 4 per cent, chemicals from 19 to 11 per cent, textiles and clothing from 16 to 7 per cent and metal products from 12 to 8 per cent.

A comparison of intra-sectoral purchases with the value of output for the manufacturing sector for 1957 and 1966 reveals that in 1957 such purchases represented approximately 9 per cent of the value of output. In 1966 the corresponding estimate was approximately 11 per cent of the value of output for the sector. This estimate is based on a comparison of activities which were taking place in both periods. An inclusion of the new activities, petroleum,

rubber products and machinery products, also resulted in an estimate of intra-sectoral purchases of approximately 11 per cent.

Turning now to the question of inter-sectoral dependence we will employ once again as an indicator purchases by the manufacturing sector from the primary and service sectors. An examination of the input coefficients of the transaction matrix reveals once again that with few exceptions there was limited interrelationship between the sector and the rest of the economy. The exceptions were once again as in 1957 sugar and rum manufacture and food processing where the value of purchases from the agricultural sector of 57 and 26 per cent respectively were virtually unchanged as compared with the situation in 1957. In the case of wood products approximately 34 per cent of the value of output represented purchases from domestic agriculture, a dramatic increase over the 7 per cent estimate for 1957. For most of the remaining activities for which there were some limited purchases from the primary sector a comparison of the input coefficients reveals that in most instances these purchases were less significant in 1966.

As far as interrelationship with other domestic sectors of the economy was concerned the available information indicates that these were also limited. The activity which had the highest level of purchases, 20 per cent, in terms of value of output was the manufacture of non-metallic mineral

products. For most other manufacturing activities the corresponding estimate was in the neighbourhood of 10 per cent or less. A comparison of the situation in this regard with 1957 revealed limited change and there was if anything a slight reduction in the level of such purchases.

As was the case in 1957, the limited degree of domestic interrelationship meant that import purchases constituted an important part of the value of output for most activities. Import purchases represented 57 per cent of the value of output in the case of paper products, 49 per cent for rubber products, 54 per cent for footwear, 37 per cent for textiles and clothing, as well as machinery products, and 35 per cent for chemical products. These were the activities with the highest import coefficients with the exception of petroleum products, 74 per cent, which is in a unique position given the absence of local supplies.

Earlier in the chapter we had outlined the rapid growth in the manufacturing sector and its emergence as the dominant sector in the economy. However, it is clear from the information provided that this growth was not associated with the emergence of any significant degree of interdependence within the sector itself or between the sector and other sectors of the economy. In Table 4-16 is set out the domestic and import coefficients for manufacturing operations excluding such traditional activities as the manufacture of sugar, rum, other beverages and tobacco products for the

TABLE 4-16

CHANGES IN INPUT STRUCTURE OF SELECTED ACTIVITIES IN THE MANUFACTURING SECTOR[a]

	1957		1960		1963		1966	
	Domestic Input Coefficient	Import Coefficient	Domestic Input Coefficient	Import Coefficient	Domestic Input Coefficient	Import Coefficient	Domestic Input Coefficient	Import Coefficient
Footwear	.2143	.4277	.2175	.4437	.1134	.5479	.1179	.5436
Leather and Leather Products	.4057	.2005	.3897	.2089	.4675	.3221	.3056	.2666
Wood and Wood Products	.2234	.3422	.2196	.3911	.4872	.1429	.3571	.0875
Furniture and Fixtures	.2152	.0509	.4013	.1015	.3942	.1152	.3768	.1431
Paper and Paper Products	.1123	.1317	.1156	.4988	.1426	.4969	.0857	.5744
Rubber and Rubber Products	. .	. .	.2135	.4219	.2041	.4286	.1464	.4837
Chemicals	.4121	.2973	.3166	.3421	.2964	.3632	.3054	.3590
Textiles and Clothing	.3262	.3046	.2625	.2677	.2063	.3459	.1807	.3707
Non-Metallic Mineral Products	.4869	.0250	.5068	.0235	.5302	.0207	.5013	.0279
Metal Products	.2195	.3267	.1150	.3855	.1284	.4216	.2157	.3393
Machinery Products	. .	. .	.1831	.4549	.2130	.4699	.2794	.3780
Food Processing	.5057	.1559	.5656	.1620	.5217	.1729	.5518	.1590
Miscellaneous Manufacturing	.3320	.1207	.2488	.1969	.3796	.0874	.2100	.2766

[a]Computed from input-output matrices.

years 1957, 1960, 1963 and 1966. It can be seen that with the exception of wood and wood products and furniture and fixtures, the domestic input coefficients either declined substantially, as for example in the cases of footwear and leather products, or remained virtually unchanged. At the same time, with the sole exception of wood products where there was a substantial decline, there were increases in the import coefficients for most other activities. Further evidence of the relative decline in the importance of domestic sources can be determined from Table 4-17, which shows an increase in both the direct as well as the indirect import requirements for the six major categories of the sector between 1957 and 1966.

TABLE 4-17

DIRECT AND INDIRECT IMPORT INPUT REQUIREMENTS, 1957 AND 1966[a]

	1957	1966
Chemicals	.3805	.4223
Textiles and Clothing	.3682	.4137
Non-Metallic Mineral Products	.1070	.1342
Metal Products	.3654	.3938
Machinery	. .	.4338
Food Processing	.2182	.2508
Other Manufacturing	.1655	.2697

[a]Estimates derived by multiplying the row vector of direct import input requirements by the column vector of the inverse matrix for the items listed.

The overall result then was that growth was associated with the maintenance of a considerable degree of fragmentation within the sector. Moreover the limited interdependence between the sector and other sectors of the economy would indicate that, for example, in the case of contribution to employment, the direct employment created, 10.9 per cent of the employed labour force in 1967, could not have been enhanced to any significant degree by indirect employment created.

The tariff system has been an important instrument in the island's incentive framework. At this stage an attempt will be made to determine the significance of the system of commercial protection and its possible impact on the evolution of the manufacturing sector.

The Effective Rate of Protection of the Jamaican Tariff

The majority of firms operating under the incentives offered by the island government are engaged in import replacing production activities. That being the case, the structure of the tariff system is important in determining the competitive advantage these firms will have in the local market. The significance of the protection provided will depend on the rate of duty on imports of final output as well as the duties applied on required inputs. This will have a direct bearing on value added in the particular line of activity. The value added, in turn, defines the potential

return to the primary factors of production, labour and capital. The significance of the tariff structure is then dependent on the extent to which value added in a given line of activity exceeds or falls short of what it would have been in the absence of the protection provided by the tariffs. The difference between value added with the benefit of the tariff and value added in the absence of the tariff expressed in percentage terms is what is referred to as the effective rate of protection.

An attempt will be made to estimate effective rates of protection for a sample of industries of the non-food processing variety, which were operating on the island in 1965. In Jamaica, apart from the tariffs, further protection to the manufacturer is often provided through quotas and licensing restrictions on imports. As a result, the nominal tariff could understate the flexibility which might be employed by the producers in their pricing policies. Nevertheless, in making estimates of the effective rate of protection provided by the tariff structure, it will be assumed that the tariff represents the difference between domestic and international prices.

The model to be employed here is the same as that developed by Corden, Basevi and Johnson.[5] It is generally

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[5] W. M. Corden, "The Structure of a Tariff System and the Effective Rate of Protection," Journal of Political Economy (June, 1966); G. Basevi, "The United States Tariff Structure: Estimates of Effective Rates of Protection of

assumed in these models that the production technique is given and that the supply of inputs are perfectly elastic.[6]

Let V_j = value added in domestic production of j at domestic prices

S_j = value of output of j at domestic prices

M_{ij} = value of material input i used in the production of j at domestic prices.

Let industry j be subject to a tariff tj

$$V_j = S_j - \sum_{i=1}^{n} M_{ij} \qquad (1)$$

To arrive at value added in the absence of tariffs it would be necessary to deflate the value of output by the tariff on output and the cost of inputs by the tariff rate on inputs.

Let V_j^1 be value added in the absence of tariffs on output and inputs, then

$$V_j^1 = \frac{S_j}{1 + t_j} - \sum_{i=1}^{n} \frac{M_{ij}}{1 + t_i} \qquad (2)$$

United States Industries and Industrial Labor," Review of Economics and Statistics (May, 1966); and H. G. Johnson, Trade and Development, Etudes et Travaux de l'Institut Universitaire de Hautes Etudes Internationales No. 4 (Geneva: Libraire Droz, 1965).

[6]It has been established that if allowances are made for substitution between primary factors of production, this reduces the significance of the measure. See W. P. Travis, "The Effective Rate of Protection and the Question of Labor Protection in the U.S.," Journal of Political Economy (May-June, 1968), pp. 443-61; and B. Balassa, "Effective Protection in Developing Countries," in Trade, Balance of Payments and Growth, ed. by R. Jones, R. Mundell and J. Vanek (Amsterdam and London: North Holland Publishing Company, 1971), pp. 300-301. However, in this context with industrialization based on borrowed technology an assumption of fixed techniques of production would seem to be in accord with the reality of the situation.

The effective rate of protection F_j would then be

$$F_j = \frac{S_j - \sum_{i=1}^{n} M_{ij}}{\frac{S_j}{1 + t_j} - \sum_{i=1}^{n} \frac{M_{ij}}{1+t_i}} - 1 \qquad (3)$$

or

$$\frac{V_j}{V_j^1} - 1$$

The following generalizations may now be made. The effective rate of protection will be equal to the tariff rate on output if the weighted average tariff rates on inputs are equal to the tariff rate on output. The effective rate of protection will be higher than the nominal rate on output the lower the weighted average tariff rate on inputs and will reach a maximum when such rates are zero. Conversely, the higher the weighted average rate on inputs the lower the effective rate of protection on output and the rate could eventually become negative. The negative rates would occur when the tariff rate on output is less than the weighted average tariff rate on inputs. Furthermore, the effective rate of protection is likely to be higher the smaller the share of value added as compared with the overall value of output. This tendency will be further heightened when the nominal rate of duty on final output is high. This can be seen from equation (3) above when the estimate of value added in the absence of tariffs would likely be a small proportion of reported value added.

Estimates of effective rates of protection which have so far been carried out have relied on the use of input-output tables which provide data on the inter-industry movement of goods as well as on the tariff revenue for each sector. An input-output table for the island was not available for use in this part of the study. However, in light of the model formulated above, the information required for purposes of conducting such an exercise was value added in the various industrial sectors, the sources of intermediate inputs and the extent of inter-sectoral transactions. Such information was available from the national accounts worksheets for 1965. In carrying out the exercise specific attention was paid to those operations which could be most appropriately described as falling within the realm of secondary manufacturing operations. The food and food processing industries were excluded. These were activities utilizing local produce and for the most part were serving specialized tastes and had by and large developed independently of the incentive measures.

Information on rates of duty applicable to final products was derived from the Jamaican tariff schedule for 1964 and subsequent amendments. The schedule incorporates two rates of duty, a preferential rate applicable to commonwealth countries and a general rate applicable to imports from other countries. Ad valorem rates of duty were applied to most items, but there were instances where combinations

of ad valorem and specific duties were applied and in exceptional cases specific duties only. In these instances an effort was made to determine the ad valorem equivalent. This was done by estimating from trade returns gross duty paid as a percentage of imports valued at c.i.f. This technique was adopted for the industry groupings, clothing, footwear, rope and cordage. In these three instances this single ad valorem equivalent was used in the estimation process.

In the case of intermediate inputs a similar procedure to that described above was adopted in deriving the preferential and general rates applicable to the various inputs. There were some difficulties in dealing with these items in view of variations in the duty exemptions granted under the various incentive laws. All firms operating under these laws are allowed to import capital equipment duty free regardless of source. In addition special duty exemptions are granted to certain producers on some of their imported input requirements. In some instances all inputs were allowed in duty free from areas governed by the preferential tariff. Since the source of data employed did not distinguish between capital inputs and other inputs the convention was adopted here of applying the relevant rate to all imported inputs. This would then overstate the impact of the tariff on raising the cost of imported inputs to the producers.

It has been pointed out by others[7] who have worked in this area that indirect taxes on inputs have the same cost-raising effect to the user as a tariff. It was not possible to derive estimates of the possible price-raising effects of indirect taxes. In this instance this was not considered to be a particularly serious shortcoming in view of the fact that in most cases well over 80 per cent of the intermediate inputs were imported. The data contained on the worksheets also reveal that inter-sectoral sales involving manufactured products were virtually non-existent with the exception of those operations involving the manufacture of metal containers and wooden boxes.

Two estimates of effective protection were derived. The first was based on preferential rates of duty on both final output and material inputs. The second was based on general rates of duty on both output and inputs. In instances where an ad valorem equivalent was estimated for the final product, this single nominal rate on final output was combined with the general and preferential rates on inputs to give two estimates of effective protection.

The findings based on the techniques described above are summarized in Table 4-18. In all instances the effective rate of protection was higher than the nominal rate on

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[7] H. G. Grubel and H. G. Johnson, "Nominal Tariffs, Indirect Taxes and Effective Rates of Protection: The Common Market Countries 1959," Economic Journal (December, 1967).

TABLE 4-18

EFFECTIVE RATES OF PROTECTION, SELECTED ITEMS, 1965

S.I.T.C.	Industry Group	Nominal Rates				Effective Rates of Protection	
		Final Products		Imported Inputs			
		Preferential	General	Preferential	General	1[a]	2[b]
522-01	Toilet Preparations	30	40[c]	Free	Free	298	1,252
522-02	Soap and Soap Products	20	30	15	20	44	84
533-01	Paints and Emulsions	15	20	Free	Free	117	221
541-04 9	Pharmaceutical Products	10	15	Free	Free	57	61
612-02	Other Leather Products	15	20	10	15	21	27
632-01	Wooden Boxes, Cases, Crates	Free	10	Free	1.7		27
641-04 642-01 9	Paper Products	15	20	9	12	31	43
651/652	Cloth and Yarn	15	30[c]	5	7.5	29	70
655-06	Rope and Cordage		6[c]	10	15	9	8
699-02	Aluminum Awnings	15	25	Free	5	44	69
699-14	Alumina Ware	20	30	Free	5	78	123
699-01/02	Structural Parts of Metal	15	25	Free	5	20	32
699-21	Metal Containers and Utensils	15	25	Free	5	122	239
821-01	Wooden Furniture	30	35	Free	1	74	91
821-02	Metal Beds and Furniture	30	40	Free	5	182	263
821-09 1	Mattresses	25	30	Free	5	504	774
851	Footwear		29[c]	15	25	76	45
821-09 899-07	Plastic and Plastic Goods	20	30	10	15	52	87
841	Clothing		29[c]	15	30	6/	32

[a]Effective rate applying preferential rates to output and inputs.

