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DEVELOPMENT PATTERNS OF JAMAICA AND MANCHESTER
PARISH SINCE EMANCIPATION

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A thesis submitted to the Faculty of Graduate Studies
in partial fulfillment of the degree of

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PREFACE

This analysis of the development pattern of Jamaica and Manchester parish consists of four chapters. The first chapter primarily serves as an introduction to the analysis covering a survey of economic growth theories, hypothesis, method of analysis and the physical and economic characteristics of Manchester parish. The purpose of the second chapter is to reconstruct the economic activities prior to the emancipation in Jamaica and in the parish of Manchester. The incorporation of this chapter became essential because the study, although it begins after 1832, needs some background information in order to set the stage for an examination of the pattern of development after 1832. The third chapter is on the pattern of development of Jamaica and Manchester parish after 1832. In this section, time series and shift and share techniques are utilized in the analysis. Chapter four interprets the pattern of development with constant reference to the hypothesis of the study, and shows the significance of the export sector in creating differences of development between the island regions.

ACKNOWLEDGMENTS

The writer is deeply grateful for the original inspiration for this thesis, and for many ideas, to Dr. Frank C. Innes of the Department of Geography, University of Windsor. To Dr. Vernon Smith, (formerly Assistant Professor, Department of Geography, University of Windsor), the writer is particularly in debt, for the encouragement and advice given in the course of this work. Sincere appreciation is also expressed to the Graduate Committee for the thorough review and criticism of the thesis.

D.N.R. Samaranayaka

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CHAPTER 1

FRAMEWORK FOR THE ANALYSIS OF DEVELOPMENT PATTERNS OF JAMAICA AND MANCHESTER PARISH

(i) INTRODUCTION

The notion of balanced and unbalanced growth; lagging and leading regions, characteristic industrial mix and natural resource endowment have all been appearing frequently in the literature on regional planning. These aspects of national economic developments are however, recent in origin. The theories relating to economic growth in early years considered only such aspects as the rate of expansion of the national income and the total national production; and the national growth was measured in terms of real income or product per capita. These theories, until recently neglected the spatial aspects of economic activities which are responsible for the gross national production. Increasing differences in economic growth among regions due to differences in the spatial distribution of economic activities finally led many scholars to incorporate spatial aspects into the theories of

1. As in many studies, the terms of economic development and economic growth in this study are also used synonymously. However, the distinction between two terms should be made clear although the term economic development frequently refers to economic growth. Economic development measures the social or other changes that produce growth, while economic growth is used to describe the outward evidence of the process of economic development.

economic growth. As Losch (1954) noted, these changes in recent years resulted in a new era of our knowledge about economic growth:

"the center of gravity of theoretical economics is shifting once more: emphasis was laid at first on a price theory that neglected time and space; then the theories of interest and business cycles introduced time; and now the third period has dawned, when space is seriously considered." (Losch, 1954)

Spatial distribution or array of economic features on the landscape reflects the aggregate decisions of individuals' activities. These behavioural aspects of individuals in creating economic landscape are influenced by many factors such as physical, political and social. Therefore, there is a mutual interaction between these factors and the spatial distribution of economic activities. Not surprisingly, therefore, there have been numerous attempts to adapt economic growth theories on a national scale to the regional context (Siebert, 1969: 1-13). In other instances, attempts are made to develop particular regional economic growth theories which, although having their roots in theories of growth at the national level, are at the same time given significant amounts of regional bias through the introduction of crucial "regional variables" (Klien, 1969: 105-115). Therefore, the regional economic growth theories vary from the consideration of national aspects at regional level to more specifically dominant regional variables. On this account a review of

some of the prominent theories on regional economic growth proves useful, especially to show the aspects that are considered in these theories.

(ii) THEORIES IN REGIONAL ECONOMIC GROWTH

The theories to be reviewed are export base, sector theory, sequential growth, growth pole ideas and theory based on the national forces and resource endowment.

(a) Export Base Theory:

Export base concepts propose that growth in a given area is initiated by the response of the industries within this area to an increased demand outside the area itself (North, 1955). The concept applies to external trade and the wealth brought to the region through external trade enhances the region's ability to import goods. The concept suggests that the development of a region is, therefore, dependent on its ability to export goods which satisfy a demand outside the region. Such regions experience much more rapid growth than other regions, causing unbalanced growth patterns among regions.

(b) Sector Theory:

The sector theory introduced by Fisher (1933) and Clark (1940) focussed on internal development rather than stressing external forces as causes for differences in growth. The theory states that the economic growth of a region is primarily an internal evolution of

specialization and division of labour. The theory assumes a rise in per capita income of the nation over time and this increment at different stages is accompanied by a rise in the proportion of employment in certain activities at the expense of other activities.

(c) Sequential Development:

Hoover and Fisher (1948) modified the sector theory by introducing the concept of sequential development in a region. The theory of sequential development has five stages:

- (i) The first stage in the economic history of most regions is one of a self sufficient subsistence economy in which there is little investment or trade.
- (ii) With improvements in transportation, the regions develop some trade and local specialization.
- (iii) With the increase of interregional trade, a region progresses from extensive grazing to cereal production, fruit growing, dairy farming and truck gardening.
- (iv) With increased populations and diminishing returns in agriculture and extractive industries, a region is forced to industrialize.
- (v) A final stage of regional growth is reached when a region engages in tertiary industries

producing for export.

(d) Growth Pole Ideas:

Although Perroux (1950), Myrdal (1957) and Hirshman (1970) made separate contributions to the literature on regional economic growth, the nature of their propositions are closely related. As such they are discussed together.

The main idea of their argument can be summarized by the concept of the 'growth pole'. As Perroux (1950) puts it:

"Economic space consists of centers from which centrifugal forces emanate and to which centripetal forces are attracted. Each centre being a centre of attraction and repulsion has its proper field which is set in the fields of other centers."

The idea of 'growth pole' has led to some confusion in recent years. Darwent (1969: 22) argued that Perroux applied his original theory of 'growth pole' only to those sectors which exerted a propulsive on other associated industries or sectors. Therefore, he suggested the notion of 'growth centre' as the more applicable term in the field of regional planning. According to Darwent 'growth centre' is an area in which economic and social development is initiated and transmitted to an area around it. Nichols (1969: 193) argued that, although Perroux was not explicit in his original statement of 'growth pole' about spatial proximity, he however, recognized that 'growth poles' often possessed a spatial property. Therefore, he suggested that the 'growth pole'

idea is more appropriate in the field of regional planning. Quoting a definition, agreed upon at a recent seminar, he shows that the 'growth pole' notion is now well established in the field of regional planning.

Hirshman's arguments, when he speaks about the growth of a region due to economies of scale, was also along the same lines as in 'growth poles'. Likewise Myrdal's 'linkage concept' with spread and backwash effects, except that it is more specific about industrial linkages, is not significantly different from Perroux and Hirshman's lines of argument. Almost all these ideas primarily considered the growth of an economic activity in a particular area (mostly in urban centers) to the point that growth is diffused outward into other parts of the nation.

(e) The Theory of National Forces and Resource Endowment in the Economic Growth of Regions:

In a recent analysis of the pattern of economic growth of regions in the United States by Perloff, Dunn, Muth and Lampard (1960) combined the national forces and the resource endowment to explain the economic growth of regions. The economic growth of a region analysed by this method depends upon two factors. Firstly, the economic activities that are subjected to most significant nationwide changes and secondly, the nature of given regions. The analysis suggested that economic growth of regions accelerates

under two circumstances; (a) getting an increasing proportion of an industry even though that industry as a whole is either declining or not increasing nationally, and (b) getting a substantial share of a leading national industry. These two types are known as differential shifts and proportional shifts respectively. The analysis noted that the pattern of regional growth could be best explained by tracing the patterns of their growth against the national trend. This pattern of analysis is useful in explaining the departures of regional growth patterns from the national forces and the differences in growth patterns between regions.

The analysis of regional economic growth in the United States was primarily based on a technique known as Shift and Share. Employing this technique the analysis used a variety of data and sources to analyse the economic growth in the United States between 1890 and 1950. (The analysis however, laid heavy stress upon income and employment data by industry for all the counties and business economic areas in the country.

A new project was completed by Dunn (1972) using the same technique to analyse the changing structure of the regional and urban economies of the United States between 1940 and 1970. The project focussed upon the structure and change of whole sets of regional and urban complexes within the larger environmental complex.

n

It also examined the structure and the history of a region when compared with that of other regions and with the same region differently depicted. Through this method, it became possible to identify the natural "growth poles" from the historical experience and similarities and differences between them.

(iii) PURPOSE OF THE STUDY

The previous discussion regarding existing theories on regional economic growth reveals the emergence of a number of views to explain differential growth among regions. These theories, although not explicit in some cases, consider national forces and their concentration into a few specific areas of a nation, as causes for differences in regional growth. They only significantly vary in their explanation for such developments. Under these situations, a scientific investigation of the development pattern of a region proves useful as it helps to give an understanding of how differences in regional growth exist. Therefore, the main purpose of the study is to contribute to our knowledge of differential growth among regions.

Secondly, the study seeks to examine the present theories empirically as they all have some explanatory value. And in the final chapter an attempt is made to synthesize the more appropriate parts of them into a comprehensive whole. Thirdly, this investigation is undertaken to examine the pattern of regional growth on an economy primarily based on agricultural

activities. In this sense the present analysis is useful as it examines how differences in regional growth exist in an agriculturally based economy.