[b]Effective rate applying general rate to output and inputs.

[c]Ad valorem equivalent.

output. These results were predictable in view of the fact that in all but one instance, S.I.T.C. 655-06 rope and cordage, imported inputs were subject to rates of duty substantially lower than that applicable to final products or were completely exempt from duty. When estimates were made employing the preferential rates of duty on both the final product and the intermediate imported input, the effective rate of protection was on the basis of a simple average three to four times the nominal rate. There were five instances in which the effective rate was well in excess of 100 per cent. These were all instances, with one exception, S.I.T.C. 522-01, toilet preparations, where imported inputs represent approximately 90 per cent of the value of intermediate purchases and in turn these intermediate purchases represented approximately 75 per cent of the value of output of the particular items. Applying the general rates of duty to both final products and material inputs revealed a relationship of the same order of magnitude. The estimated effective rates were all higher since in this instance a larger deflator was applied to the value of output at domestic prices.

In estimating effective protection for each of the industry groups non-traded inputs were treated as if they were imported inputs subject to zero tariffs. However, as Corden[8] has pointed out, the degree of protection provided

[8]Corden, op. cit.

by the tariff system to the industry will have a direct bearing on the quantity of these non-traded inputs which are utilized by the industry. The employment and general resource allocations effect of the tariff on the domestic economy will then be twofold. The first effect will be on the industry receiving the protection and the second on those sectors providing services for the industry. This being the case it is important to have some knowledge of the impact of the tariff system on the value of domestic production rather than simply to value added in each of the sectors. The effective rate of protection provided by the tariff system to domestic production could then be expressed as follows:

$$Ef_d = \frac{S_j - R_{ij} - T_x}{\frac{S_j}{1+t_j} - \sum_{i=1}^{n} \frac{R_{ij}}{1+t_i}} - 1 \qquad (4)$$

where R_{ij} represents the value of imported material inputs employed in production in industry j and T_x represents indirect taxes paid on output. The difference between R_{ij} and M_{ij} in equation (3) would then be the value of non-traded inputs employed in j.

In conducting the estimation equation (4) was employed in the same manner as equation (3). The value of output as well as inputs was deflated by the same preferential and general rates of duty where applicable, yielding in this instance two estimates of effective protection for

domestic production. The resulting estimates are summarized in Table 4-19.

Once again the effective rates were generally found to be higher than the nominal rates although the average differential was somewhat less. The effective rates were on the average two to three times the nominal rate. There were only two instances where the effective rate for domestic production exceeded 100 per cent, the manufacture of mattresses, S.I.T.C. 821-09, and metal beds and furniture, S.I.T.C. 821-02. These were both instances where imported inputs represented a very large share of the total value of intermediate purchases, being 95 per cent for the former and 88 per cent for the latter. There was one instance when the rate was actually lower on both counts, rope and cordage, S.I.T.C. 655-06. This was an industry in which imported inputs represented only 32 per cent of the value of intermediate purchases.

When a comparison is made of the results derived from the two techniques paying particular attention to the most important industrial sectors in terms of value of output, the differences in the results obtained become much less significant. In the case of clothing, the most important activity, the effective rates of protection in terms of value added were 67 and 32 per cent at the preferential and general rates, respectively. In terms of overall domestic value the corresponding estimates were 55 and 26 per

TABLE 4-19

EFFECTIVE RATES OF PROTECTION FOR DOMESTIC PRODUCTION

S.I.T.C.	Industry Group	Effective Rate	
		1[a]	2[b]
522-01	Toilet Preparations	45	66
522-02	Soap and Soap Products	21	40
533-01	Paints and Emulsions	49	73
541-04 9	Pharmaceutical Products	11	18
612-02	Other Leather Products	16	21
632-01	Wooden Boxes, Cases, Crates		21
641-04 642-01 9	Paper Products	22	31
651/652	Cloth and Yarn	25	58
655-06	Rope and Cordage	5	4
699-01/02	Structural Parts of Metal	19	31
699-02	Aluminum Awnings	39	60
699-14	Alumina Ware	42	60
699-21	Metal Containers and Utensils	73	117
821-01	Wooden Furniture	42	50
821-02	Metal Beds and Furniture	111	145
821-09 1	Mattresses	210	197
841	Clothing	55	26
851	Footwear	58	35
821-09 899-07	Plastic and Plastic Goods	17	34

[a]Preferential rate applied to output and material input.

[b]General rate applied to output and value of material input.

cent, respectively. This relative similarity can be explained by the fact that 93 per cent of the intermediate purchases for the clothing industry were imported. In the case of the second ranking industry, the manufacture of wooden furniture, the estimates with respect to value added were 74 and 91 per cent and 42 and 50 per cent with respect to the value of domestic production. The significant difference in this case is a reflection on the fact that 49 per cent of the material inputs for this sector are imported. For most of the other leading operations between 85 and 90 per cent of the intermediate inputs were imported and as a result there were only moderate differences in the estimates derived from using the two techniques.

The initial estimates made of protection in terms of value added, as well as protection to domestic production, revealed that industries on the island derived very high protection from the tariff system. This arose from the fact that producers were able to secure high rates of protection on their products and at the same time were able to import capital equipment without payment of duty and required material inputs either at nominal rates or duty free. These very high rates estimated are indicative of the fact that investors were exploiting the system to the maximum. At the same time in so doing it meant that the sector was being developed on a very fragmented basis. A less heavy reliance on imports, which would have meant a greater measure of

internal purchases of inputs would have resulted in a closer proximity between the nominal and effective rates of protection.

In the Jamaican context the potential markets for manufactured products, which are most obvious, are those for finished consumer goods and quite often brand name products. At the same time there was the heavy emphasis placed by the government on attracting foreign investment. Given the potential market, along with the structure of the tariffs, the most attractive approach for the foreign as well as the domestic investor would be to take advantage of the potential market, using the established techniques and equipment, as the tariff system suited this approach perfectly. There would be little incentive to look for more than the minimum domestic requirements.

Local Participation in the Manufacturing Sector

We will now turn to the question of local participation in the growth of the manufacturing sector. One of the issues dealt with in the Lewis thesis was that the income generated by a growing manufacturing sector would provide the savings for an increased measure of local participation. One indicator which could be employed would be local profits as a share of total corporate profits. This information for a selected group of manufacturing activities is provided for the years 1959 and 1965 in Table 4-20. From the table it

TABLE 4-20

PERCENTAGE DISTRIBUTION OF PROFITS
IN MANUFACTURING

Items	1959		1965	
	Gross Corporate Profit		Gross Corporate Profit	
	Local	Foreign	Local	Foreign
Food Processing	100%	. .	64%	36%
Beverages	98	2%	100	. .
Tobacco and Tobacco Products	100	. .	87	13
Wood and Wood Products	100	. .	100	. .
Furniture and Fixtures (Wooden)	100	. .	100	. .
Paper and Paperboard	78	22	44	56
Printing and Publishing	. .	. .	99	1
Textiles and Clothing	100	. .	87	13
Leather and Leather Products	94	6	100	. .
Rubber and Rubber Products	. .	. .	100	. .
Chemicals and Chemical Products	85	15	89	11
Petroleum Products	. .	. .	. .	. .
Sugar, Rum and Molasses	60	40	64	36
Non-Metallic Mineral Products	82	18	88	12
Metal Products	98	2	97	3
Machinery Products and Repairs	. .	. .	100	. .
Miscellaneous Manufacturing	81	19	71	29
Total	84%	16%	83%	17%

Source: Brown, op. cit., Table V-26(a).

can be seen that in 1959, 84 per cent of gross corporate profits accrued to local corporations and 83 per cent in 1965, seemingly indicating an overwhelming dominance of local investment in the sector.

An alternative indicator which would also seem appropriate is the number of firms which were either foreign or locally owned. Information in this regard as applicable to firms operating under the various incentive laws is provided in Table 4-21. Of the 133 firms operating under the various incentive laws for which information was available as at the end of 1966, 61 or 46 per cent were listed as being locally owned. Another 34 or 26 per cent were listed as being operated under joint ownership. On this basis it would appear that over 70 per cent of these firms were either locally owned or operated under joint ownership.

TABLE 4-21

DISTRIBUTION OF FIRMS OPERATING UNDER INCENTIVE LAWS BY OWNERSHIP (1966)

I.I.L.			P.I.E.L.			E.I.E.L.		
Foreign	Local	Joint	Foreign	Local	Joint	Foreign	Local	Joint
15	51	25	4	8	6	19	2	3
Cement Industry (Encouragement) Law					1	Joint Ownership		
Textile Industry (Encouragement) Law					1	Joint Ownership		

Source: Government of Jamaica, Industrial Development Corporation, Statistical Report of Manufacturing Enterprises Approved and Operating Under Industrial Incentive Laws (March 31, 1969).

Both of these indicators in this instance are misleading indicators of the degree of local participation in the operation of the sector. This stems from the fact that in official publications companies are designated as being foreign or local depending on whether they happened to be registered locally rather than on the nationality of the majority shareholders of the plant. That being the case the actual level of local participation would be considerably less than suggested by the indicators employed.

The manner in which the manufacturing sector evolved seemed to support the more pessimistic results which were suggested earlier. We will now proceed to try to determine to what extent there was an awareness in official thinking of some of the difficulties likely to arise from the adoption of the strategy and the attempts made to counteract these problems. The principal reason behind the industrialization programme was the problem of unemployment. The problem faced by those involved in implementing the strategy would then involve devising special features in the programme to ensure that on the one hand industries would be attracted which would make an important direct contribution to employment and on the other hand through the growth of interdependence with other domestic activities also have an important indirect employment-creating effect. In the final analysis these indirect effects could be as important or more important than the direct effect.

The Official Position on Problems of Industrialization

The official thinking on the problems of industrialization can be derived from the development plans of 1957 and 1963.[9] There were three broad factors which seemed to be of particular concern at the official level in the mid-fifties. One element of concern was a realization of the fact that the strength of United States and United Kingdom influence on the pattern of island life had resulted in the structure of demand being biased towards a wide variety of consumer goods of a luxury rather than of a basic type. This then meant that in the absence of restrictions on demand, the market constraint was not only a reflection of size but was further compounded by this induced public desire for a wide variety of goods.

Secondly, there was a realization of the fact that the government would not be able to rely simply on the market incentive of low wage rates to ensure the establishment of labour intensive industries. It was accordingly explained that in facing up to this problem due consideration would be given to the question of efficiency and the degree to which there would be a permissible margin of trade-off between additional employment at the expense of reduced efficiency in operations.

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[9]Government of Jamaica, A National Plan of Development for Jamaica 1957-1967; and Government of Jamaica, Five Year Independence Plan, 1963-1968.

The third factor concerned the possible need to devise means of wage restraint as a means of maximizing employment, as well as the need to make sure that the unregulated establishment of industry did not lead to the demise of handicraft operations, which were a substantial source of employment.

It was decided to approach the difficulty created by market fragmentation through the application of such commercial restrictions as tariffs, quotas or special licensing arrangements. The following factors would be considered with regard to the application of these measures. It was recognized, for example, that the difficulties likely to be experienced in the early stages of production would make it difficult for local firms to compete with imports. In certain extreme cases when market limitations precluded any effective competition monopoly status would be granted. Such a privilege would be accompanied by government regulations and price controls as a means of protecting the consuming public.

With respect to the question of maximization of employment, a distinction was drawn between those industries operating mainly on the export market and those catering mainly to the local market. Since the former would be obliged to cope with international competition, it was felt that efficiency would have to take precedence over labour intensity. As far as firms operating for the local market were concerned the

following principles were to be adopted. Up to a defined limit, the production technique adopted should be based on labour intensive methods even though this might result in higher unit costs of production than would have been the case with a capital intensive method. The limit was defined as follows. The difference between the cost of the labour intensive technique and the most efficient alternative method would have to be equal to or less than the subsistence cost of the workers employed. In exceptional cases it was suggested that there could be justification for adopting labour intensive methods even when this margin was exceeded. It was realized that considerable difficulty would be experienced in trying to apply this principle to foreign investment. That being the case the principle would likely not be applied in such instances.[10]

One finds it difficult to imagine how those responsible for drafting these guidelines could ever have considered them to be in any way operational. In the first place what would be the subsistence wage under these circumstances? Would it be some overall national average estimate or would it be an amount based on an estimate of what would be required to survive in an urban centre or rural area?

A great deal of emphasis was placed on attracting labour intensive industry to satisfy the employment objective

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[10]Government of Jamaica, A National Plan of Development for Jamaica 1957-1967.

behind the programme. Labour intensity, however, involves relative and not absolute amounts of labour and capital. The total number of jobs created is then not necessarily an indicator of labour intensity. In practical terms an investor has limited alternatives in terms of production techniques. From his viewpoint the criterion of efficiency is based on cost. Given the relevant capital and labour costs a producer will opt for the capital intensive technique if it is clearly the more profitable and it would be very unlikely that the labour intensive technique could be adopted within any reasonable cost range. It was not made clear either whether the onus for proving that the technique desired would be the most labour intensive would rest on the prospective investor or whether this could be the responsibility of some government agency. The principle behind these guidelines becomes even more questionable when one takes into consideration the fact that they were not to be applied with equal force to foreign investment. The local investor could then have been placed in a position where he would be compelled to adopt a more costly labour intensive production technique without any offsetting subsidy.

As far as the question of wage restraint was concerned, the need for this was indicated without any attempt being made to stipulate guidelines. However, there was a statement to the effect that the government would not insist on low wage payments for particular activities as a means of

maintaining some form of inter-sectoral balance in earnings, when employers were willing and able to pay a higher wage. It was argued that such action would only benefit the employer and there would be no offsetting benefit since the employer would very likely be exempt from local taxation.[11] This ambivalence in the government position could reflect the dilemma created by the close interrelationship between the trade unions and political parties on the island. It could be argued that higher wages in the more productive sectors would very likely exert upward pressure on wage levels in the economy as a whole, either through union action or even more generally on public expectations with regard to what would be considered an appropriate wage.

It would appear from an examination of the official position that the contribution of the manufacturing sector to the economy was considered only in terms of the direct effect. Neither in the plan discussed above nor in the subsequent one of 1963 was there indicated any awareness of the need to modify the programme so as to promote a greater measure of interdependence within the sector itself and between the sector and other sectors of the economy. The lack of integration pointed out previously has then to be attributed at least in part to the absence of policy in that direction rather than to a policy failure.

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[11] Ibid.

CHAPTER V

THE EVOLUTION OF THE MANUFACTURING SECTOR IN PUERTO RICO, 1950-1967

Introduction

In evaluating the Puerto Rican experience too much emphasis cannot be placed on the factors which placed the island in a rather unique position when compared with other underdeveloped areas of similar size. The most important is the fact that the island is a part of the United States customs area and hence its potential market for manufactured products is that of the entire continental area of that country. Moreover, its special constitutional relationship with the federal government of the United States left the island government with a considerable measure of sovereignty with respect to matters of taxation.[1] Taking these factors into consideration one could reasonably regard the question of industrialization on the island as being a matter of regional rather than national development. Nevertheless, differences in language and cultural tradition effectively prevent the island from being just another region of the United States. The island could be described as being more

[1]See Chapter I, Introduction.

of a specially favoured entity. Nevertheless, in evaluating the development of the sector, the standards employed will be the same as those used for Jamaica, namely, the overall growth of the sector and its contribution to employment and income as well as the degree of intra-industry relationships within the manufacturing sector and between the manufacturing sector and other sectors of the economy.

A comprehensive industrialization strategy was formulated in 1948 and the programme received a great stimulus with the commencement of the Korean War. We will begin with an outline of some of the principal features of the economy in general and the manufacturing sector in particular in 1950.

The State of the Economy in 1950

In 1950 the island's Gross Domestic Product (G.D.P.) at factor cost, as indicated by Table 5-1, was $699.3 million. As was to be expected in a country at this stage of development, the agricultural sector was the single most important contributor, $159.5 million to G.D.P. The estimates in Table 5-2 reveal that the contribution of the sector represented 22.8 per cent of G.D.P. The contribution of the manufacturing sector was $114 million representing 16.3 per cent of G.D.P. The value of output from this sector was not all based on factory production as it included the value of home needlework activities which were of considerable significance at that time.

TABLE 5-1

GROSS DOMESTIC PRODUCT AT FACTOR COST
(In Millions of Dollars)

Sector	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Agriculture	159.5	196.6	174.4	171.6	170.7	177.0	162.7	164.7	171.3	183.9	194.9	203.2	231.1	210.2	195.8	190.5	192.1	193.4
Mining	1.8	2.3	2.1	2.0	1.9	2.2	2.5	2.0	2.5	3.0	3.5	5.5	6.5	7.9	9.4	10.0	11.5	13.4
Manufacturing	114.0	123.9	147.1	166.7	181.6	212.6	231.6	239.9	278.7	314.6	366.6	423.9	484.1	531.7	587.1	661.5	720.9	810.9
Construction	36.4	46.1	42.4	44.7	49.3	50.5	60.7	71.3	82.2	98.0	114.8	131.8	153.8	169.8	213.7	237.2	270.3	304.6
Electricity and Gas	19.6	20.7	22.0	25.6	27.6	31.7	37.2	41.5	44.3	49.1	54.6	60.6	68.4	78.0	89.7	100.2	106.0	119.9
Transportation	42.7	46.7	51.2	57.5	62.9	68.9	74.2	79.8	82.9	98.2	111.5	130.7	146.1	153.5	164.6	180.7	204.4	225.8
Wholesale and Retail Trade				162.5		175.6			230.8	250.1	275.7	311.3	335.3	384.6	442.1	493.4	536.7	583.5
Banking Insurance and Real Estate	325.3	350.3	383.0	24.4	452.0	34.2	540.8	600.2	47.6	55.7	63.1	66.8	87.4	99.9	115.4	126.8	141.0	155.7
Ownership of Dwellings				70.3		80.5			106.1	115.0	127.5	146.4	148.6	165.1	186.0	204.7	225.2	238.1
Public Administration				102.9		115.6			162.2	174.9	198.8	219.1	244.7	276.2	307.2	341.5	387.3	430.1
Services				64.4		80.3			124.7	140.6	159.6	188.2	221.6	255.2	309.5	350.5	386.6	438.1
G.D.P.	699.3	786.6	822.2	892.6	946.0	1,029.1	1,109.7	1,199.4	1,333.3	1,483.1	1,670.6	1,887.5	2,127.6	2,332.1	2,620.5	2,897.0	3,182.0	3,513.5

Source: United Nations, Yearbook of National Account Statistics 1968, Vol. I.

TABLE 5-2

GROSS DOMESTIC PRODUCT AT FACTOR COST BY ORIGIN,
PERCENTAGE SHARES, 1950-1967[a]

Sector	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Agriculture	22.8	25.0	21.2	19.2	18.0	17.2	14.7	13.7	12.9	12.4	11.7	10.8	10.9	9.0	7.5	6.6	6.0	5.5
Mining	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Manufacturing	16.3	15.8	17.9	18.7	19.2	20.7	20.9	20.0	20.9	21.2	21.9	22.5	22.8	22.8	22.4	22.8	22.7	23.1
Construction	5.2	5.9	5.2	5.0	5.2	4.9	5.5	5.9	6.2	6.6	6.9	7.0	7.2	7.3	8.2	8.2	8.5	8.7
Electricity and Gas	2.8	2.6	2.7	2.9	2.9	3.1	3.4	3.5	3.3	3.3	3.3	3.2	3.2	3.3	3.4	3.5	3.3	3.4
Transportation	6.1	5.9	6.2	6.4	6.7	6.7	6.7	6.7	6.2	6.6	6.7	6.9	6.9	6.6	6.3	6.2	6.4	6.4
Wholesale and Retail Trade				18.2		17.1			17.3	16.9	16.5	16.5	15.8	16.5	16.9	17.0	16.9	16.6
Banking Insurance and Real Estate	45.5	44.5	46.6	2.7	47.8	3.3	48.7	50.0	3.6	3.8	3.8	3.5	4.1	4.3	4.4	4.4	4.4	4.4
Ownership of Dwellings				7.9		7.8			8.0	7.8	7.6	7.8	7.0	7.1	7.1	7.1	7.1	6.8
Public Administration				11.5		11.2			12.2	11.8	11.9	11.6	11.5	11.8	11.7	11.8	12.2	12.2
Services				7.2		7.8			9.4	9.5	9.6	10.0	10.4	10.9	11.8	12.1	12.2	12.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a] Estimates based on data contained in Table 5-1.

The island's labour force at that time was estimated to be 704,000 of which 596,000 were employed. This meant that 103,000 persons were unemployed, an unemployment rate of 15 per cent approximately. As can be determined from Table 5-3, agriculture and trade activities accounted for about 51 per cent of the employed labour force. Home needlework provided employment for 51,000 people or 8.6 per cent of the employed labour force. Other manufacturing activity provided employment for 56,000 people or 9.4 per cent of the employed labour force.

There was a higher level of unemployment among males than females. The rate for males was 15 per cent and the rate for females 13 per cent.[2] The difference could be accounted for in part by the substantial level of employment provided for female workers in home needlework activities. Furthermore there were also the differences in the male and female participation rates. The participation rate for males was 80 per cent and for females 30 per cent at that time.[3]

The economy at the time was highly dependent on external trade. Export amounted to 41 per cent of G.D.P. and imports 65 per cent. The openness of the economy was

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[2]Commonwealth of Puerto Rico, Committee on Human Resources, Unemployment, Family Income and Level of Living in Puerto Rico (San Juan: Puerto Rico Planning Board, 1959), pp. 68-69.

[3]Ibid., pp. 66-67.

TABLE 5-3

DISTRIBUTION OF EMPLOYMENT IN 1950
(In Thousands of People)

	Number	Percentage
Agriculture	214	35.9
Forestry and Fishing	2	0.3
Mining	1	0.2
Construction	27	4.5
Home Needlework	51	8.6
Manufacturing	56	9.4
Transportation and Public Utilities	30	5.0
Finance, Insurance and Real Estate	3	0.5
Services	77	12.9
Government	45	7.6
Total	596	100.0
Labour Force	704	
Unemployed	108	
Unemployed Percentage		15.3

Source: L. G. Reynolds and P. Gregory, Wages Productivity and Industrialization in Puerto Rico (Homewood, Ill.: Richard D. Irwin, Inc., 1965), p. 10.

further accentuated by the considerable degree of concentration in market sources for both exports and imports. The United States provided a market for approximately 90 per cent of the island's exports and was the source of a similar percentage of the island's imports.[4] The principal exports at the time were processed food products, such as sugar, rum and tobacco products and textile products, consisting at the time predominantly of home needlework.

A closer examination of the manufacturing sector reveals features which are common to the sector when it is at an early stage of development. The information contained in Table 5-4 reveals that the principal activity was the manufacture of sugar accounting for 34.1 per cent of net income generated by the sector. Activities based on the processing of food and other agricultural products accounted for approximately 51 per cent of net income generated by the sector. Apparel and related products contributed 19.3 per cent, a reflection on the importance of home needlework. Other manufacturing activities were responsible for 27 per cent..

As far as the question of distribution of employment within the sector was concerned, in many instances the contribution to employment was substantially different from the contribution to net output. As indicated in Table 5-5,

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[4]United Nations, Statistical Yearbook 1969.

TABLE 5-4

NET INCOME IN THE MANUFACTURING SECTOR
BY INDUSTRY, 1950
(In Millions of Dollars)

	Value	Percentage
Sugar	$30	34.1
Beverages	4	4.5
Other Food Products	7	8.0
Tobacco Products	5	5.7
Textile Mill Products	1	1.1
Apparel and Related Products[a]	17	19.3
Other Manufacturing	24	27.3
Total	$88	100.0

[a]Includes home needlework.

Source: Reynolds and Gregory, op. cit.

TABLE 5-5

DISTRIBUTION OF EMPLOYMENT IN THE
MANUFACTURING SECTOR, 1950
(In Thousands of People)

	Number	Percentage
Sugar	11	10.3
Alcoholic Beverages	2	1.9
Tobacco	6	5.6
Textile and Apparel	12	11.2
Other Manufacturing	25	23.4
Home Needlework	51	47.7
Total	107	100.0

Source: Reynolds and Gregory, op. cit.

sugar manufacturing accounted for only 10.3 per cent of the labour force employed in the sector, whereas, as indicated above, it contributed in excess of one-third of net income generated by the sector. The principal source of employment in the sector was in home needlework, which accounted for 47.7 per cent of those employed. If home needlework were to be excluded, thus concentrating on factory employment, sugar manufacturing and other agricultural processing operations would account for 34 per cent of the employment in the sector, textile and apparel 21 per cent and other manufactures 45 per cent. The importance of home needlework and textile and apparel production as a source of employment indicated that the sector was overwhelmingly biased towards the provision of jobs for female labour.

Economic Growth, 1950-1967

This period witnessed a very substantial rate of growth in the island's economy. Table 5-1 indicates that G.D.P. at factor cost in 1967 was $3,513.5 million as compared with $699.3 million in 1950. Furthermore an examination of the data in the table suggests that the rate of growth of output on an annual basis increased over the period. It was estimated that the real rate of growth of G.D.P. for the decade 1950-1960 was 6.7 per cent and between 1960 and 1967 9.0 per cent. On a per capita basis the estimates were 6.1 and 6.9 per cent for the two periods,

respectively. Table 5-6 summarizes the average annual overall and sectoral growth rates.

During the period there were important changes in the sectoral contributions to G.D.P. at factor cost. The most important change was in the drastic decline in the importance of the agricultural sector. The information in Table 5-2 shows that the agricultural sector in 1967 made a contribution of only 5.5 per cent to G.D.P. as compared with 22.8 per cent in 1950. Moreover, as can be determined from Table 5-1, the value of output of the sector in 1967 was only about $34 million more than it had been in 1950 and in fact was lower than the estimated value for 1961. From Table 5-6 it can be seen that the real rate of growth of the sector between 1950 and 1960 was only 0.9 per cent on an annual basis and between 1960 and 1967 there was a negative annual growth rate of 1.9 per cent. Overall the sector had declined from being the first ranked in terms of its contribution to G.D.P. in 1950 to being eighth ranked in 1967.

While the agricultural sector was declining in significance the manufacturing sector emerged as the most important contributor to G.D.P., representing 23.1 per cent of G.D.P. in 1967 as compared with 16.3 per cent in 1950. The manufacturing sector attained its position of dominance at an early stage in the period under consideration. In 1954 it surpassed the agricultural sector in terms of absolute dollar contribution and emerged then and remained subsequently as the dominant sector.

TABLE 5-6

AVERAGE ANNUAL RATES OF GROWTH OF REAL GROSS DOMESTIC PRODUCT, PUERTO RICO

Period	Total	Per Capita	Agri-culture	Manufac-turing	Con-struction	Transportation and Communication	Wholesale and Retail	Other
1950-60	6.7	6.1	0.9	9.5	8.9	4.6	7.3	7.6
1960-67	9.0	6.9	-1.9	9.0	12.9	8.1	9.7	10.7

Source: United Nations, Yearbook of National Account Statistics 1968, Vol. II, Table 53.

The principal developments were in the two sectors discussed above but there were also increases in the importance of the construction sector, the finance and real estate sector as well as in the service sector. The other sectors' contribution to G.D.P. remained more or less unchanged, showing some slight improvements, with the exception of ownership of dwellings where there was a slight decline to 6.8 per cent in 1967 as compared with 7.9 per cent in 1953. Overall, as can be determined from Table 5-6, the leading sector in terms of growth rates during the decade 1950-1960 was manufacturing. In the period 1960-1967 the construction sector had the most rapid rate of growth.

We will now proceed to determine whether the rapid rates of growth in income and output were associated with a rapid increase in the level of employment. In 1967 there were 693,000 persons employed, which represented an increase of 96,000 over the number employed in 1950. As can be determined from Table 5-7, given a labour force of 789,000 in 1967 this meant that the rate of unemployment was 12.2 per cent. The change in the overall levels of employment and unemployment was then far less spectacular than the change in income.