For this purpose, Manchester parish of Jamaica becomes the "region" for the present study. Since national development forces are important in analysing regional growth, the development pattern of Manchester parish is not treated in isolation, but relates to the national development forces throughout.

(iv) HYPOTHESIS

The present analysis on the development pattern of Jamaica and Manchester parish is based on two hypotheses. The first hypothesis relates to the national development pattern while the second is more specific about the development pattern of Manchester parish. Since the Jamaican economy has been closely associated with an export economy the study hypothesizes that any changes in export pattern has its influence on national development. Furthermore, the national and regional development of population also has some influence on the overall pattern of development in Jamaica. Considering these aspects the first hypothesis is stated formally as follows:

The Jamaican development pattern is associated with the prevailing conditions for its export commodities and the national and regional growth pattern of its population.

As it has already been observed in the present theories, regional differences in growth are an inevitable development of any open economy. Since resource endowment in Jamaica had strong influences on the volume and the nature of production of export commodities, the differences in growth result from the regional differences in resource endowment. In situations where the pattern of export changes, the regions which possess the ability to accommodate such changes experience a faster growth. These aspects of development at the regional level have been formulated into a formal hypothesis as follows:

The regional differences in growth result from the ability to produce export commodities, with relatively high demand, which in turn results from the regional differences in resource endowment. At the same time, the developments of faster and slower growth of regions are related to the changes in demand of export commodities.

The second hypothesis stated above will be analysed through the examination of development patterns in the parish of Manchester. In this section, the major emphasis is on the Manchester parish's resource endowment and the impact of national forces on its development.

(v) METHOD OF ANALYSIS

Two types of techniques are employed in this analysis, known as shift and share and time series. The shift and share technique was first developed by the United States Department of Commerce (1960) and by Dunn (1960) as a

descriptive tool of analysis. However, recent modifications to shift and share technique by Dunn (1962, 1972) have extended its use as a quantitative technique. Applications of shift and share technique to historical data enables one to project and possibly identify future development. The use of this technique as a framework for regional development has been suggested by Ashby (1964, 1967), Perloff (1960, 1964) and Dunn (1962, 1972).

Shift and share technique¹ calculates the net shift in a positive or negative sense in relation to average levels. The net upward shift or the total increases of all regions (or sectors) is equivalent to 100 percent. Each region or sector in the group is then seen to account for a specific share in this percentage. The percentages are high if the increases are great, and are low when increases are low. The negative or downward shifts are also calculated in the same manner. The only difference is that the downward shift calculates declines, and each sector or region accounts for a certain percentage of such decline. Shift and share technique, although not used extensively, proves extremely useful in the observation of the patterns of regional growth.

Time series² analysis calculates the pattern of movement of a single variable over time; and produces a trend line. The trend line can either be an increasing or decreasing one,

1. See Appendix B for the method of computation.
2. See Appendix A for the method of analysis.

depending upon the movement of the variable over time. It also calculates the percentages of increases or decreases for a given interval. Although time series analysis is often used in explaining the movements of economic variables over time, studies applying the technique to regional economic growth are very limited.

Shift and Share technique is applied in this study to show changing patterns of crop distribution, population movement and the development pattern of land holdings. Time series analysis on the other hand utilizes the variables of prices, exports and acreage of sugar, coffee and bananas over time. It is important to emphasize the reason for utilization of both shift and share and time series techniques in this study, as it reduces the difficulty of identifying the general pattern of development of regions which lack good data sources.

(vi) DATA AND SOURCES

Data and sources that are being used in this study have been obtained from official records and available research materials. To a great extent the study utilizes the data available through official records. Official records include the Blue Books of Jamaica, Handbook of Jamaica, and other Trade Records maintained by the Colonial Office. The Blue Book of Jamaica began in 1842 and was succeeded by the Handbook of Jamaica in 1872. The Handbook of Jamaica contains great detail relating to economic growth, tabulated on a

regional basis. The data extracted from this source are (a) population growth: national and regional, (b) patterns of crop distribution and (c) land holdings. Recent government documents relating to physical and economic planning are also used to highlight recent development patterns. In addition, the study is aided by reference to other research work available about Jamaica (for example, Higman (1970), Innes (1973)).

(vii) PHYSICAL AND ECONOMIC CHARACTERISTICS OF MANCHESTER PARISH

An introduction to Manchester parish, in terms of physical and economic characteristics, becomes relevant before proceeding with the present analysis. However, this introductory description is not intended to cover the entire country because of two reasons. Firstly, in the present analysis the physical characteristics of regions receives some importance only at the regional level. Secondly, the study seeks to analyse national forces at the regional level considering the departures and similarities in their developments.

The parish of Manchester,¹ on the south-west of Jamaica is bounded on the west, north and east by the parishes of St. Elizabeth, Trelawny, and Clarendon respectively

1. Three different approaches have been used to define regions. They are (a) homogeneity, (b) nodality or polarization, (c) programming or policy oriented and concerns mainly with administrative coherence. In this study regions refers to the third definition because administrative demarcations are being used to delimit the regions.

(Fig. 1.1, 1.2). The area enclosed is roughly 340 square miles. The parish became a separate administrative unit in 1814 comprising areas from Vere, Clarendon, and St. Elizabeth, and named after the Duke of Manchester.

Manchester parish is mainly composed of cretaceous limestones and additional materials from the quaternary. The Soil and Land-Use Survey (1970) for the parish of Manchester clarifies four types of geological formations. However, more than ninety percent of the area is covered with white limestone rocks, thus becoming the predominant rock type of the parish. Small patches of other types are scattered mainly in the north and north-east of the region.

Two major physiographic areas can be distinguished in Manchester parish primarily associated with the geological formations of the country (Fig. 1.3). In the extreme north and north-east deep dissection of shales and tuffs has produced a mountainous terrain often reaching 3000 feet above sea level and cut by deep valleys. The rest of the area consists of a faulted limestone plateau with an elevation ranging from 1000 to 3000 feet.

Climatically, the parish of Manchester shows little variations, having an annual rainfall of about 60 inches and an average temperature of 80°F. However, the northern part of the parish receives higher rainfall than the average, whilst the lower totals in the southern part of the parish lead to this being an important limiting factor in human

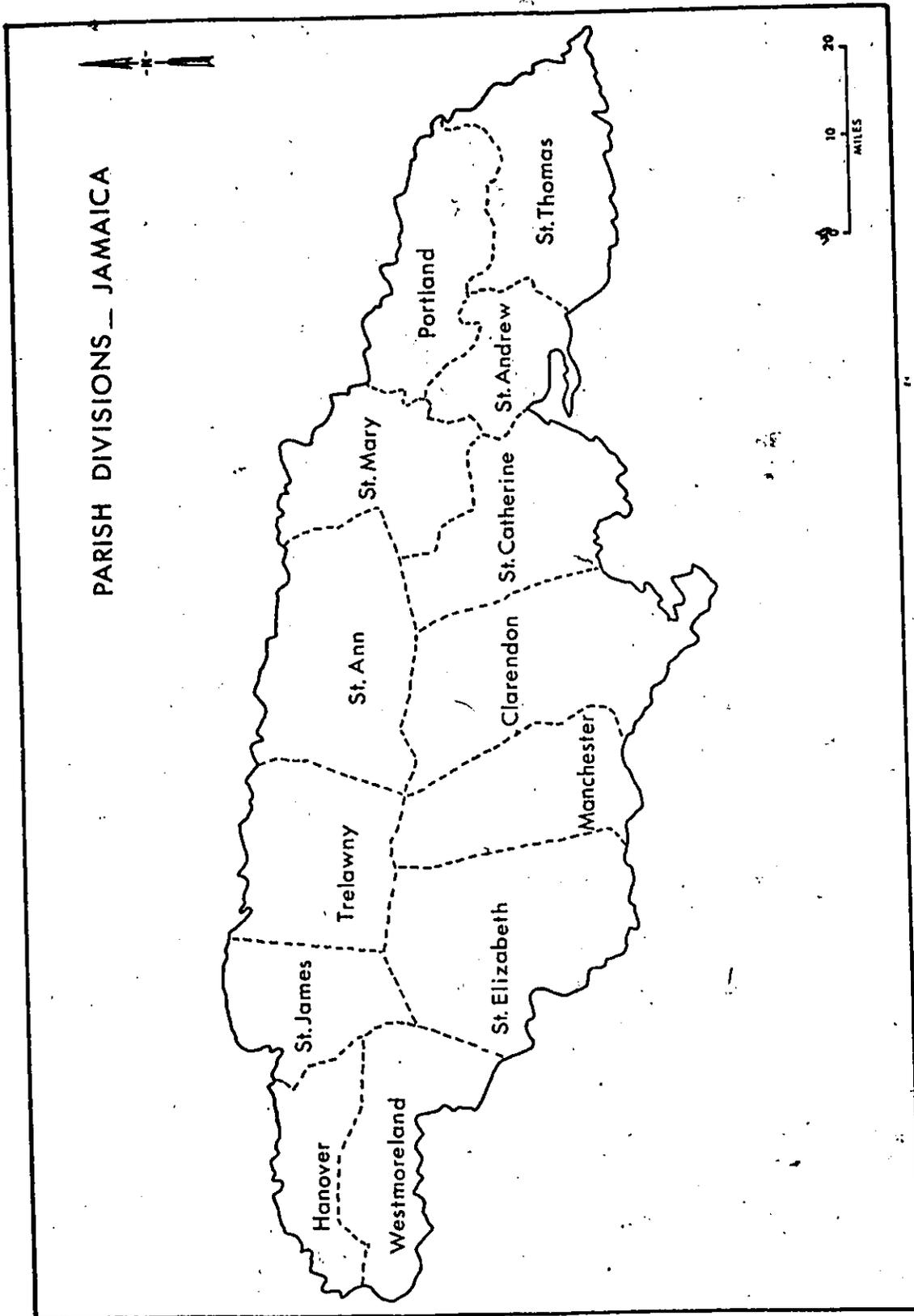


Figure 1.1

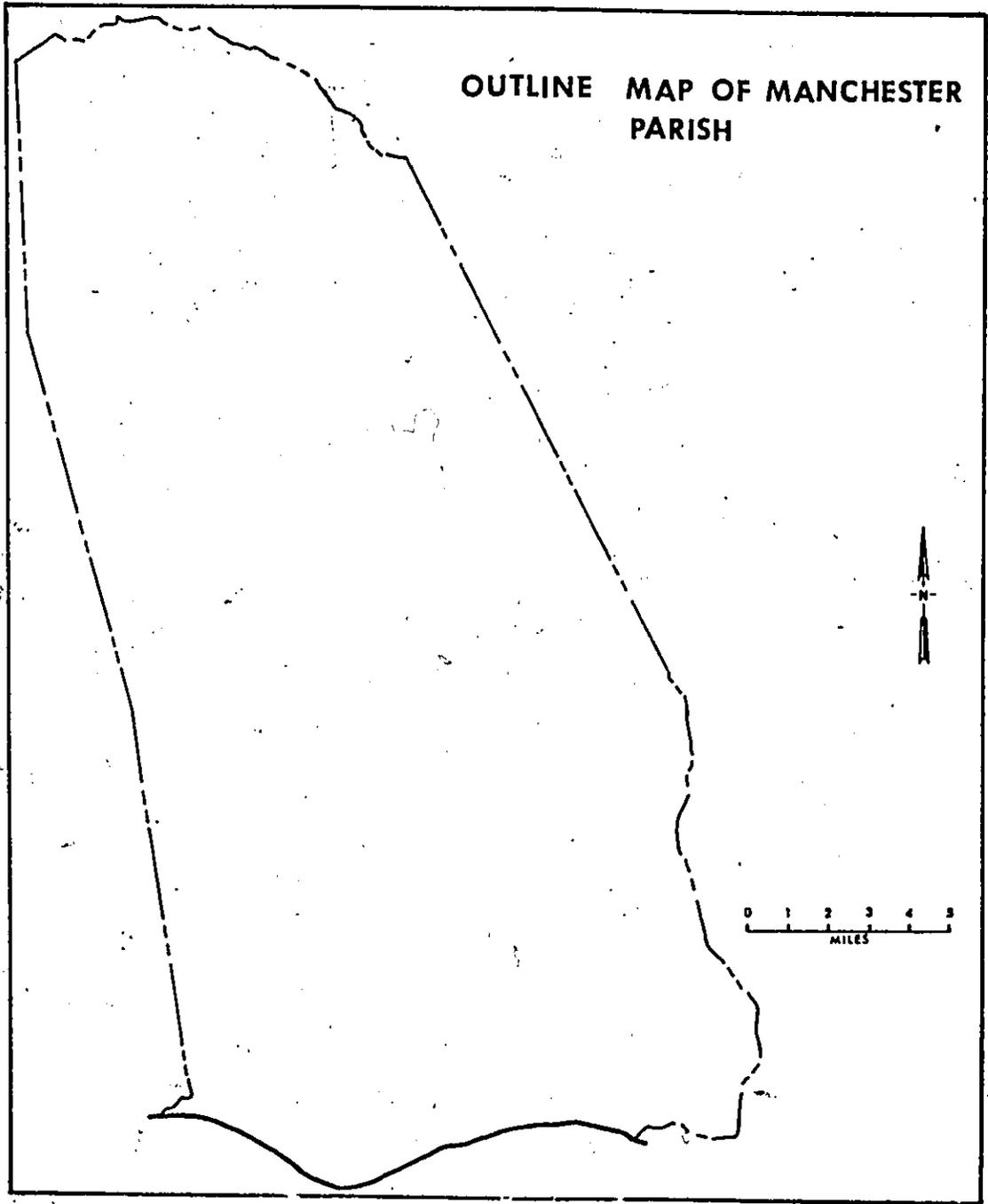
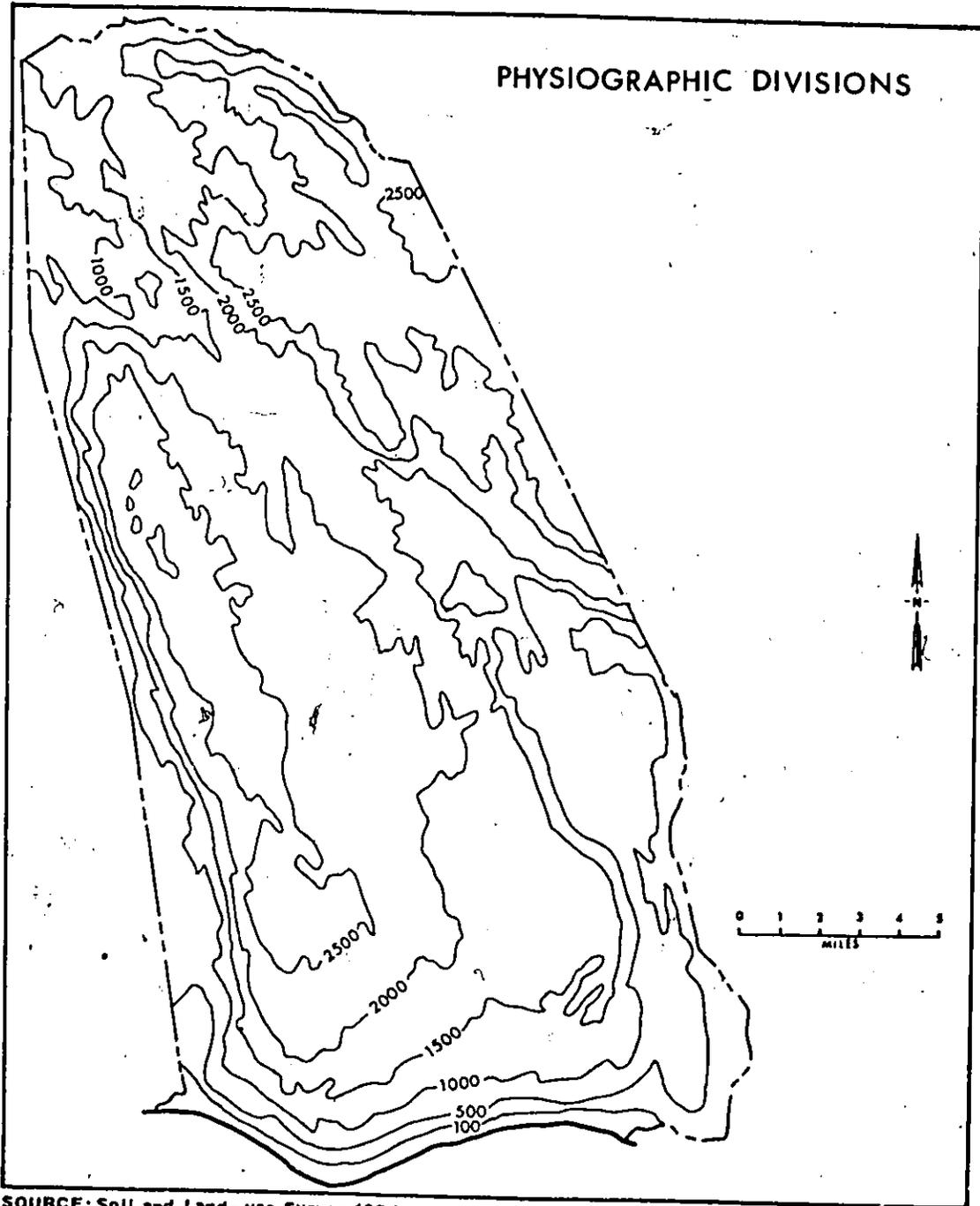


Figure 1.2



SOURCE: Soil and Land-use Survey, 1964.

Figure 1.3

occupance. Slight variations in temperature are also found in the hilly areas due to the altitude factor.

Economic activities of Manchester parish have changed over time, from plantation agriculture in the early years to cultivations of ground provisions and fruit crops and mining industries in recent years. At present, most of the land area of Manchester parish is under cultivation. Cultivated crops in the parish range from export cash crops to those for local consumption. Among the chief cash crops grown in the parish, citrus cultivation ranks first. Although coffee has been another important crop of the region its importance has declined substantially during recent years. Sweet potatoes, yams, and corn are the most commonly cultivated subsistence crops and all these subsistence crops combined together are known as 'ground provisions'. Large tracts of the remaining area of the region are covered with pastures and 'ruinate' or second growth abandoned land.

Manchester parish's vast bauxite resources has helped Jamaica to become one of the leading bauxite producers of the world. During recent years bauxite has assumed great importance in the Jamaican economy and this development has changed the parishes' economic structure drastically, mainly by reducing dependency on agriculture

CHAPTER 2

ECONOMIC ACTIVITIES OF JAMAICA AND MANCHESTER PARISH
PRIOR TO EMANCIPATION

Early nineteenth century agricultural activities in Jamaica, resulted from the British occupation of the country in 1655. Although, early settlements in Jamaica actually began with the Spaniards in the latter part of the fifteenth century, no agricultural development took place, as they were only interested in mineral exploitation and trade. The British too were not seriously involved in agricultural activities in the country until about the early eighteenth century. According to Pittman (1957: 93) two factors prevented the British settlers from engaging in agricultural activities at some significant level. Firstly, the British were not comfortably settled until the early eighteenth century because of the continuous wars with Spain regarding Jamaica. Secondly, the settlers were seeking immediate fortunes in the logwood trade, and such fortunes were not possible from agricultural activities. Hence, there were no distinguishable patterns of agricultural activities recorded prior to the early eighteenth century.