The unemployment rate declined fairly steadily through the decade of the fifties with some minor fluctuations and was at a minimum for the period covered in 1964 when it was 11.2 per cent.

TABLE 5-7

EMPLOYMENT AND UNEMPLOYMENT IN PUERTO RICO, 1951-1967
(In Thousands of People)

Year	Labour Force	Employed	Unemployed	Percentage Unemployed
1951	705	591	114	16.2
1952	659	559	100	15.2
1953	634	543	91	14.4
1954	631	534	97	15.4
1955	642	550	92	14.3
1956	640	557	83	13.0
1957	631	550	82	13.0
1958	639	550	89	13.9
1959	631	544	87	13.8
1960	638	561	77	12.1
1961	667	582	85	12.7
1962	683	598	85	12.5
1963	705	623	83	11.7
1964	728	646	82	11.2
1965	756	664	92	12.1
1966	778	682	96	12.3
1967	789	693	96	12.2

Source: Reynolds and Gregory, op. cit., Table 1-18; and Commonwealth of Puerto Rico, Employment and Unemployment Statistics for Puerto Rico, Table 3.A.

In assessing the unemployment situation some attention had also to be paid to overall trends in the size of the labour force over the period. In 1959 there were about 76,000 less people in the labour force than there had been in 1950. There were two important factors which had a bearing on trends in the labour force. The first was the heavy out-migration of people who would otherwise have been in the labour force. It was estimated that during the first half of the fifties about 100,000 workers migrated to the United States.[5] Over the entire decade it was estimated that emigration offset about three-quarters of the natural increase in the island's population.[6] The second factor was the decline in the percentage of the population of labour force age which was in the labour force. As can be determined from Table 5-8 the overall participation rate declined from a high of 55 per cent in 1951 to a low of 46 per cent in 1960 and remained at that level until 1965 when it increased slightly to 47 per cent. This downward trend was associated with a decline in the participation rates for males from a high of 80 per cent at the beginning of the period to 69 per cent at the end. For females the rate fell from 31 per cent in 1951 to 22 per cent in 1960. However the rate began to increase once again in 1964 and was up to 26 per cent in 1967.

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[5]Barton, op. cit., p. 28.

[6]Reynolds and Gregory, op. cit., p. 30.

TABLE 5-8

AVERAGE ANNUAL LABOUR FORCE PARTICIPATION RATES, SELECTED YEARS, 1951-1967

Year	Total	Male	Female
1951	55	80	31
1953	50	77	26
1955	49	74	25
1957	47	73	23
1960	46	72	22
1962	46	72	22
1964	46	70	23
1965	47	70	24
1966	47	70	26
1967	47	69	26

Source: Commonwealth of Puerto Rico, Committee on Human Resources, Unemployment, Family Income and Level of Living in Puerto Rico; and Commonwealth of Puerto Rico, Employment and Unemployment Statistics for Puerto Rico.

The decline in participation rates could be attributed in part to the expansion of educational opportunities which resulted in a smaller number of younger persons entering the labour force. Between 1950 and 1960 participation rates for males in the 14-19 age group declined from 45 per cent to 32.1 per cent and for females from 25 per cent to 12.8 per cent. Furthermore, it was also suggested that the drastic decline in the home needlework industry which by 1960 was providing employment for only 10,000 women as compared with 50,000 in 1950 resulted in many of the women

previously engaged in this activity withdrawing from the labour force.[7]

In describing the situation in 1950 it was pointed out that the unemployment rate among males was higher than for females. This condition remained unchanged throughout the period. In 1967 the unemployment rate for males was 13 per cent and for females 10 per cent. From Table 5-9 it can be seen that the male unemployment rate declined gradually throughout the period, reaching a low of 12 per cent in 1964. On the other hand there was a substantial decline in the female unemployment rate during the fifties and the low point was attained once again in 1964 when the rate was 8 per cent. Moreover, the upward movement in overall unemployment from 1965 through 1967 can be associated with an increase in female unemployment.

At the outset we had suggested that the lower unemployment among women could be related in part to the large numbers engaged in home needlework activity. There was, as noted above, a drastic decline in employment in this activity during the period. The fact that the employment position for females still improved suggests that the employment opportunities provided through the expansion of the economy was weighted towards female labour.

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[7] Ibid., p. 33.

TABLE 5-9

AVERAGE ANNUAL UNEMPLOYMENT RATES, MALES AND FEMALES, SELECTED YEARS, 1951-1967

Year	Male	Female
1951	15	20
1953	15	15
1955	15	13
1957	13	13
1960	13	10
1962	14	9
1964	12	8
1965	13	9
1966	13	10
1967	13	10

Source: Commonwealth of Puerto Rico, Committee on Human Resources, Unemployment, Family Income and Level of Living in Puerto Rico; and Commonwealth of Puerto Rico, Employment and Unemployment Statistics for Puerto Rico.

As far as sectoral contribution to the overall level of employment was concerned, in 1967 the most important was the service sector, which provided employment for approximately 30 per cent of those employed. The manufacturing sector was second in importance, as revealed by Table 5-10, providing employment for approximately 19 per cent of the employed labour force. The agricultural sector, which in 1950 was responsible for approximately 24 per cent of overall employment, made a contribution in 1967 of approximately 14 per cent. The absolute number of people employed

TABLE 5-10

EMPLOYMENT BY SECTOR
(In Thousands of People)

Sector	1955		1960		1962		1964		1965		1967	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Agriculture, Forestry and Fishing	164	30.2	131	23.4	144	24.1	124	19.2	101	14.8	95	13.7
Manufacturing	97	17.9	91	16.3	98	16.4	116	18.0	128	18.8	131	18.9
Construction	34	6.3	50	8.9	53	8.9	60	9.3	65	9.5	68	9.8
Commerce	89	16.4	98	17.5	104	17.4	115	17.8	124	18.1	129	18.6
Transportation, Storage and Communications	34	6.3	40	7.1	41	6.9	43	6.7	47	6.9	48	6.9
Services	119	21.9	142	25.4	148	24.8	177	27.4	205	30.1	209	30.2
Others	6	1.1	8	1.4	9	1.5	12	1.9	12	1.8	13	1.9
Total	543	100.0	560	100.0	598	100.0	646	100.0	682	100.0	693	100.0

Sources: Reynolds and Gregory, op. cit.; and United Nations, Yearbook of Labour Statistics.

in the sector declined over the period. By 1960 there were more people employed in the service sector, which includes government services, and by 1966 it was surpassed both by the manufacturing and commerce sector. The changes in sectoral contribution to employment were consistent with the changes noted previously in contribution to income. The decline in importance of employment and income generated by the agricultural sector and the growth in importance of manufacturing, construction and services on these same standards is consistent with what one would expect from a country which had experienced a very rapid rate of economic growth.

Having discussed the rapid growth of the economy over the period, we will now attempt to determine whether this was associated with any important structural changes in the island's external trade. In 1967 the island exported commodities having a value of $1.3 billion approximately, amounting to 37 per cent of G.D.P. At the same time imports were $1.8 billion approximately, representing 51 per cent of G.D.P.[8] There was then some reduction in the importance of trade to income over the period, although external trade still was a factor of importance. The United States remained as the principal market area for the island's exports and source of its imports. It provided a market for

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[8]Commonwealth of Puerto Rico, Balance of Payments (San Juan: Puerto Rico Planning Board, annually); and Commonwealth of Puerto Rico, National Income and Product (San Juan: Puerto Rico Planning Board, annually).

approximately 92 per cent of the island's exports and was the source of 82 per cent of its imports. There were important structural changes in the composition of both exports and imports. The traditional exports prior to the industrialization effort, that is, such items as food, beverages and tobacco, accounted for less than one-third of the value of exports. In Table 5-11, which sets out the value of exports to the United States, it can be noted that the single most important export item was clothing and accessories amounting to $255.5 million. In the case of imports the important development was the decline in the importance of consumer goods and the increase in importance of capital goods and raw materials. Consumer goods imports, as can be determined from Table 5-12, amounted to 34.2 per cent of total imports in 1967 as compared with 48.5 per cent in 1950. Imports of capital goods and raw materials at the end of the period represented 65.8 per cent of total imports as compared with 51.5 per cent at the earlier date. These developments are consistent with the expansion of the manufacturing sector noted above.

TABLE 5-11

SHIPMENTS OF MERCHANDISE FROM PUERTO RICO TO THE UNITED STATES, 1966
(In Millions of Dollars)

Food and Food Products	$ 179.3
Beverages and Tobacco	142.4
Crude Materials (Inedible, i.e., Fuels)	6.1
Mineral Fuels and Lubricants	83.3
Animal and Vegetable Oils and Fats	0.1
Chemicals	60.9
Leather Products	8.0
Rubber Products	3.5
Wood and Cork Products	0.4
Paper and Paperboard	0.9
Textile Yarn and Fibres	15.4
Woven Man-made Fibres	6.9
Other Textile Products	13.3
Non-Metallic Manufactured Products	2.8
Glass and Glassware	9.8
Iron or Steel Products	2.4
Metal Products	10.2
Machinery (other than Electric)	7.4
Electrical Machinery and Switchgear	50.0
Electrical Distributing Equipment	0.1
Telecommunication Apparatus	16.3
Other Electrical Equipment	14.1
Transportation Equipment	0.1
Furniture	0.3
Travel Goods	16.7
Men's and Women's Clothing and Accessories	255.5
Footwear	45.9
Professional and Scientific Equipment	30.1
Miscellaneous Manufactured Products	29.9
Total	$1,012.1

Source: Commonwealth of Puerto Rico, Statistical Yearbook (San Juan: Puerto Rico Planning Board, 1967).

TABLE 5-12

ECONOMIC CLASSIFICATION OF MERCHANDISE IMPORTS,
1950-1967
(In Millions of Dollars)

Year	Consumer Goods	Capital Goods	Raw Materials	Total	Consumer Goods Percentage	Capital Goods + Raw Materials Percentage
1950	$166.8	$ 22.5	$154.6	$ 343.9	48.5%	51.5%
1951	196.8	30.9	209.8	437.5	45.0	55.0
1952	203.8	33.3	211.0	448.1	45.5	54.5
1953	232.1	39.1	224.8	496.0	46.8	53.2
1954	248.1	45.1	232.2	525.4	47.2	52.8
1955	266.2	53.3	255.0	574.5	46.3	53.7
1956	269.1	56.1	307.8	633.0	42.5	57.5
1957	293.5	75.5	343.9	712.9	41.2	58.8
1958	314.1	75.8	341.1	731.1	43.0	57.0
1959	325.4	82.5	403.3	811.3	40.1	59.9
1960	374.5	93.3	447.2	915.0	40.9	59.1
1961	370.2	85.0	472.1	927.3	39.9	60.1
1962	423.0	103.3	565.7	1,092.0	38.7	61.3
1963	473.6	113.2	572.9	1,159.7	40.8	59.2
1964	499.8	133.2	720.8	1,353.8	36.9	63.1
1965	546.1	144.0	824.5	1,514.6	36.1	63.9
1966	599.1	156.0	904.3	1,659.4	36.1	63.9
1967	615.7	181.6	1,001.6	1,798.9	34.2	65.8

Source: Commonwealth of Puerto Rico, National Income and Product (San Juan: Puerto Rico Planning Board, 1967), Table 31.

Summary

The period 1950-1967 was associated with very substantial rates of growth in income and output. At the same time there were important structural changes in the economy along with the overall expansion. There was a significant decline in the importance of agricultural activities and the manufacturing sector attained a position of dominance in the economy.

The expansion in income and output was associated with a far more modest increase in the level of employment. As a result the problem of unemployment was still of critical proportions with 96,000 unemployed, representing a rate of 12.2 per cent. The seriousness of the unemployment problem was further heightened by the fact that approximately 50 per cent of those unemployed in 1967 were in the 16-24 age group.[9] Moreover, throughout the period the employment situation for males has been consistently worse than it has been for females. This is an indication that the expanding sectors of the economy have evolved in such a manner that more job opportunities were provided for women.

The main element in the development strategy over the period covered was in the promotion of a manufacturing sector. We have already noted that this sector did emerge

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[9]Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972 (San Juan: Puerto Rico Planning Board).

as the dominant one in the economy. We will now proceed to conduct a closer examination of developments in the sector over the period.

Trends in the Manufacturing Sector

In 1967 the manufacturing sector contributed approximately 23 per cent to G.D.P. at factor cost and provided employment for approximately 19 per cent of the employed labour force. (See Tables 5-7 and 5-10.)

Net income in manufacturing in 1967 amounted to $702 million as compared with $171 million twelve years earlier in 1955 and $88 million in 1950. As can be determined from Table 5-13 there was a substantial decline in the share of the sector's income generated by agricultural and food processing activities. These activities accounted for approximately 19 per cent of the sector's net income in 1967 as compared with 29 per cent approximately in 1955. There was also a slight decline in the importance of the manufacture of apparel. In 1955 these activities accounted for about 19 per cent of the sector's overall net income, whereas by 1967 they accounted for about 17 per cent.

While the activities mentioned above were declining in relative importance, there was an increase in the importance of such activities as for example the manufacture of metal products and machinery. By 1967 these activities accounted for in excess of 16 per cent of the sector's net

TABLE 5-13

NET INCOME IN MANUFACTURING, SELECTED YEARS
(In Millions of Dollars)

Sector	1955		1960		1964		1965		1966		1967	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Food and Related Products	$ 50	29.2	$ 67	23.1	$118	23.2	$125	22.4	$132	20.8	$136	19.4
Apparel and Related Products	32	18.7	51	17.6	84	16.5	89	16.0	104	16.4	116	16.5
Metal Products and Machinery	20	11.7	55	19.0	83	16.3	89	16.0	104	16.4	115	16.4
Other Manufacturing	69	40.4	117	40.3	223	43.9	255	45.7	294	46.4	335	47.7
Total	$171	100.0	$290	100.0	$508	100.0	$558	100.0	$634	100.0	$702	100.0

Source: United States, Department of Commerce, Statistical Abstract of the United States (1970), p. 799.

income and were of almost equal importance to the apparel industry. In point of fact from a position in 1955 where its net income was approximately equal to two-thirds of that of the apparel industry, by 1960 it had surpassed that industry in terms of net income generated.

The change in importance of different activities within the sector was a reflection on the evolution of the industrialization strategy over the period. During the early period up until about 1955 all efforts were directed at trying to attract as many manufacturing firms as possible without being particularly concerned with what type of manufacturing activities they would carry out. It was hoped that the tax concessions and the relatively low wage rates would be successful in attracting industries which could make extensive use of the readily available but relatively low skilled labour force.

These hopes were realized during the early fifties. There was very rapid growth both in output and employment. Most of this expansion took place in the textile and apparel industries, where the low level of skills of the labour force was not a serious drawback and the relatively low wage rates were a decided incentive. The programme experienced a major setback with the post-Korean War recession. There was a decline in the number of new plants and several of the existing plants ceased operations.

As a result of this experience, it was decided that attention would have to be directed at attracting certain special types of industry. Specifically this meant attracting those industries which would experience a more modest decline in markets during periods of economic recession. The industries which were held to satisfy that condition were those associated with the production of electronic and chemical products.[10] These industries unlike those concerned with textile and apparel production are capital intensive industries. In this instance the tax concessions could act as an important attraction.

In this case the strategy did meet with some success as evidenced by the relative decline in the contribution to net income in manufacturing by the food product and apparel industries discussed above.

An alternative indicator of the relative importance of different manufacturing activities to the overall performance of the sector is the contribution made by such activities to value added by the sector. Such information is set out in Table 5-14 for the years 1958, 1963 and 1967. There is evidence once again of the relative decline in the importance of the food processing and textile and apparel manufacturing activities. The most significant change was the increased importance of the chemical industry. In 1958,

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[10]Barton, op. cit., p. 29.

TABLE 5-14

PERCENTAGE CONTRIBUTION TO VALUE ADDED IN MANUFACTURING BY SECTOR

Sector	1958	1963	1967
Food and Kindred Products	32.7	30.6	25.9
Tobacco Manufactures	3.5	3.8	4.1
Textile Mill Products	5.2	3.3	3.5
Apparel and Related Products	15.1	14.6	14.4
Lumber and Wood Products	0.4	0.4	0.6
Furniture and Fixtures	3.0	2.5	1.9
Paper and Allied Products	1.3	1.4	1.2
Printing and Publishing	2.3	2.2	2.0
Chemicals and Allied Products	3.2	7.4	9.9
Petroleum and Coal Products	4.6	5.8	5.2
Rubber and Plastics	1.4	1.0	1.4
Leather and Leather Products	2.3	3.3	4.7
Stone, Clay and Glass Products	6.6	6.1	5.8
Primary Metal Industries	0.7	0.9	0.9
Fabricated Metal Products	3.5	2.7	3.9
Electrical Machinery	7.5	8.2	8.6
Miscellaneous Manufactured Products	6.8	5.8	6.0
Total	100.0	100.0	100.0

Sources: United States, Department of Commerce, Census of Manufactures in Puerto Rico 1963; and United States, Department of Commerce, Statistical Abstract of the United States (1970).

this industry contributed 3.2 per cent to value added in the manufacturing sector. Five years later this had more than doubled to 7.4 per cent and by 1967 this sector was responsible for almost 10 per cent of total value added in manufacturing. This is again indicative of the change in strategy noted above.

Having noted above changes in the contribution to income and output of different activities within the sector over the time period covered, we will now try to determine whether these changes were associated with shifts in the contribution to employment within the sector. In 1967, as indicated by Table 5-10, the direct contribution to employment by manufacturing amounted to 131,000. In Table 5-15 is set out the contribution to employment in the sector by various manufacturing operations. In 1967 the principal source of employment was in the garment industry which accounted for 27.9 per cent of those employed in the sector. The manufacture of food products ranked second, accounting for 17.4 per cent of employment in the sector. In comparing the situation then with the position in 1960 it can be seen that there was a slight increase in the importance of the garment industry and a decline in the importance of food products. Overall what might be considered the traditional activities, food and tobacco products, textiles and garments, were responsible for over 50 per cent of employment in the sector while contributing about 36 per cent of net income.

TABLE 5-15

PERCENTAGE CONTRIBUTION BY MANUFACTURING INDUSTRIES TO EMPLOYMENT BY MAJOR INDUSTRY GROUP

Industry	1960	1967
Food and Food Products	19.4	17.4
Tobacco Products	6.9	6.2
Textile Products	6.1	5.1
Garments and Related Products	27.4	27.9
Paper and Related Products	3.1	2.6
Chemicals and Related Products	2.4	2.4
Petroleum Refining	2.9	3.7
Leather and Leather Products	4.8	8.0
Wood Products and Furniture	4.2	3.2
Stone and Glass Products	5.5	5.0
Metal Products	3.3	3.2
Machinery (excluding Electrical)	1.3	3.2
Electrical Machinery	5.5	6.7
Professional and Scientific Equipment	2.2	2.3
Miscellaneous Manufacturing	5.1	3.2
Total	100.0	100.0

Source: Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972 (San Juan: Puerto Rico Planning Board).

The chemical products industry which showed a very rapid rate of growth in terms of its contribution to income from the sector was responsible for only 2.4 per cent of the level of employment in 1967 which was identical to the contribution it made in 1960.

All things considered the distribution of employment within the sector was very similar to what it had been in 1950 if one were to exclude home needlework operations. At the same time it is important to note that home needlework, which provided employment for 51,000 people in 1950, had by the end of the period under consideration turned out to become an insignificant source of employment.

The developments in the sector were a direct result of the governmental policies outlined in the introductory chapter. As can be determined from Table 5-16, net income originating in manufacturing firms operating with government assistance increased from 47 per cent of overall net income in manufacturing in 1958 to a position whereby in 1967 they were contributing 68 per cent of overall net income in manufacturing. In 1967 of the 131,000 people employed in manufacturing approximately 95,000 or 73 per cent were in plants operating with the assistance of government incentives. There was over the period, as can be determined from Table 5-17, more than a thirteenfold increase in the number of jobs created which could be related to government assistance in this area. An examination of the table also provides

TABLE 5-16

NET INCOME ORIGINATING IN MANUFACTURING FIRMS PROMOTED BY THE ECONOMIC DEVELOPMENT ADMINISTRATION
FISCAL YEARS
(In Millions of Dollars)

Year	E.D.A. Firms (1)	All Firms (2)	Percentage (1) ÷ (2) (3)
1958	$104.8	$222.6	47.1%
1959	127.7	258.7	49.4
1960	155.4	288.7	53.8
1961	207.2	339.2	61.1
1962	241.5	391.3	61.7
1963	278.9	443.5	62.8
1964	314.1	496.8	63.2
1965	351.2	547.8	64.1
1966	400.4	611.6	65.5
1967	461.1	678.2	68.0

Source: Commonwealth of Puerto Rico, National Income and Product (San Juan: Puerto Rico Planning Board, 1967), Tables 26 and 27.

TABLE 5-17

DIRECT CONTRIBUTION TO EMPLOYMENT BY GOVERNMENT-ASSISTED MANUFACTURING PLANTS, 1950-1967
(In Thousands of People)

Year	Total	Female	Percentage Female
1950	7.1	3.5	49.3%
1951	9.0	4.5	50.0
1952	14.8	8.4	56.8
1953	21.8	14.4	66.1
1954	23.0	15.4	67.0
1955	28.5	18.9	66.3
1956	33.1	21.4	64.7
1957	35.8	22.0	61.5
1958	36.4	22.6	62.1
1959	45.0	27.5	61.1
1960	46.5	28.0	60.2
1961	55.1	34.2	62.1
1962	57.4	34.2	59.6
1963	62.6	38.0	60.7
1964	70.8	42.6	60.1
1967	95.3		

Sources: Commonwealth of Puerto Rico, Economic Development Administration, Annual Statistical Report of Manufacturing Plants (1963-1964), Table 11, pp. 29-34; and Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972 (San Juan: Puerto Rico Planning Board), p. 61.

some insights into the reason why unemployment among males has remained higher than for females. In the period 1950 through 1954 there was more than a threefold increase in the number of jobs provided by government-assisted plants. At the same time there was an approximate fivefold increase in the number of these jobs held by females. As a result 67 per cent of the jobs were held by females. These developments took place at a time when, as mentioned previously, industrial expansion was concentrated in the textile and apparel industries. Since that time there has been some moderation in the female share of jobs but they were still holding approximately 60 per cent of the jobs in the mid-sixties. It is then clear that despite the effort made in the mid-fifties to try to promote so-called more sophisticated industries the overall result nevertheless involved a preponderance of manufacturing activity heavily biased towards the use of female labour.

Having discussed the direct income and employment contributions of what was the leading sector during this period of economic expansion, it is important at this stage to derive some insights into the extent of the indirect impact of the sector on the economy. These indirect effects would be determined by the extent of the degree of interdependence within the sector itself as well as between the sector and other sectors of the economy.

By the mid-sixties there were firms in the sector which were engaged in most lines of manufacturing activity. At the same time in many of the industrial sectors, for example, textiles and apparel, there were firms engaged in operations which could provide inputs and utilize output from other firms within the sector. It would then seem that the physical requirements for interdependence existed. An attempt was made to derive some insight into the actual degree of interdependence by estimating from the Census of Manufactures for 1963 what percentage of value of output was in the form of intra-sectoral sales as well as sales to final demand and exports. The results of this exercise are summarized in Table 5-18. The information provided indicates that in only four instances were intra-sectoral sales of any significance. These were in the case of paper and allied products where 48 per cent of the value of output was in the form of intra-sectoral sales, lumber and wood products where the corresponding estimate was 38 per cent, primary metal industries, 35 per cent, and stone, clay and glass products, 23 per cent.

At the same time for ten of the eighteen sectors falling within USSIC 20-39, in excess of 60 per cent of output was exported. In two instances exports were in excess of 90 per cent of output, in four instances in excess of 80 per cent and two in excess of 70 per cent. Since these exports were in the main destined for the mainland, this would

TABLE 5-18

PERCENTAGE DISTRIBUTION OF MANUFACTURING OUTPUT BY INDUSTRY, 1963

USSIC	Industry	Sales to: Manufacturing % (1)	Sales to: Other Domestic Sectors % (2)	Sales to: Exports % (3)
20	Food and Food Products	6	54	40
21	Tobacco Products	15	2	83
22	Textile Mill Products	16	10	74
23	Apparel and Related Products	5	11	84
24	Lumber and Wood Products	38	57	5
25	Furniture and Fixtures	4	94	2
26	Paper and Allied Products	48	25	27
27	Printing and Publishing	1	83	16
28	Chemicals and Allied Products	4	32	64
30	Rubber and Plastic Products	9	13	78
31	Leather and Leather Products	8	4	88
32	Stone, Clay and Glass Products	23	66	11
33	Primary Metal Industries	35	42	23
34	Fabricated Metal Products	5	62	33
35	Machinery (except Electrical)	15	23	62
36	Electrical Machinery	1	7	92
38	Instruments and Related Products	. .	3	97
39	Miscellaneous Manufactures	4	7	89

Source: Estimated from United States, Department of Commerce, Census of Manufactures in Puerto Rico 1963, Table 4.

suggest that the manufacturing sector was predominantly integrated with mainland rather than island operations.

The low level of intra-sectoral sales along with the overwhelming importance of exports in most instances suggest that there would also be limited integration between the manufacturing and distribution sector. Column (2) of Table 5-18 sets out that percentage of output from the respective activities which went to local wholesale and retail establishments. The highest estimates were for furniture and fixtures, 94 per cent, and printing and publishing, 83 per cent. Overall there were only five other instances in which local wholesale and retailing establishments absorbed significant shares of output.

Although these estimates do not provide complete information on all aspects of interdependence both within the sector itself and between the sector and other sectors of the economy, they do give a fair indication of the limited degree of interdependence which existed. This was the situation even though, as indicated previously, the physical requirements for a substantial degree of interdependence did exist. Given the very large share of output exported to the mainland, it must be the case that since the majority of the plants were branches of mainland plants, they were integrated into the operations of those plants and this mitigated against any significant degree of internal integration. This meant that in spite of the important

direct contributions to income and employment by this sector the indirect contributions must have been relatively modest. In fact it was estimated that for each job created in industry there was one other job indirectly created in the economy.[11]

The Puerto Rican government in the latter part of the period under consideration started to make efforts to deal more specifically with the question of industrial integration. Emphasis was placed on the promotion of a fully integrated petro chemical complex which would make extensive use of local materials such as limestone and clay as well as a part of the output from the petroleum refineries. In addition inputs would be provided for the production of synthetic fibres and plastic products.

Another factor of importance in evaluating the development of the sector concerns the role played by domestic entrepreneurs. Given the substantial growth in income discussed previously we will attempt to determine whether this had led to more domestic participation in the economy as was implied by the Lewis model. There was no evidence of any important developments in this direction. In fact it was pointed out that on the basis of almost any standard, namely, relative or absolute contribution to income, employment or exports, the role of local entrepreneurs was of

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[11]Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972, p. 70.

declining importance.[12] By the mid-sixties of all the plants which were promoted under the auspices of Fomento only 25 per cent of these were of local origin. However there was some evidence from 1960 through 1964 of an increased number of plants of local origin promoted with government assistance.[13]

A further indicator of the dominance of foreign investment was the significance of net capital imports in gross domestic investment. In 1966 net capital imports accounted for 47 per cent of gross domestic investment. Moreover, as can be determined from Table 5-19, such imports were in excess of 40 per cent of the value of gross domestic investment from 1957. The high point was in 1951 when net capital imports accounted for 62 per cent of gross domestic investment. This was in the early stages of the development programme when, as mentioned previously, the expansion in the mainland economy associated with the Korean War led to a substantial flow of mainland capital to the island. When one takes into consideration the substantial capital inflows as well as the role of reinvested profits in domestic capital formation, there can be little doubt of the dominance of foreign investment in the economy.

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[12] Ibid., p. 72.

[13] Commonwealth of Puerto Rico, Economic Development Administration, Annual Statistical Report of Manufacturing Plants (1963-1964), Table 23G.