There were a number of factors that contributed to the beginning of agricultural activity in the country in the early eighteenth century. Among them, the proximity to the mother country and the natural conditions offered by Jamaica for agricultural development are highlighted as two important

factors. Within the known habitable areas of the world, and the limited transportation modes in the early eighteenth century, Jamaica and other Caribbean Islands were the closest tropical colonies to the British Isles and to the other European sea powers at that time. On the other hand, with their tropical climatic conditions and a variety of soil formations due to limestone rock structure and seasonal and local changes in rainfall and temperature, they provided an excellent location for a profitable agricultural undertaking to grow tropical crops for which the demand was growing rapidly during this period. Although some settlers observed these opportunities, and the benefits that can be derived from such engagement, they were, however, without means to undertake large scale agricultural activities. They realized that the necessary capital could only be raised from the capitalist class in the mother country. Therefore, in order to attract capital investment in agricultural activities, the settlers of Jamaica, in their descriptions sent to the United Kingdom, often mentioned the fertility of the soils and the good climatic conditions, stressing the profitability of undertaking extensive agricultural developments (Pittman, 1957: 94). The wealthy merchants in Britain too, during this period, were seeking desirable areas for further investment. Therefore, the descriptions encouraged them to risk their capital in order to increase their wealth.

(1) THE DEVELOPMENT OF A PLANTATION ECONOMY

The interest of the British capitalist class in investment in the newly settled lands caused new patterns of large scale agricultural developments. This required three basic pre-requisites. Firstly, the availability of an abundant supply of cultivable land. In Jamaica, unsettled lands suitable for large scale agricultural activities were available freely. Thus the first requirement was easily satisfied. Secondly, sufficient initial capital for the opening up of the lands, and to build necessary infrastructure and to organize the plantation sector. This was readily available through the British merchants who were seeking such an opportunity. The third requirement was a labour supply, the acquisition of which was the most difficult of all the factors faced initially. This problem, however, was solved through the opening up of the slave trade, which brought an influx of labour from West African countries. Thus, in the early part of the eighteenth century, the plantation system began to emerge in Jamaica, and in other Caribbean countries. Because of special characteristics of plantation agriculture, a formal definition becomes relevant to this study. The definition in this study follows that of Jones:

"A plantation is an economic unit producing agricultural commodities (field crops or horticultural products but not livestock) for sale and employing a relatively large number of unskilled labourers whose activities

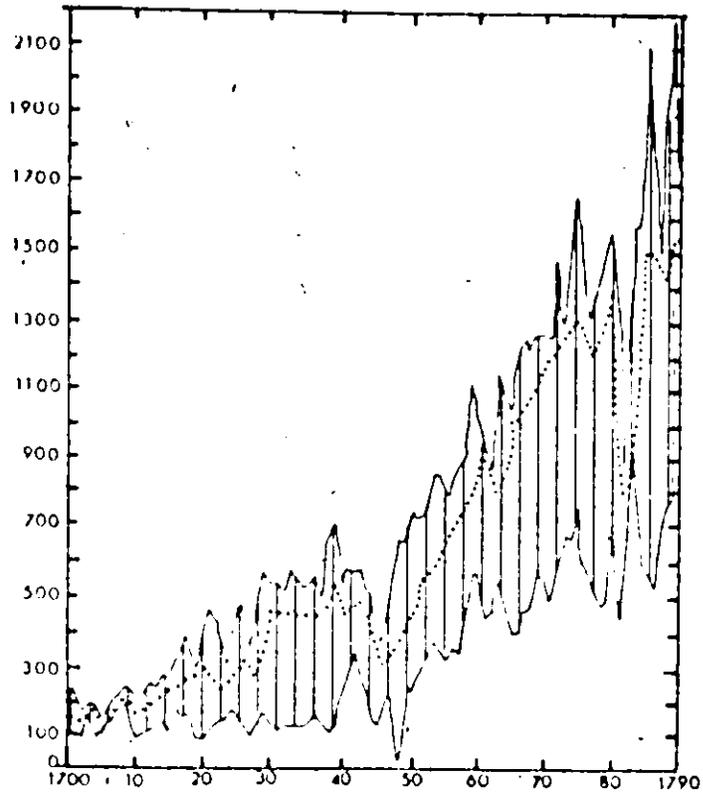
are closely supervised. Plantations usually employ a year round labour crew of some size, and they usually specialize in the production of only one or two marketable products." (Jones, 1968: 154)

Since the early stages of plantation agriculture, sugar cane became the predominant crop planted in almost all the West Indian countries. Among the tropical crops known during this period, sugar had the highest demand from overseas markets. Natural conditions especially the flat coastal land and seasonal rainfall in West Indian countries made them well suited for cane cultivation. It was therefore to be expected that the British capitalist class would invest in cane cultivation because it became the most profitable activity. The profitability of the growing of sugar cane is well demonstrated by the exports and imports figures for Jamaica during the period 1710 - 1796 (Fig. 2.1). Figure 2.1 further reveals that, throughout the period the balance of trade was in favour of Jamaica, and it was primarily due to the exports of sugar. Eisner (1962: 189) attributes the profitability of growing sugar cane chiefly to three factors. Firstly, cheap labour through the slave trade. Secondly, sugar enjoyed a virtual monopoly in the British markets and finally, all consumption and production goods could be obtained cheaply from abroad.

Although sugar plantations monopolized the entire Caribbean area during the early part of the eighteenth century a few exceptions to this development were found in

BALANCE OF TRADE BETWEEN JAMICA AND ENGLAND, 1700-1790

(In £ 1000)



▬ Favor of Jamaica
..... Value of Sugar Imported From Jamaica

SOURCE: Pittman, 1967

Page 10.1

some parts of the Caribbean Islands, especially in large islands like Jamaica, where great diversity in soil, in climate and in altitude were found. Yet in Jamaica too, the tendency toward making sugar the single crop was clearly evident.

In Jamaica, the eastern, north-eastern and south-eastern parts consists of mountain chains rising up to about 3000 feet above sea level, with dissected plains in between. These physiographic characteristics did not suit sugar cane cultivation well, which normally required flat lands. Lands suited for sugar cane cultivation were however, abundantly available throughout the country. Therefore, the eastern, north and south-eastern sections, except the areas with low elevation, were left unattended, awaiting some other agricultural crop to which the physical characteristics in these regions were well suited.

In the early part of the eighteenth century, coffee as a beverage became highly popular and its consumption increased rapidly especially in European countries. Since the coffee plant is cultivable in tropical and semi-tropical areas, and there were European colonies in the tropical world, it was not a surprise that the coffee plant became the second largest crop grown under plantation agriculture in the tropical colonies. In addition, the coffee plant could be grown in elevated areas up to about 5000 feet above sea level, and therefore it was introduced into the areas of the

Caribbean Islands, where sugar cultivation could not make a break through because of physical characteristics.

According to Thomas (1964: 194) the coffee plant was introduced to Jamaica by the Governor of the island Sir Nicholas Lawn, during the years 1728-30. The first planting was made at his property at Temple Hall, St. Andrew, and it is from this area that the cultivation of the plant spread among the hilly parishes of the rest of the country, especially in the eastern, south and north-eastern sections. The spread of coffee plantations had an immediate impact on those parishes, which had had no significant economic activity up to this period. The availability of cultivable lands in large quantity in these parishes, enabled the coffee plant to be adopted under plantation agriculture. As in the sugar plantations, the capital requirements were met by British investment, while the supply of labour was satisfied by the slave trade, which brought nearly 6000 slaves per year to the country. Since the necessary conditions were satisfied to grow under plantation system, the coffee plantation was also oriented towards an export market, like the sugar industry had been previously.

Although, the industry was dominantly organized around an export market, one of the greatest influences on its development was legislation affecting coffee imports into the United Kingdom. The Coffee Encouragement Act introduced by George II, in 1732, reduced the duty paid from 2/= to

1/6 d.¹ on the coffee imports to England from Jamaica. This encouragement led to a marked increase in coffee exports to the United Kingdom from Jamaica in succeeding years (Thomas, 1964: 199). Slave Trade Records (1827) indicate that in 1737, after only seven years of coffee production in Jamaica, exports had already reached 83,000 pounds per year. However, the legislation was subsequently amended and the duty on Jamaican coffee raised to meet the pressing demands for revenue in Britain, and to overcome difficulties in devising new fiscal arrangements (Thomas, 1954: 203). The increased duty on Jamaican coffee with increased transportation costs placed the coffee industry in a precarious position. In 1873, the legislation was again amended reducing duty on Jamaican coffee to six pence per pound. The effect of this reduction was that by 1790 over two and a half million pounds were entering British markets.

The immediate impact of the increased coffee trade was the expansion of the coffee cultivation, in order to satisfy the growing demands, in the British markets. To facilitate such increases, adjustments were made in the land tenure system of the country, and large tracts of unsettled Crown lands were alienated to private enterprises for coffee production, in the most suitable parishes.