TABLE 5-19

NET CAPITAL IMPORTS AND GROSS DOMESTIC INVESTMENTS, SELECTED YEARS, 1950-1966
(In Millions of Dollars)

Year	Gross Domestic Investment	Net Capital Imports	Percentage
1951	$144.9	$ 90.2	62.3%
1953	157.5	25.2	16.0
1955	217.1	77.0	35.5
1957	274.8	114.2	41.6
1959	326.3	116.5	51.0
1960	390.0	195.6	50.2
1961	410.7	170.3	41.6
1962	517.9	267.0	51.6
1963	561.4	225.2	40.1
1966	857.0	403.0	47.0

Sources: J. Freyre, "External and Domestic Financing in the Economic Development of Puerto Rico" (unpublished Ph.D. thesis, Yale University, New Haven, Connecticut, 1966); and Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972 (San Juan: Puerto Rico Planning Board).

In the following section an attempt will be made to arrive at an estimate of the significance of two elements in the industrialization programme, the tax concessions and the wage differentials as compared with similar occupations on the mainland in the evolution of the sector.

The Protective Effect of the Incentive Programme in Puerto Rico

In evaluating the protective effect of the Puerto Rican incentives special emphasis will be placed on two particular features of the programme. These are the corporate tax exemption provisions and the wage differential. Puerto Rico is a part of the United States customs area, and consequently their industrialization efforts have been directed at incorporating the manufacturing sector into the overall mainland market. There has been as a result very little activity of the import replacement type. The local market was incidental to the overall operations of the majority of firms which have been established. Puerto Rico was then not limited by the market constraints faced by Jamaica and the need to accept economic inefficiency as an overall cost to secure the potential benefits to be derived from industry was not an issue.

The significance of the two features of the incentive programme has to be measured in terms of the level of profits earned by those plants which were located on the island. At the same time it is hoped to gain some additional

insights into the reasons why the growth of the sector has been associated with a high degree of disintegration within the sector and why a more effective contribution had not been made to the employment problem.

The analysis to be conducted in this section will be along the following lines. It will be assumed that the potential investor has the opportunity to employ the same techniques of production regardless of whether he establishes his plant on the mainland or on the island. That being the case one may reasonably conclude that the investor will locate his operations on the island when profits estimated on the basis of operating under conditions applicable there would be greater than profits earned from producing the identical product on the mainland. As mentioned at the outset the principal factors which will be held to account for the differential profit return are the ten-year tax holiday on corporate profits as well as the wage differential. The quantitative impact of these two elements can then be understood to relate to the extent of the profit differential between island and identical mainland operations. The model to be employed takes the following form.

Let industries i = 1 . . . n represent the number of industries which may be located either on the mainland or in Puerto Rico. These industries employ two primary factors of production labour and capital, earning wages and profits respectively.

Let wip be the wage bill of production workers employed in industry i in Puerto Rico.

Let Rip be the profits earned in industry i in Puerto Rico. Let wia represent the wage bill for the identical level of operations for industry i were it located in the United States. Let Ria represent the profit earned from the identical level of production in industry i were it located in the United States. Let ki represent the hourly wage in industry i in Puerto Rico as a percentage of the mainland wage in that industry.

Let t represent the corporate tax rate in the United States.

Let Fi represent the freight rate on goods of industry i shipped from Puerto Rico to the mainland.

Given our assumption of an identical production technique the lower Puerto Rican wage represents a profit subsidy to the producer located on the island. On the other hand the freight rate on goods shipped to the mainland would have to be absorbed out of the investors' profits. This arises from the fact that with a given wage rate and production technique the wage bill will be fixed.

The critical information as far as the potential investor is concerned would then be the difference between Rip and Ria. On the basis of data derived from firms operating on the island the value of Rip can be determined. We could then advance from this basis to estimate Ria. The

first step would be to adjust the Puerto Rican wage bill in each industry to what it would be if wages were at mainland levels.

For any industry i the wage bill could be adjusted to mainland levels as follows:

$$Wip \frac{1}{k_i} = wi_a \qquad (1)$$

Since $k_i < 1$ then $wi_a > wi_p$.

Given the assumption that factor earnings are split between wages and profits an increase in the wage bill ceteris paribus implies a decrease in profits.

As was mentioned above, the freight rates on shipments from the island would have to be absorbed out of profits. The freight margin then may be considered to embody an element of protection to mainland production. Given the assumption of identical production techniques the freight margin can be considered to be a subsidy to profits on the mainland. Adjusting then for the wage differential and the freight margin, the profits earned in a comparable activity on the mainland would be expressed as below:

$$Ria = Rip - (wi_a - wi_p) + Fi \qquad (2)$$

This would be an estimate of profits before corporate taxes were paid. Since net profit is the principal determinant it would be necessary to adjust the estimate of gross profit to net profit by the tax rate. Taking the wage differential, freight margin and corporate taxes into

consideration potential profits on the mainland for industry i could be expressed in the following form:

$$Ria = \frac{Rip - (wi_a - wi_p) + Fi}{\frac{1}{1 - t_i}} \qquad (3)$$

By adopting this approach towards the estimation of profit it is then possible to see that the impact of the wage differential and the tax rebate will depend on the relative labour or capital intensity of the particular production process. The margin of difference between Rip and Ria will provide an estimate of the quantitative significance of these two features of the programme. If the margin in a number of instances should be found to be very small this would not necessarily mean that these two measures could not be a stimulus to industrial production. It would rather suggest that the full benefit of these incentives could only be realized if production techniques were to be organized for their maximum exploitation. Specifically in these instances, higher profits could be realized if the mainland investor in Puerto Rico were to adopt a production technique different from that which he would have employed at home.

The following generalization can be made. Given the alternatives open to the investor mentioned above, more mainland investors would be attracted to the island, the greater the possibility of earning high profits using

techniques of production with which they are familiar. However, given the different stages of development of the two regions the production techniques which are optimal for the mainland in terms of resource use would not likely be optimal for the island.

In conducting the exercise data was derived from the annual report published by the Economic Development Administration. The year 1963 was selected for purposes of the evaluation in view of the comprehensive nature of the data available as well as the fact that the structure of industries was very representative of the nature of the sector in the sixties. The industries selected were those in the range USSIC 22-36 with the exception of items 25 and 26, household furniture and paper products, respectively, item 28, cleaning and toilet goods, and items 32 and 34, stone, clay and glass products and fabricated metal products. These items were excluded because the major portion of their output was sold on the local market. From the report mentioned above data was derived on the wage bill for production workers as well as profits for each of the sectors.

It was possible to derive information from another E.D.A. publication on wage rate per sector as a percentage of the rates prevailing on the average for the United States as a whole as well as for individual states. In terms of equation (1) two adjustments were made to the production workers' payroll. The first involved an adjustment made on

the basis of average hourly earnings in each sector based on the national average for the United States for the particular sector. The second was based on average hourly earnings per sector for the southern mainland states. This distinction was made because it was considered that in many respects the southern states could be considered to be an alternative to Puerto Rico for the mainland investor considering either establishing a new enterprise or considering expanding his operations. As a result of making two wage adjustments, two estimates of profits before taxes were derived.

The next stage in the estimation procedure involved an adjustment for freight margins on items shipped from the island to the mainland. It was our initial intention to employ ocean freight rates for this purpose. This information was, however, not available from any official source. It was also not possible to arrive at an estimate of the margin indirectly from trade returns in view of the fact that the United States treats shipments from Puerto Rico as being an internal and not an international transaction. A study conducted by the Jamaican Central Planning Unit, which was concerned with an evaluation of factors affecting the competitive position of Jamaica, vis-à-vis, Puerto Rico, in the United States market, yielded information on air freight rates between San Juan and New York City. These rates were then employed for purposes of estimating the freight margin. Using air freight rates obviously imposed an upward bias on

the implicit protection to mainland producers provided by transportation costs. This has to be borne in mind when one considers the overall estimates. The trade returns provided information on the weight of all items shipped to the mainland. A crude estimate of total freight payments as a percentage of the value of individual exports was then derived by applying the air freight rates to the weight of shipment. This percentage was then applied to the value of output for each sector. In this roundabout fashion the additional amount to be applied to profits, as per equation (2) above, was derived.[14] The final stage in the process involved an application of the United States corporate tax rate of 52 per cent to the profit estimates arrived at by the indicated procedures.

In Table 5-20 reported profits and estimates of profits and losses derived from using the procedures described above are set out. It can be seen from the table that in four instances, after making adjustments for the wage differential using either national averages or the averages for the southern states, there would have been overall operating losses. This was true in the case of floor covering mills, USSIC 227, children's outerwear, USSIC 236, leather footwear, USSIC 314, and other leather goods, USSIC 3151-99. In the

[14]It is realized that unless mainland firms are market based they would also incur internal transportation costs. Accordingly, our technique would tend to overstate the impact of transportation costs on potential earnings.

TABLE 5-20

ESTIMATED PROFITS AND LOSSES OF PUERTO RICAN INDUSTRY BASED ON MAINLAND OPERATING COSTS AND TAXES

USSIC	Industry Group	Reported Profits[a] ($000's)	Estimated Profits (b)	Estimated Profits (c)	Losses (b)	Losses (c)
2211-2241	Broad Woven and Narrow Fabric Mills	878	346	364		
2251-2259	Knitting Mills	1,176	81	357		
226	Textile Finishing	98	29	35		
227	Floor Covering Mills	57			123	87
232	Men's and Boy's Furnishings	3,846		1,271	1,400	
233	Women's and Misses' Outerwear	1,249		33	1,091	
234	Women's and Children's Underwear	7,299		1,752	538	
236	Children's Outerwear	104			504	205
238/239	Miscellaneous Apparel	1,262	730	1,062		
283	Drugs	15,945	7,398	7,493		
314	Leather Footwear	1,830			967	25
3151-3199	Other Leather Goods	1,272			1,043	365
35	Machinery (except Electrical)	889	257	392		
3611-13	Electrical Distribution Equipment	6,916	2,437	2,996		
3621-3629	Electrical Industrial Apparatus	1,416	543	657		
3631-3639	Household Appliances	7,809	3,132	3,797		
3641-3643	Lighting and Wiring Devices	3,442	1,285	1,555		
3651-52	Radio and T.V. Equipment	631	202	308		
3671-79	Electrical Components and Accessories	3,142	1,165	1,416		
369	Electrical Products (n.e.c.)	4,817	308	365		

[a]Source: Commonwealth of Puerto Rico, Economic Development Administration, Annual Statistical Report of Manufacturing Plants (1963-1964).

[b]Wage adjustment based on mainland average.

[c]Wage adjustment based on average for the southern states.

case of women's and children's outerwear, USSIC 233, women's and children's underwear, USSIC 234, men's and boy's furnishings, USSIC 232, losses would have been realized if the prevailing wage had been at the national average for the mainland. Profits earned on operations in Puerto Rico, in every instance, exceeded after tax profits for the same industry operating under mainland conditions. Excluding those activities in which losses would have been realized, if they were conducted under mainland conditions, with one exception, miscellaneous apparel, USSIC 238-239, where estimated profits based on wage rates for the southern states were very close to that of the reported profits for the activity on the island, the profits earned in Puerto Rico were in most instances between two and four times what net earnings would have been if mainland operating costs and taxes had been incurred.

It is possible to determine from the analysis those industries in which the wage differential was the significant factor in the determination of realized profits and those in which the tax concessions was the factor of overriding significance. One would expect that the importance of the wage differential would depend on the labour intensity of the particular operation. The rule adopted for the purpose of establishing labour intensity was the wage bill for production workers, when it represented a minimum of 20 per cent of the value of net sales. On the basis of this

criterion, most of the textile, apparel and leather industries could be described as being labour intensive operations. These were the industries in which it was most frequently found that losses would be incurred after adjustments were made for the wage differentials and freight margins, or where the profit margins would have been very low after making these adjustments.

The other industries, consisting mainly of drugs, USSIC 25, and electrical appliances, USSIC 35 and 36, could all be considered to be capital intensive on the basis of the criterion outlined above. The wage differential in these instances, whether it was related to mainland averages or averages for the southern states, was greater than for the other industries mentioned above. The Puerto Rican wage was between 50 and 60 per cent of the mainland averages and between 60 and 70 per cent of the average for the southern states. Nevertheless, after adjustments were made for the wage differential and freight margins there was a much smaller margin of difference between declared profits in Puerto Rico and the pre-tax estimated mainland profits. In one instance, household appliances, USSIC 3631-39, the mainland pre-tax profit would have been higher. This suggests that tax concessions may have played a more important role than the wage differential as an influential factor in the decision to locate these industries on the island.

It is interesting to note that the type of industry in terms of labour and capital intensity were established mainly within certain set time intervals. The labour intensive industries were established in the early period up to 1955. The more capital intensive industries were established in the later period. The apparent failure of the wage differential to be a significant incentive in the later period stems partially from the fact that the benefits to be received from this are recognized as being transitory. This was as a result of the declared intention of the Federal Department of Labour to eventually work towards an elimination of the wage differential. This would make it difficult for a prospective investor to forecast accurately the benefits likely to be derived from the savings on wages, whereas at the same time he could be assured of the tax concession for a minimum period of ten years.

The ability of Puerto Rican products to gain free access to the mainland market has been cited frequently as a factor of considerable importance in the industrialization programme. A further attempt was made to evaluate the importance of the tax concessions and wage differentials by estimating what rate of duty when applied to the value of output would reduce declared Puerto Rican profits to the mainland levels arrived at by the estimation procedure previously described.

Since the analysis has been conducted on the assumption of fixed production techniques, the tariff would have to be absorbed by the investors out of profits. Alternatively the matter could be examined along the following lines. This would involve a determination of the rate of duty which, when applied to the same industries operating under mainland conditions, would permit net earnings on the mainland to be equal to that of Puerto Rico for each industry.

In order to estimate the rates of duty on the basis of either of the two approaches mentioned above the following extensions were made to the basic model.

Let Ria and Rip retain the same identity as in the basic model.

Let the tariff rate be n.

Let x be the value of output in Puerto Rico.

Then

$$Rip - n(x) = Ria \tag{4}$$

$$-n = \frac{Ria - Rip}{x} \tag{5}$$

The rate of duty which would be required to bring the level of mainland after-tax profits up to the Puerto Rican level could be derived in the following way:

$$Ria + \frac{n(x)}{1-t} = Rip \tag{6}$$

where t once again represents the corporate tax rate in the United States.

From (6) we could deduce that

$$n = \frac{Rip - Ria}{x(1 - t)} \qquad (7)$$

In view of the fact that the Puerto Rican products are exempt from corporate taxes, the rate of duty required to reduce Puerto Rican profits to mainland levels as per equation (5) would be less than the rate of duty which would be required to bring net mainland profits in the respective sectors, as per equation (7), up to island levels.