(ii) DEVELOPMENT OF COFFEE CULTIVATION IN THE PARISH OF MANCHESTER

In Manchester parish, coffee plantation became the predominant crop upon its introduction to the country. The expansion of cultivation in the parish was however influenced by certain physical parameters, especially soil characteristics and the steepness of slopes. The crop production capability based on soil characteristics for Manchester parish, shown in Table 1, indicate that the plantation of coffee became the only possible crop known during this period.

According to the Land-use Survey (1970) there are five major soil covers in the parish of Manchester. Among these five types, the Bonny Gate Stony Loam type and the St. Ann Clay Loam, dominates the parish having about 110,000 and 65,000 acres in each soil type respectively (Fig. 2.2, Table 2). Although all soil types of the parish are classified as suitable for coffee production, the steepness of slope ~~became~~ an important limiting factor reducing the potential area significantly (Table 3 and 4). Even though it is difficult to make an estimate of acreage used for coffee cultivation in early periods, an approximate area can however, be determined by utilizing the available resources.

TABLE 1

MAJOR SOIL TYPES OF MANCHESTER PARISH AND
THEIR SUITABILITY FOR CROP PRODUCTION

	Bonny Gate	St. Ann	Chudeliagh	Carron Hall	Wait Bait
Coffee	X	X	X	X	X
Cane	-	-	-	XX	XX
Banana	-	-	-	X	-
Timber	XX	X	X	X	X
Food	X	X	X	XX	XX
Vegetables	-	XX	X	XX	X
Citrus	-	XX	X	-	-

Source: Soil and Land-use Survey

XX = Highly Suitable

X = Suitable

- = Not Suitable

TABLE 2

ACREAGE CLASSIFIED IN TO SOIL GROUPS OF THE
PARISH OF MANCHESTER

Soil Type	Acreage
Bonny Gate	110,960
St. Ann Clay	64,939
Chudeliagh	19,229
Carron Hall	2,726
Wait Bait	2,475
Other	1,655
Total	202,994

Source: Soil and Land-use Survey.

TABLE 3

SLOPE CATEGORIES AND LAND CAPABILITY CLASSES IN
MANCHESTER PARISH

Slope	Steepness	Acres	Class of Land	Acres
A		745	I	324
B		14,449	II	10,558
C		48,160	III	60,908
D		26,646	IV	16,614
E		54,219	V	30,804
F		58,775	VI	82,220
			VII	1,466
Total		202,994		202,994

Source: Soil and Land-use Survey, Table 2 and 3.

TABLE 4

THE MOST INTENSIVE SUITABLE USES FOR LAND IN EACH LAND
CAPABILITY CLASS, MANCHESTER PARISH

Land Capability Class	Most Intensive Suitable Use
I A and B slopes of good soils	Suitable for cultivation with almost no limitations.
II Mainly C slopes of good soils	Suitable for cultivation with moderate limitations.
III Mainly D slopes. Some gentler slopes of less favourable soils	Suitable for cultivation with strong limitations.
IV Mainly E slope, some D Slopes	Suitable for tree crops, grass and very limited cultivation.
V Mainly E and F slopes	Not suitable for cultivation, but suitable for planted forest, tree crops or improved grass.
VI Mainly steep and rocky	Not suitable for cultivation.
VII Rock outcrops, river wash, etc.	No productive use.

Source: Soil and Land-use Survey.

Slave Registry Records for Manchester parish, as at 1832, indicate that most of the coffee land holdings were large in extent. According to this source of information there were 171 land holdings, ranging from 100 acres to estates more than 5000 acres in area under coffee cultivation at that date. As shown in Table 5 coffee plantations were more dominant in large land holdings than in small holdings particularly holdings in excess of 100 acres.

TABLE 5

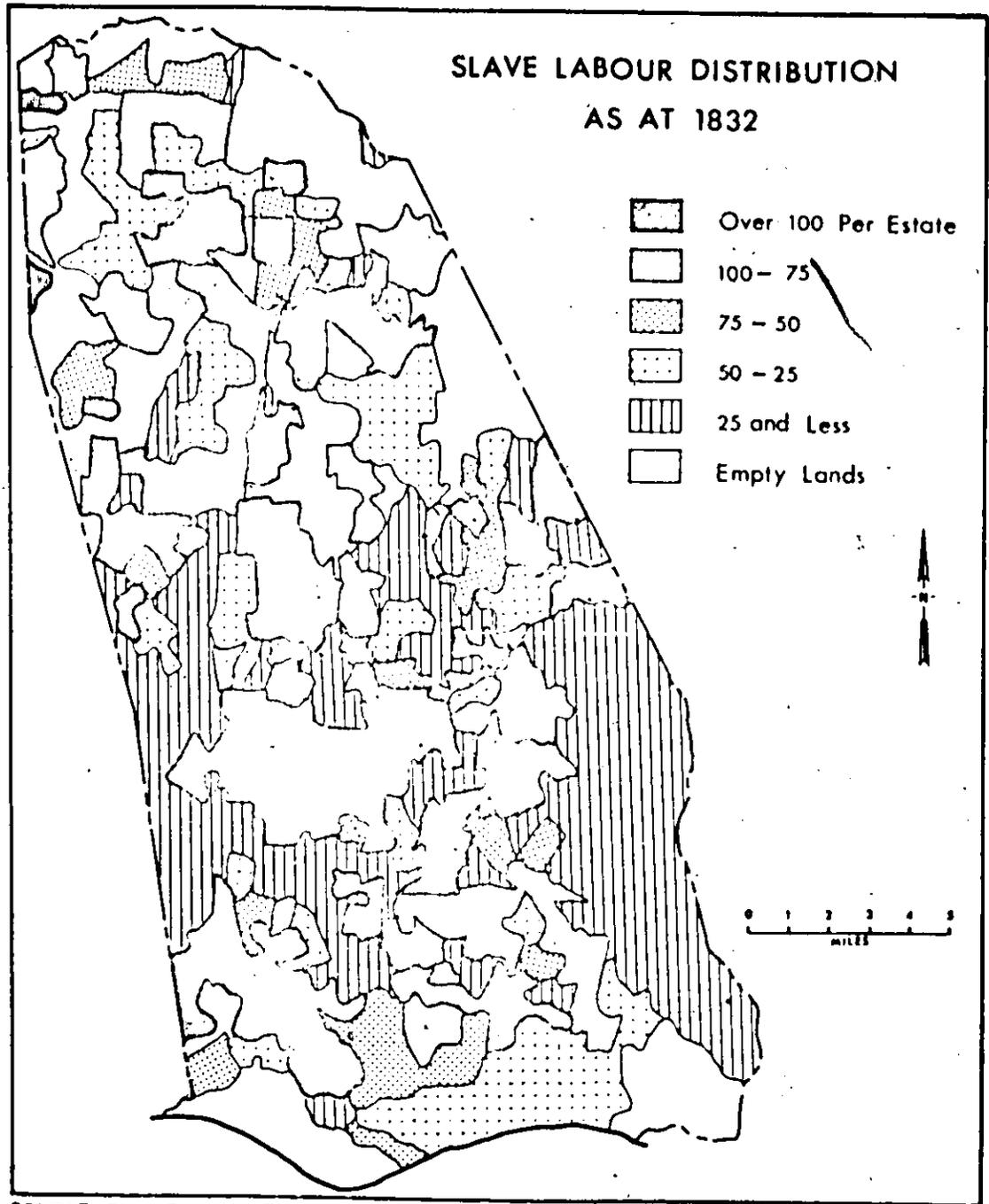
SIZE OF COFFEE LAND HOLDINGS IN THE PARISH
OF MANCHESTER AS AT 1832

Size of the Holdings (acres)	The Number of the Holdings
Less than 99	9
100 - 399	43
400 - 699	38
700 - 999	38
Over 1000	53
Total	171

Source: Slave Registry Records (1832, 1837).

Although a total of 171 land holdings covered an area of 163,000 acres, the entire area cannot be taken as totally utilized for coffee production because of the limitations imposed by physical parameters and other factors such as capital and labour. The pattern of slave labour distribution given in Fig. 2.3 serves as an important source at this point to determine the approximate area under coffee cultivation in the early nineteenth century.

The coffee industry requires a large labour force only during the planting and harvesting periods. Since the life span of a coffee plant ranges 5 - 8 years, a labour force for planting is not required annually, and for harvesting large labour inputs are required only two or three



SOURCE: Slave Registry, 1837

Figure 2.3

times per year depending upon the number of crops taken. Therefore coffee estates do not generally maintain large labour forces. However, efficiently managed estates require a permanent staff to maintain the organization and for general duties. Therefore, the slave labour distribution patterns can be utilized to identify the areas where coffee plantations were well established. It is the author's view that the estates with 50 or more slaves could be categorized as estates having a well established system of coffee plantation over a sufficient acreage to demand frequent replanting and a sizeable labour force for harvesting. Based on this assumption, one third or approximately 60,000 acres can be defined as the area used for coffee cultivation in the parish in early years.

In the early nineteenth century, the Jamaican economy based on coffee and sugar, was well established providing their products to export markets, particularly to the United Kingdom. In 1812, Jamaican exports constituted 113,173 sugar Hawks, 44,111 punches of rum and 1.8 million pounds of coffee, and all these together accounted for nearly 98 percent of the total exports of that year (Eisner, 1962: 203). Some parishes of Jamaica became predominantly the suppliers of sugar to the world market, while in others like the parish of Manchester, coffee became the important crop, and

regions which possessed these two crops generally accounted for the country's economy. Except for the weather conditions which affected the supply of these products occasionally, there were no other obstacle to the system organized under plantation agriculture before the period of emancipation.