The result of the tariff estimates derived employing equations (5) and (7) are summarized in Tables 5-21 and 5-22 respectively. In each case two estimates were derived for individual items, one in respect to profit adjustments on the basis of national operating costs and the other in respect to costs applicable to the southern states. We will begin by examining the estimates summarized in Table 5-21 which represents the rates of duty which could be absorbed by Puerto Rican producers. In the case of the textile and apparel industries the rates of duty which Puerto Rican manufacturers could absorb and remain on an equal basis with manufacturers operating subject to southern wage costs, potentially their major competitors, were for the most part relatively modest. A rate of duty of 10 per cent would eliminate the competitive advantage held by Puerto Rican manufacturers on all activities falling within these industrial classifications, with the exception of broad woven and

TABLE 5-21

ESTIMATES OF TARIFF RATES NECESSARY TO REDUCE PUERTO RICAN EARNINGS TO MAINLAND LEVELS

USSIC	Industry Group	Tariff Rates (a)	Tariff Rates (b)
2211-41	Broad Woven and Narrow Fabric Mills.	12	11
2251-59	Knitting Mills	4	3
226	Textile Finishing	9	8
227	Floor Covering Mills	c	c
232	Men's and Boy's Furnishings	d	9
233	Women's and Misses' Outerwear	d	6
234	Women's and Children's Underwear	d	9
236	Children's Outerwear	c	c
238/239	Miscellaneous Apparel	5	2
283	Drugs	37	36
314	Leather Footwear	c	c
3151-99	Other Leather Goods	c	c
35	Machinery (except Electrical)	20	16
3611-13	Electrical Distribution Equipment	26	23
3621-29	Electrical Industrial Apparatus	17	15
3631-39	Household Appliances	13	11
3641-43	Lighting and Wiring Devices	22	20
3651-52	Radio and T.V. Equipment	7	5
3671-79	Electrical Components and Accessories	22	19
369	Electrical Products (N.e.c.)	26	23

$$\text{Tariff Rates: } -n = \frac{Ri_a - Ri_p}{x}$$

[a]Profit rates as per mainland average wage rates as a basis of the estimate.

[b]Profit rates as per southern average wage rates as a basis of the estimate.

[c]Losses would be realized when wage rates adjusted to national averages and averages for southern states (see Table 5-20).

[d]Losses would be realized when wage rates adjusted to national averages.

TABLE 5-22

ESTIMATES OF TARIFF PROTECTION NECESSARY TO RAISE MAINLAND EARNINGS TO PUERTO RICAN LEVELS

USSIC	Industry Group	Tariff Rates	
		National	South
2211-41	Broad Woven and Narrow Fabric Mills	25	24
2251-59	Knitting Mills	8	6
.226	Textile Finishing	19	18
227	Floor Covering Mills	27	21
232	Men's and Boy's Furnishings	39	19
233	Women's and Misses' Outerwear	25	13
234	Women's and Children's Underwear	28	20
236	Children's Outerwear	35	18
238/239	Miscellaneous Apparel	10	4
283	Drugs	76	75
314	Leather Footwear	34	22
3151-99	Other Leather Goods	30	22
35	Machinery (except Electrical)	43	33
3611-13	Electrical Distribution Equipment	55	48
3621-29	Electrical Industrial Apparatus	36	22
3631-39	Household Appliances	28	24
3641-43	Lighting and Wiring Devices	47	41
3651-52	Radio and T.V. Equipment	15	11
3671-79	Electrical Components and Accessories	46	40
369	Electrical Products (n.e.c.)	55	48

Tariff Rates: $n = \frac{Ri_p - Ri_a}{x(1 - t)}$

narrow fabric mill products, USSIC 2211-41, where the Puerto Rican producers could absorb an 11 per cent rate of duty.

The highest rates of duty which would be absorbed by any sector were for drugs where the rates were 37 and 36 per cent, depending on whether the wage costs were estimated at national or southern averages, respectively. For the other large industrial sector consisting mainly of electrical machinery and appliances the average rates were 19 and 16.5 per cent on the basis of the same criteria. The highest rates in this sector were 26 and 23 per cent for electrical equipment and the lowest rates were 7 and 5 per cent for radio and television equipment. Finally for leather products the rates were 15.5 and 10.5 per cent, respectively. Taking this evidence into consideration suggests that free access to the mainland market adds considerable weight to the importance of the wage differentials and the tax incentives as in most instances the rates of duty which could be absorbed were very modest.

It could be argued that equation (7) which is concerned with an estimate of the level of United States tariffs which would eliminate the profit advantage realized by producers in Puerto Rico would be a better indication of the importance to the island of free access to the mainland market. Estimates derived from using equation (7) were on the average twice those derived from using the alternative approach. This difference can be directly related to the

United States corporate tax rate of 52 per cent which would have to be paid on mainland earnings. Taking the estimates on a more detailed basis it was estimated that the average rate of protection which would be required for the textile and apparel industries, depending on whether mainland or southern average costs were applicable, was 24 per cent with respect to the former and 15.9 per cent with respect to the latter. The highest levels of protection would have been required for men's and boy's furnishings, 39 and 19 per cent, and children's clothing, 35 and 18 per cent. With the exception of knitting mills, 8 and 6 per cent, and miscellaneous apparel, 10 and 4 per cent, all the other activities in this sector would have required tariff protection in the area of 20 per cent or greater. The industry which would have required the highest level of protection was the drug industry with 76 and 75 per cent. The other large sectors consisting of electrical appliances and equipment would require protection of 40.6 and 34.6 per cent. Finally for leather goods the rates were 32 and 22 per cent.

The results derived from this estimation procedure reveal also that the level of protection required to combat Puerto Rican competition would be much lower for the labour intensive industries such as textiles and leather products than for the capital intensive industries such as drugs and electrical equipment. This reinforces the point made earlier in this section that the competitive advantage of

Puerto Rico arising from the incentive system tends to favour capital as opposed to labour intensive operations.

Nevertheless, the overall rates of protection which would be required to keep Puerto Rican merchandise out of the mainland market on the basis of these last estimates are very high. These results, contrary to the others derived by the first procedure, tend to reduce the significance of tariff free access to mainland markets and add weight to the importance of tax and wage incentives. Nevertheless, one might argue that the fact that the island is a part of the United States customs area in itself had a positive impact on the volume of investment capital and the flow of capital would have been smaller under the same incentive framework if the region concerned had been a foreign country. One may also conclude, on the basis of this evidence, that the lower level of earnings in Puerto Rico was not completely offset by lower productivity in industrial operations on the island. The rate of tariff protection, which would be required to eliminate the Puerto Rican profit advantage mentioned above, was not substantially lower than the wage differential. The differential on the average was between 30 and 40 per cent.

Summary

The findings revealed in the preceding sections indicate clearly that the two aspects of the Puerto Rican

programme on which attention was concentrated are important in making the island an attractive place to locate industry. These incentives could only be utilized by mainland firms considering expansion or by investors considering starting up new enterprises as United States law prevented the closing of mainland plants for purposes of relocating on the island. This situation has had a special impact on the structure of the industrial sector. One outcome has been the substantial degree of integration of island with mainland manufacturing operations. Shipments to the mainland accounted for well in excess of 80 per cent of output for the industries covered.

If one were to take a global view of the situation this integration could be considered to be a good thing in terms of resource allocation within a customs area. On the other hand when specific attention is given to the effect of this situation on the island economy, several reservations have to be held. One effect of this integration with mainland operations is the great degree of fragmentation within the manufacturing sector. In the textile and apparel industries, for example, although there are plants engaged in the spinning, weaving and clothing sectors, there are hardly any inter-industry purchases as in most cases the bulk of the output is sold directly abroad.

Apart from the question of fragmentation within this sector there is the related issue of optimum resource use in terms of endowments and needs of the island. The greatest problem faced by the Puerto Ricans was and still is that of providing adequate employment for its large labour force. By having its manufacturing sector integrated with the mainland along the lines indicated, it is not surprising that the type of industry established in terms of production technique would not be best suited to meet the basic need stated above. There is the implicit assumption in the preceding statement that the incentives as they are presently formulated would be neutral in terms of resource use. They are neutral in the sense that they will not encourage an investor from the mainland to employ techniques for his operations on the island which are substantially different from those he would employ should he be engaged in the same line of activity on the mainland. This can be explained when one takes into consideration the options open to the potential investor. Given the choice, for example, of locating the new plant in the southern states or in Puerto Rico, it is easiest in terms of cost as well as time to try to estimate which location would provide the better rate of return by carrying out this evaluation on the basis of techniques of production with which he is familiar. The wage

differential can be considered on the one hand to be a subsidy to encourage use of labour but at the same time lower labour costs are also a subsidy to capital.

A factor of possibly equal importance is that the labour intensive industries are the declining industries in the United States. The competitive position of these industries could perhaps be improved if mainland operations could be transferred to the island, but such transfers are not permissible within existing United States laws. The growth industries which would be considering new areas for expansion are then the capital intensive industries. In fact these have been the types of industries which have been of increasing importance to the island in the latter part of the period under consideration in this study. The growing capital intensity of industry was one of the factors mentioned earlier as being responsible for the relatively small employment effect in terms of the size of the sector.

The comment made above concerning the limited prospects of the incentives influencing techniques of production is more applicable to the mainland investor than to his domestic counterpart. This then calls for a modification of the system of incentives to make them more amenable to domestic investors. The importance of the need to promote a greater local share in the manufacturing sector had been recognized and a suggested programme to deal with this endeavour was discussed earlier. Mainland and domestic

investment would then have to complement each other. Something in this direction has already been achieved with the establishment of a chemical industry.

Finally, it is clear that an expansion of the incentive system in its present form, for example, through an extension of the tax holiday period, would do nothing to alleviate the shortcomings outlined. Modifications in the programme would be required in the form of a tailoring of the incentives more towards meeting the employment requirements and resource availabilities of the island.

CHAPTER VI

CONCLUSIONS

This thesis has been concerned with an evaluation of the strategy of industrialization by invitation carried out by Jamaica and Puerto Rico since the end of the Second World War. The strategy as indicated was initiated by Puerto Rico in the late forties and was very shortly afterwards adopted by Jamaica. The evaluation was conducted on the basis of the following criteria: the overall growth of the manufacturing sector in terms of its contribution to income and employment, structural changes within the sector, the emergence of integration within the sector as well as between the sector and other sectors of the economy and finally the level of domestic participation in the expansion of the sector.

In the previous two chapters a separate examination of the strategy was conducted for each of the two countries and the findings contained there revealed that on the basis of the criteria established for the purpose of the evaluation, the approach adopted has met with limited success. At this stage we will proceed with an examination of some of the similarities and differences in the experience of both countries over the period.

In both countries the manufacturing sector had emerged over the period as being the single most important contributor to G.D.P. In 1967 the manufacturing sector contributed approximately 15 per cent to the value of G.D.P. at factor cost in Jamaica. In Puerto Rico the dominance of the sector was even more pronounced where it contributed approximately 23 per cent to the value of G.D.P. At the same time in both countries the growth in significance of the sector was associated with a substantial decline in the contribution of the agricultural sector to G.D.P. Agriculture in both cases declined from its position of pre-eminence in terms of its contribution to income. In Jamaica in 1967 it was fifth in terms of importance and in Puerto Rico eighth.

In Jamaica, manufacturing activity based on the processing of agricultural products was the traditional activity prior to the start of the industrialization programme. With the expansion of the sector these operations still remained the most important, accounting for approximately 45 per cent of G.D.P. in manufacturing in 1967. It must be pointed out, however, that within these agricultural processing operations, there was a sharp decline in the importance of sugar and rum manufacturing. There emerged only three new important activities within the sector, namely, metal products, textiles and garments and chemicals.

In Puerto Rico there was evidence of a greater degree of structural change associated with the growth of

the sector. The traditional manufacturing operations were, as in the Jamaican case, the manufacture of food products, but unlike Jamaica there had also been the manufacture of apparel of which home needlework was the predominant operation. By the end of the period under consideration these operations contributed approximately 36 per cent as compared with approximately 72 per cent in 1951 of the net income of the sector. In 1967 the manufacture of metal products and machinery was approximately equal in terms of its contribution to net income of the sector, as the manufacture of apparel. This change in the composition of sector output was, as indicated in Chapter V, a direct consequence of the official policy of promoting the establishment of relatively more capital intensive sophisticated industry.

In 1967, employment in the manufacturing sector in Jamaica was approximately 58,000, representing 10.9 per cent of the employed labour force. This sector which was then the most important in terms of its contribution to G.D.P. was third ranked in terms of its contribution to employment. At the same time the agricultural sector which had declined to the position of being fifth ranked in terms of its contribution to G.D.P. retained its overwhelming position of importance in terms of its contribution to employment. In 1967, 43 per cent of the employed labour force was engaged in agriculture. At the same time approximately 24 per cent was reported as being engaged in miscellaneous service

activity. The fact that in 1967 67 per cent of the labour force was engaged in agriculture and service operations is important for the following reasons. The numbers reported as being engaged in agriculture include unpaid workers and farm operators and the miscellaneous service sector includes large numbers of those engaged in petty trading activity. One could conclude then that a number of those engaged in these two sectors were underemployed. This suggests that the modernizing function expected to be played by the introduction of a manufacturing sector in this context, namely, that of not only providing direct employment but of reducing as well underemployment was not realized to any significant degree over the period covered.