CHAPTER 3

DEVELOPMENT PATTERNS OF JAMAICA AND MANCHESTER
PARISH AFTER EMANCIPATION

The Jamaican economy, before 1832, was largely dominated by sugar and coffee which were grown under plantation agriculture. Plantation agriculture in the absence of other economic activity not only influenced the national development pattern, but also affected the regional development as well. Almost all the foreign exchange earnings, before 1832, were derived from the exports of coffee, sugar and its by-products, and even after this period these two commodities played a significant role in foreign exports until about 1850. At the regional level, on the other hand, the parishes which accounted for a considerable share of the cultivation of either one or both of these crops stood out as having higher economic growth rates than the other parishes. Parishes which did not possess suitable physical characteristics contributed less to development both at a national and a regional level.

Although there were less prosperous periods for coffee and sugar before 1830, they, however, lasted for short periods. The decline of sugar and coffee which began in early 1830, on the other hand, had two important impacts on the economy of Jamaica. Firstly, the two basic crops failed to regain their dominant position in the economic activities of Jamaica. Secondly, the decline of sugar and coffee as

two major crops resulted in an emergence of a diversified economy; with different activities becoming important in different periods. It has been noted in late 19th century Governmental records, and in more recent studies, that the Emancipation Act and the higher duty for export crops in the British market were the two factors primarily responsible for the decline of coffee and sugar and the emergence of a diversified economy in Jamaica after 1830 (Handbook of Jamaica, 1870; Eisner, 1962).

The Emancipation Act, which became effective in 1832, not only abolished the slave trade but also released the slave labour from compulsory attachment to sugar and coffee estates. This change in labour supply was closely reflected in the distribution of the labour force in the plantation period as the enterprises were dependent on slaves for their labour supply. Many slaves, leaving sugar and coffee estates, became independent cultivators, as they were given the liberty to decide their own livelihood by the Emancipation Act. The Emancipation Act, therefore, affected a rapid decline in the labour force attached to coffee and sugar estates. This decline was inevitable in large islands because of the enormous opportunities existing for acquisition of lands. Beckford (1972: 90) noted that in small islands like Barbados, Antigua, and Kitts the situation was not so drastic because of the fewer opportunities offered in acquiring lands due to unavailability of cultivable lands.

Although there were many attempts to persuade the slaves to remain in the estates, they were not effective. Previously, any labour shortages were easily overcome from the cheap labour supplies which were readily available through the slave trade. The abolition of the slave trade, therefore, withdrew the major source of labour supply to the plantation sector, during the periods of labour shortages. The situation after 1830 was clearly represented in the petition sent to the United Kingdom by the agricultural enterprises in Jamaica:

"Between 1832 and 1847, 140 out of the 653 sugar estates in cultivation had been abandoned and the works broken up. These abandoned estates contained 168,032 acres and were worked by 22,253 slaves. During the same period (15 years) coffee plantations containing 188,400 acres were also abandoned having employed in their cultivation in the year 1832 - 26,830 slaves." (Handbook of Jamaica, 1870: 351)

The petition further requested (i) that the duties levied on the produce and industry of her Majesty's West Indian subjects might be altogether abolished or so reduced to be placed on equal terms with the slave holding foreigner, (ii) that extensive emigration into Jamaica from Africa be immediately undertaken and conducted at the National expense.

Although the United Kingdom was interested in keeping the plantation sector undisturbed, the solution to some of these problems were beyond its control. The United Kingdom had little influence in the control of falling prices, as

the market mechanism with growing international trade became the major factor deciding the prices. With regard to the second request, the British authorities took alternative action, introducing a new system of indentured labour to replace the labour supply. However, the new system of labour supply to maintain the plantation sector was not successful due to three reasons:

- (a) The plantation sector was unable to bear the high cost of labour importation through the new scheme. According to Eisner (1962: 144) a total of 75,563 pounds have been spent for the initial 4,550 immigrants to the island under the new scheme. The cost involved in the new scheme was too high, under the condition of falling prices, to undertake large scale immigration to meet the labour demand in the plantation sector.
- (b) The labourers who arrived in the country under the new scheme had the liberty of returning to the country of their origin after completing a specific period of service. Between 1845 and 1917, 38,681 indentured labourers arrived in Jamaica and only 27,000 became permanent settlers (Eisner, 1962: 171).
- (c) Unlike the period of slavery there were no regulation requiring compulsory work in the plantation sector.

Therefore, these three factors were primarily responsible

for the failure of the indentured scheme as a source of labour supply in the plantation sector. The failure of the new system becomes more evident when compared with the period of slave trade where there were nearly 6000 slaves arriving yearly in the country (Pittman, 1957: 99).

Although the price condition for sugar and coffee has not been totally neglected in studies analysing the development pattern after the emancipation, labour shortage has however, taken a greater importance as the major cause for the disruption of the plantation economy and the evolution of a diversified economy in Jamaica. Their assumptions were based on the requirements of a large labour force to maintain the plantation agriculture. However, it appears that too much emphasis has been given in these studies for the shortage of labour, in the pattern of development.

The period after 1832 was less prosperous for coffee, sugar and its by products from Jamaica and other Caribbean Islands. This was primarily due to the flow of large supplies of coffee, sugar and other similar commodities from Asia, Africa and Latin American countries. Most of these countries were brought under the influence of foreign powers during the 18th and early 19th century through colonization and trading expansion. The countries which became colonies began to produce commodities demanded by their mother countries. Most colonies became suppliers of tropical and semi-tropical products, as the demand for these

products was great in the world market during this period. The increased supplies subsequently lowered the prices of these products because the market mechanism became the major force deciding the prices of increasing supplies in the world market. The impact of these changes was heavy on Jamaica, because its economy was entirely based on sugar and coffee, which were already threatened by shortages of labour.

The present analysis on the pattern of development of Jamaica and in the parish of Manchester attributes the responsibility of the development of a diversified economy after emancipation to three factors. They are: (a) the price condition for sugar and coffee in the world market and its effect on the plantation agriculture in Jamaica; (b) changes in the supply of exports, associated with the changes in the demand from the importing countries; and (c) the demographic structure and its impact on the national and regional patterns of development. It is the purpose of this study to show that these three factors combined affected the pattern of development in Jamaica and at the regional level, particularly in the parish of Manchester. The second factor, i.e., changes in the supply of exports, associated with changes in the demand from importing countries, was the more dominant factor influencing the pattern of development.

(1) THE PRICE CONDITION FOR SUGAR AND COFFEE IN THE WORLD MARKET AND ITS EFFECT ON PLANTATION AGRICULTURE IN JAMAICA

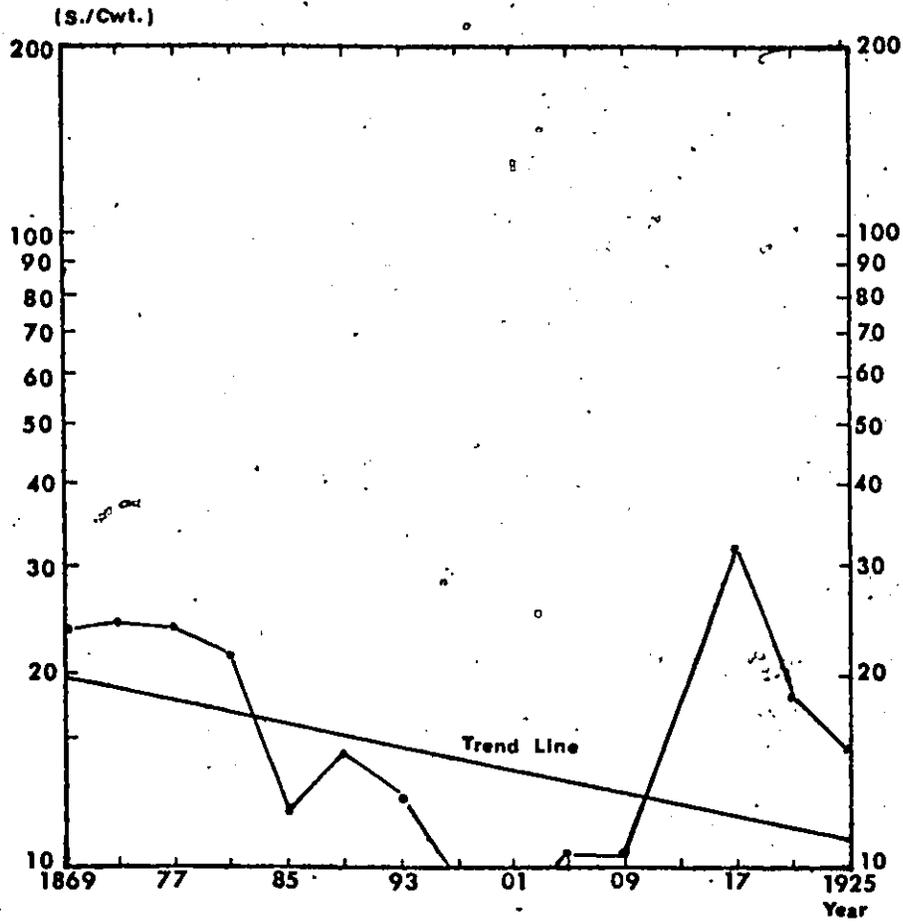
Since the middle part of the nineteenth century until about the early twentieth century the price conditions for sugar and coffee were not favourable in the world market. The unfavourable conditions were more marked in sugar prices than in coffee prices. The time series analysis for sugar prices indicate a negative trend line having a -2.9 percent per interval¹ decline during the period of 1869 - 1929, or in other words the prices of sugar were continuously falling between 1869 - 1929 (Fig. 3.1 and Table A 1). The price received for sugar in 1869 was 24 S. per hundred weight and by 1898 it had dropped to 9.2 S. per hundred weight. The decline of prices becomes more evident when compared with the prices of the early period. In 1840, sugar was 48 S. per hundred weight, and by 1898 the prices had dropped to one fifth of that level.

The decline of the exports of sugar and its by-products from Jamaica closely followed the falling prices in the world market. The trend of sugar exports over the period of 1869 - 1929, show a negative trend have a -1.4 percent per interval (Fig. 3.2 and Table A 2). When absolute values of sugar exports are considered, the impact of price conditions on its exports become more evident. During the period of the

1. Sugar and coffee values are plotted at four year intervals. Therefore increase or decrease refers to four year intervals.

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND EQUATION BY THE LEAST SQUARE METHOD

SUGAR PRICES (JAMAICA)

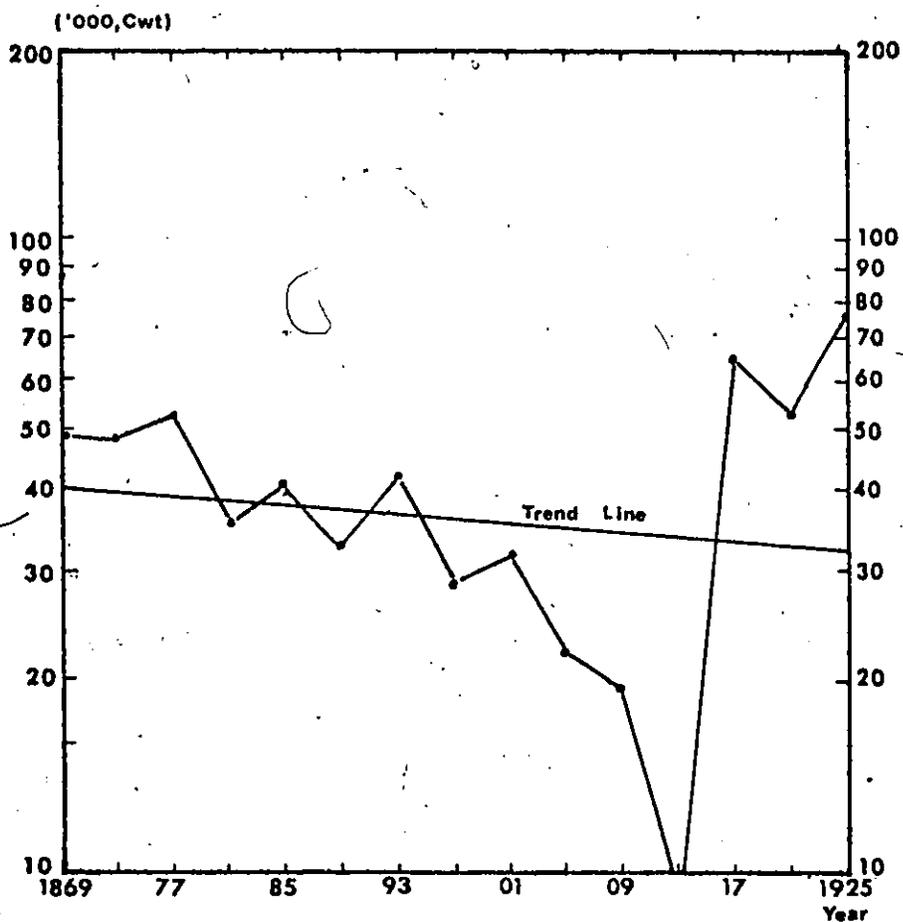


SOURCE: Table A1

Figure 3.1

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND EQUATION BY THE LEAST SQUARE METHOD

SUGAR EXPORTS (JAMAICA)



SOURCE: Table A2

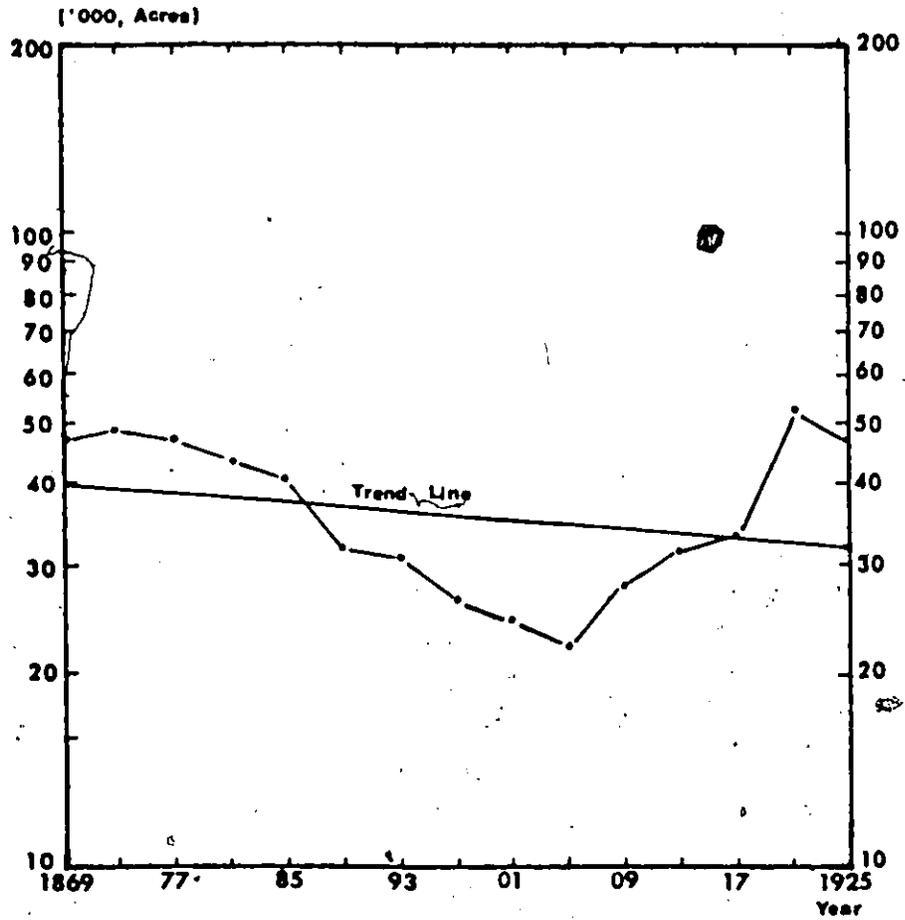
Figure 3.2

present analysis the exports of sugar, in association with the falling prices, were continuously declining until about 1915. The lowest prices for sugar during this period coincides closely with the period of lowest exports from Jamaica. In 1913 sugar exports reached their lowest level, associated with the lowest prices recorded in the same year. Although sugar production is affected by the weather conditions to some extent, the continuous downward trend until 1915 indicate the influence of prices as the most dominant factor deciding the volume of exports. The association is further evident when periods of favourable conditions for sugar prices are considered. The price for sugar began to increase after 1915 and reached its highest level in 1917. Sugar exports followed a similar trend reaching their highest peaks after 1915.

The trend line of sugar acreage under cultivation is quite similar to the trend lines of sugar prices and exports (Fig. 3.3 and Table A 3). However, the trend line of sugar acreage with -1.3 percent per interval shows a closer relationship with the trend line of exports than prices. The relationship of acreage with exports can be reasonably explained through two factors. Firstly, if acreage does not show a wide fluctuation more regularly, it generally indicates the expansion of sugar cultivation has reached its limits due to physical characteristics. In Jamaica, during the period under consideration, the acreage utilized for sugar

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND EQUATION BY THE LEAST SQUARE METHOD

SUGAR ACREAGE (JAMAICA)