Turning now to the situation in Puerto Rico, in 1967, there were 131,000 people employed in the manufacturing sector, representing 18.9 per cent of the employed labour force. This sector was the second in importance to the service sector in terms of its direct contribution to employment. That sector provided employment for approximately 30 per cent of the labour force. The agricultural sector which in 1950 had been the single most important source of employment, accounting for approximately 36 per cent of the employed labour force, had declined to a position where by 1967 its contribution was approximately 14 per cent. In fact over the period there was an absolute decline in the number of people engaged in agriculture. The trends

in sectoral contribution to employment were consistent with the changes in contribution to income. The Puerto Rican experience, unlike the Jamaican one, seems more consistent with the results one would expect from the conventional analysis of the impact of a manufacturing sector on an economy in this situation. The growth in employment in such activities as commerce, construction and transportation and in the service sector which in this instance includes government services would suggest that there was some move towards a redirection of the labour force towards more productive activity. Nevertheless it was estimated that in 1966 there were in excess of 80,000 workers underemployed.[1]

In both countries there was an increase in the contribution of exports to income. Exports accounted for 39 per cent of the value of G.N.P. in Jamaica and were of even greater importance in Puerto Rico where they represented 50 per cent of G.N.P. In Jamaica, exports of manufactured products, excluding sugar, had been insignificant at the start of the period covered. By 1967 these exports accounted for 10.6 per cent of total exports. The island's export trade was nevertheless still dominated by exports of primary commodities, for example, bauxite and alumina, which accounted for 50 per cent of the value of the island's exports. Exports of manufactured products excluding sugar and rum

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[1] Commonwealth of Puerto Rico, The Four Year Economic and Social Development Plan of Puerto Rico 1969-1972.

represented about 25 per cent of G.D.P. in manufacturing for these items. It would then appear that the expansion of non-traditional manufacturing activity was geared mainly to supplying the local market.

In Puerto Rico, not only was there a substantial change in the structure of exports away from sugar towards other items but unlike Jamaica the overwhelming portion of the output of the sector was exported. As indicated in Chapter V the domestic market was incidental to the overall operation of the sector. There was at the same time practically no diversification in terms of export markets as output went mainly to the United States. The expansion of the sector there was associated with its complete integration into the United States market. In the Jamaican case even though exports of manufactured products were of less significance, there was a greater measure of diversification in terms of export markets with the principal areas being the United States, Canada and the United Kingdom. This diversification can be partly interpreted as being indicative of the greater source of diversity in terms of foreign investment in this sector.

One of the issues raised in the examination of the evolution of the manufacturing sector in both countries concerned whether there was any evidence of the emergence of interdependence within this sector as well as with other sectors of the economy. In both cases it was pointed out that

there was limited inter and intra-sectoral interdependence. As far as Jamaica was concerned it was noted that there was a decline in many instances in the domestic input coefficient and a corresponding increase in the import input coefficient. In the Puerto Rican case it was indicated that even though there existed in many industrial sectors plants involved in different stages of processing operations, e.g., the textile and apparel industry, there were virtually no inter-industry sales. The situation appeared to be, in the Puerto Rican case, that the operations on the island were integrated with mainland activities and the relationship between island firms and their mainland parents limited interrelationships in operations on the island.

As far as the question of local participation in the evolution of the sector was concerned, it appeared on the surface that in Jamaica, by the end of the period covered, local investors were playing an important role. In excess of 80 per cent of gross corporate profits was earned by firms designated as being local. At the same time, in excess of 70 per cent of the firms operating under the various incentive laws were listed as being either locally owned or operated under joint ownership. However, as we indicated in Chapter IV, these indices are not accurate indicators of the degree of local participation in view of the fact that companies are designated as either being local or foreign, depending on whether they happened to register locally

rather than on the nationality of the majority shareholders of the plant or the centre from which effective control is being exercised.

With due regard to the reservations stated above, it nevertheless still appears that there was more effective local participation in the growth of the sector in Jamaica than was the case in Puerto Rico. As was indicated in Chapter V, by almost any standard, relative or absolute contribution to income, employment or exports, the role of local entrepreneurs was of declining importance. In the mid-sixties only 25 per cent of the plants promoted under the auspices of the incentive programme were of local origin, as compared with 46 per cent in Jamaica. Net capital imports accounted for almost one-half of the value of gross domestic investment and had remained in excess of 40 per cent of this value from 1957.

The role played by the local entrepreneur seems to be the most important difference between the Jamaican and Puerto Rican experience over the period. This difference might in large measure be due to the unique position held by Puerto Rico in terms of its ability to attract United States capital. In fact, until 1960, the local entrepreneur was for all intents and purposes ignored, in light of the success experienced in attracting mainland capital. Since that time there have been more direct attempts to promote local participation, as the two recessions during the fifties had

revealed some of the costs of an excessive dependence on one source of supply of investment funds. In those periods it was noted that the performance of local firms revealed a greater measure of stability. When one considers the continuing high rate of capital inflow together with reinvested profits, it is unlikely in the absence of specific governmental action that the local entrepreneurs could easily arrive at a position of significance in the sector.

It was pointed out in the course of the study that the main elements in the strategy for industrialization were tax exemptions and tariff protection in the case of Jamaica, and tax exemptions in Puerto Rico. In both countries the relatively low wage rates were publicized as an additional incentive. It was indicated also that the manner in which the incentives were organized could be held to have a bearing on the structure of the sector as it emerged over the period covered. To this extent the failure of the sector to measure up to the criteria established for its evaluation could at least in part be related to the manner in which the programme was implemented, apart from considerations of the overall appropriateness of the programme. In this concluding chapter an attempt will be made to indicate a series of adjustments which should be made to the programme of industrialization by invitation as a means of making it more consistent with the objective of generating more dynamic benefits to the economies of each of the islands under

consideration. By this we mean a greater direct and indirect contribution to income and employment.

One of the issues raised concerning the strategy of relying heavily on foreign investment was related to whether the techniques of production adopted would be ideally suited to the resource availabilities in the two islands. Specifically, whether the firms attracted by the policy would employ labour intensive technology. Both countries, particularly Puerto Rico, did succeed in attracting a number of labour intensive industries such as those engaged in the manufacture of textiles and clothing. However, it would seem to be the case that possibly a limit has been reached in terms of attracting further industries of this type. This stems from the fact that labour costs, the important cost component for these enterprises, have been rising steadily.

In light of the comments above, it would seem that the obvious direction of policy should be towards curbing the rate of increase in labour costs. There are, however, a number of factors which impose severe limits on the practicability of efforts directed to this end. First of all, in Puerto Rico, the island government, if it were to seriously pursue a policy of depressing wages, would find itself coming into conflict with the United States Department of Labor. That department is determined to see that wage levels on the island are not allowed to remain indefinitely

substantially lower than that applicable to corresponding operations on the mainland. A factor of even greater importance and one that is relevant to both countries is that the growth of labour unions, together with the political influence which they can exercise, would make a low wage policy virtually impossible to implement. Moreover, a declared objective of the development effort is that of generating an increase in living standards as rapidly as possible and accordingly it is doubtful whether there would be any interest in the vigorous pursuit of such a policy.

The fact is that the traditional labour intensive industries in the centres from which efforts are made to attract investment are declining industries. The path of technological advance in North America and Western Europe has been such as to result in the capital intensive industries being those which possess the best prospects for high earnings. This trend bears a direct relationship to relative factor availabilities in countries in those parts of the world. It is possible to reason by analogy that if there was any significant endogenous technological development in the islands a situation might have arisen where labour intensive projects would bear the prospect of very high rates of return. The reliance on foreign investment and by implication, foreign technology, then means that for both local and foreign investors the attractive projects will be the capital intensive ones.

The problem of trying to generate a greater direct income and employment benefit from this sector may then have to be approached in terms of the scale of operations. That being so, the incentive system should be restructured to provide distinctive advantages for larger scale operations. The system of tax concessions, which is virtually the same for both countries, could possibly be amended along the following lines to meet this objective.

It would seem to be the case that most firms which have experienced losses under the assistance programmes do so in the first two to three years of operations. Accordingly a standard rule could be adopted whereby all firms would be guaranteed the tax exemption for a minimum period of five years. After this period exemptions could then be extended in terms of additional jobs created in the following manner. A percentage exemption would be granted to match the percentage increase in employment created in a given plant during the course of any one year over a five-year period following the basic exemption period. The scheme could also be modified so that at the end of the second five-year period each firm would also be allowed to use the cumulative difference in employment levels between the beginning and the end of the period and claim an additional exemption based on this difference.

The schemes outlined above were all concerned with the direct employment created by firms claiming the

exemptions. However, one of the major factors emphasized in reviewing the evolution of this sector in both countries was the absence of any significant intra- and inter-sectoral interdependence. The growth of such interdependence was cited as being of paramount importance if any major benefits were to be derived from the manufacturing sector. Accordingly, any revision in the incentive scheme has to be concerned not only with how the measures could work to enhance direct benefits, but also the indirect benefits. To this end it would be appropriate to grant special concessions to firms which were making increased use of locally manufactured inputs as well as sources of raw materials, even though there might be very little growth in their overall level of operations. For example, after the expiration of the initial five-year exemption period, firms, irrespective of size, which derived at least 50 per cent of their raw material and processed inputs from domestic sources would be granted an additional five-year exemption. Alternatively, there could be a pro-rated exemption related to the increase in the usage of such inputs with the added incentive of a cumulative exemption after the end of the second five-year period.

It is unlikely that such a restructuring of the incentives to promote greater interdependence would be adequate without the inclusion of a penalty clause in the incentive framework. This could take the following form.

When local supplies are created it might be necessary to cancel whatever tax benefits are still available to a firm which refuses to alter its purchasing pattern. The action recommended could be taken after an interval of six months of the local supply becoming available. An alternative, open to Jamaica but not to Puerto Rico, that of a complete prohibition of imports, would be undesirable in that it removes all constraints with respect to quality, as well as pricing policy on the local supplier.

Another but substantially weaker measure would be to impose an excise tax on the export of semi-finished products when there existed plants which could utilize these items for further processing. This could potentially have two effects on the system. First of all, it could have the effect of promoting a greater measure of intra-sectoral sales or purchases, or secondly, it could have the effect of promoting more advanced processing towards the finished product stage within the particular enterprise.

The measures outlined above indicate the ways in which the incentive measures could be modified to increase purchases of domestic intermediate products. However, it might be necessary at the same time to take steps to ensure that the required products would become available. This is at least in part related to the fact that some industries which provide the processed inputs for other manufacturing enterprises, for example, chemicals, petroleum and metal

products, require substantial capital outlays. Tax exemptions could be important in this instance in that they would assist in the writing off of these substantial outlays. Industries of this type, provided they were set up to supply the local market and did in fact do so, might, for example, be granted a straight tax exemption of ten years.

The adjustment of the incentive system to ensure the availability of local inputs could be incorporated into a scheme to help promote the level of domestic participation in the sector. The governments could consider providing special assistance to local firms set up for the purpose of producing such intermediate products. This could be extended to a situation where special areas could be designated as being restricted solely to local investors to facilitate their participation in that aspect of manufacturing operations.

As an extension to this basic theme the governments should give serious consideration towards the promotion of industrial complexes within the reformed framework. The Government of Puerto Rico has already taken steps in this direction, as pointed out in Chapter V, with a move towards promotion of a fully integrated petro-chemical complex. However, in this case, moves in this direction could involve direct public participation in those areas where the capital requirements are likely to be the greatest, for example, in certain stages of iron and steel and chemical operations,

leaving the further processing stages to domestic entrepreneurs. Apart from the question of capital requirement, public ownership could result in the following type of benefit. This could come from supplying processed materials at lower costs than would be the case if these operations were under private monopoly control, the only alternative in this context.

Finally, in our examination of the evolution of the sector in Jamaica we had indicated that the system of tariff protection worked to help promote the observed lack of intra-sectoral integration. In light of our comments above, the system of tariff incentives should be adjusted to ensure that they work in a manner to complement the suggested tax reforms. In other words there should be an integration of the tax and tariff incentives. It is suggested here that tariff reform should level out duties on items within each S.I.T.C. five-digit classification. In this way, the extraordinary protection provided end use industrial activities would be reduced. At the present time the differential between duties on finished products and processed inputs is on the average approximately 20 per cent. This difference could be reduced to the region of 5 per cent through a combination of lower rates on end products and higher rates on

processed inputs.[2] The reason for suggesting this approach towards reducing the differential rather than simply raising rates on inputs by the requisite amount is that to adopt the latter approach, in light of other restrictions on imports, would likely have a more inflationary impact on prices.

The suggestions which have been outlined are concerned primarily with adjusting the system of industrialization by invitation to make it more amenable to meeting the criteria established for the achievement of a successful programme of industrialization. At the same time the weaknesses of the strategy which have been revealed in the course of the analysis could lead one to question whether suggestions of the sort outlined could really generate the desired results. Might the response of the foreign investor not simply be to scale down his level of operations in countries like the two examined, as the circumstances there from his viewpoint would no longer be as favourable as they were when he was attracted to such locations? Whether this would occur would depend on the alternatives open to him. Since there is no evidence of any serious waning of interest on the part of investors in developed countries in such external investment, it is of importance that countries which are

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[2]Balassa has suggested that effective tariff rates should be equalized to avoid discrimination against different stages in the fabrication process. B. Balassa, The Structure of Protection in Developing Countries (Baltimore and London: The Johns Hopkins Press, 1971), p. 97.

interested in receiving such investment realize the limited advantages which can be derived from this type of investment in its traditional form. This would help reduce open competition among individual countries, implying greater co-ordination of incentive policies, and so reduce the options open to the potential investor.

There is growing evidence in the Caribbean of a move away from unrestrained efforts to attract foreign investment and a move towards an insistence on some defined measure of local participation in such investments. However, the issues raised in the analysis go beyond the narrow question of ownership. Ownership is important to the extent to which it determines the way in which the industry functions. That being the case, domestic participation will only be of some relevance in meeting the shortcomings indicated to the extent that operations of the company can be redirected along more suitable lines. Such a situation is not necessarily assured by an insistence on domestic ownership participation. What is required is a clear understanding of the requirements for industrialization in such a situation and a statement of policy or policies along with the appropriate tools designed to meet this objective. The list of suggestions in this chapter is designed to satisfy a set of essential conditions for industrialization, for a programme based on foreign investment. However, the essential conditions would remain unchanged and the fiscal incentives would

possibly require only minor adjustments even if we were thinking mainly in terms of local investment.

Finally, it must be noted that the period since 1967 has witnessed increased emphasis by Jamaica on a regional approach to the problem of economic development. In 1968, Jamaica, along with the territories of the former British Caribbean, formed the Caribbean Free Trade Association. This association opened up a regional market for manufactured products and there has been a significant increase in trade in these items. It is recognized, however, that to effectively deal with such issues as resource allocation on a regional basis, the treatment of foreign investment, international trade in a world increasingly dominated by trading blocks, it will be necessary to have regional co-ordination of development policies. Evidence of this is revealed in the current movement towards the formation of a Caribbean Common Market.

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