SOURCE: Table A3

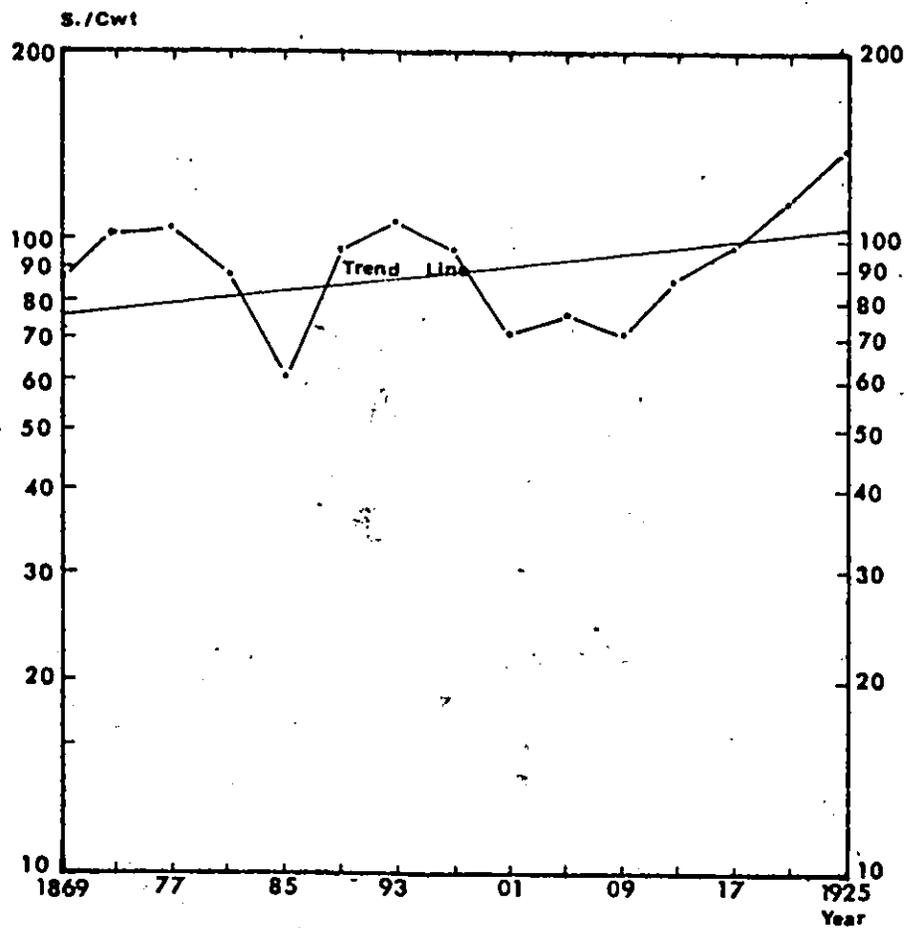
Figure 3.3

cultivation has varied from its lowest level of 23,800 acres in 1905 to the highest level of 53,700 acres in 1925. The difference of lowest and highest levels is about 30,000 acres, and from this it can be assumed that the acreage under cultivation has declined when exports were declining. The argument is further supported from the coincidence of the lowest period of sugar cane cultivation with the period of lowest sugar exports from Jamaica. Secondly, except for minor changes due to local physical characteristics, the yield of cane sugar primarily results from the area under cultivation because there was little application of scientific techniques, like improved varieties and the application of fertilizer, known during this period. Therefore, the area under cultivation fluctuated more regularly, associated with the fluctuations of sugar exports.

At first glance, the time series analysis with increasing trend lines for coffee prices, exports and acreage for the period between 1869 to 1929 shows a favourable condition than which existed for sugar during the same period. A closer examination, however, reveals a similar trend of these three parameters to that of sugar. During the period of our analysis, the trend line for coffee prices indicates an increase with 2.1 percent per interval (Fig. 3.4 and Table A 4). But 10 values out of 15 plotted for prices in the time series analysis were less than 100 S. per hundred weight, varying from 60 to 95 S. per hundred weight. The other five

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND
EQUATION BY THE LEAST SQUARE METHOD

COFFEE PRICES



SOURCE: Table A 4

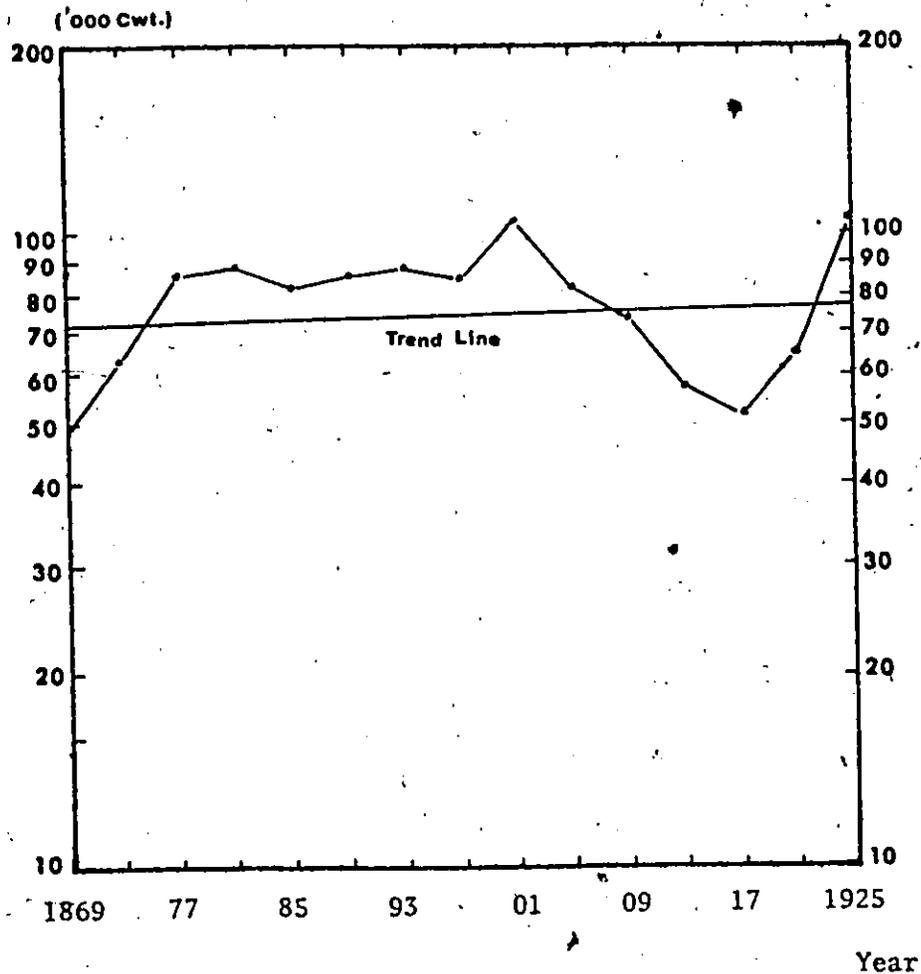
Figure 3.4

values were more than 100 S. per hundred weight, with few exceptions like 121 and 154 S. per hundred weight for 1921 and 1925 respectively. If these values were taken out and replaced with values less than 100 S. per hundred weight, the analysis would definitely show a negative trend line. This is clearly represented in the computed value given in column 3 of Table A 4, which varies from 76.7 to 102.8 with an annual increase of 2.1 percent per interval. In other words, the lowest absolute values have been compensated by the highest values in the analysis. It is therefore argued here that the trend of coffee prices were quite similar to that of sugar prices.

The time series analysis for coffee exports also showed an increased trend with 0.3 percent per interval during the period of 1869 to 1929 (Fig. 3.5, Table A 5). Like in the analysis of coffee prices, it appears that the coffee exports were also mis-represented by a few high values. The absolute values for coffee exports varied from 49,000 to 104,000, but most values were in the range of 80,000. On the other hand computed values in the analysis of the coffee exports varied from 73,800 to 77,300 with an increase of 0.3 percent per interval. It is important to note that, even though the trend line was increasing the computed values were below the average level of exports, and hence, the increased trend would not have occurred if it were not for the few high absolute values. It is therefore concluded here that exports

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND
EQUATION BY THE LEAST SQUARE METHOD

COFFEE EXPORTS (JAMAICA)



SOURCE: Table A5

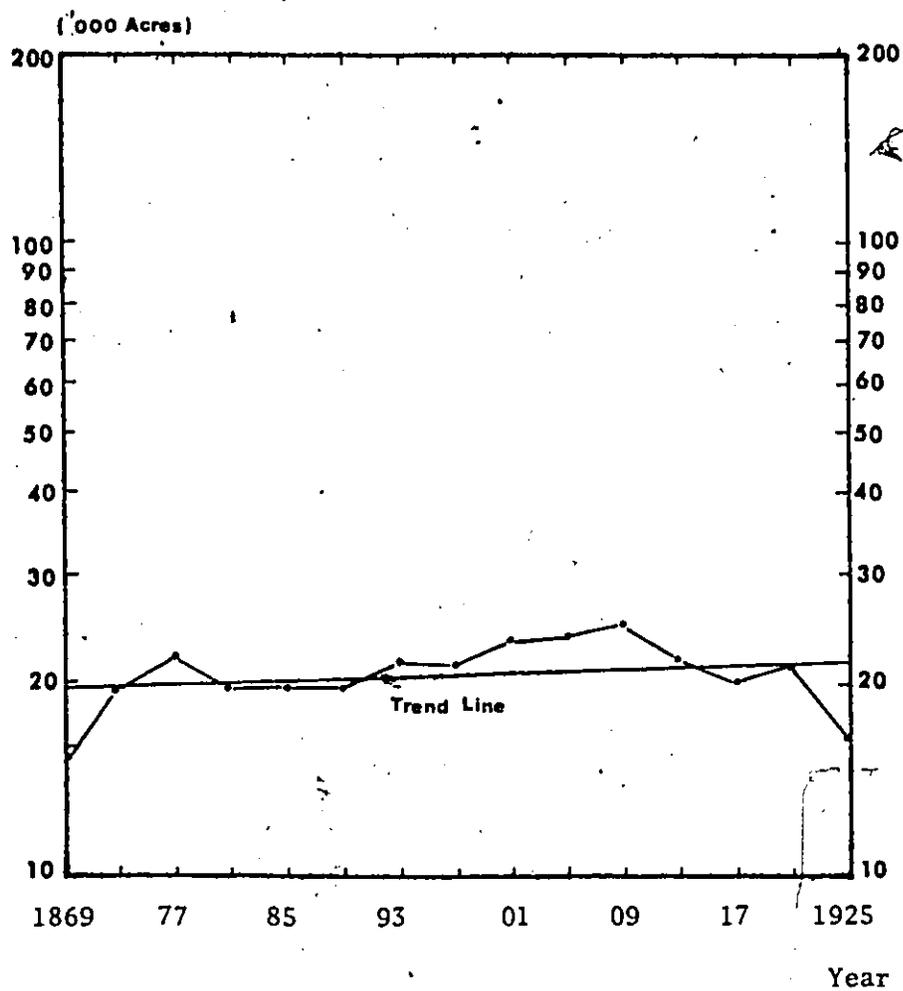
Figure 3.5

were not favourable during the period of 1869 - 1929, as the prices were not encouraging.

Although the time series for acreage under coffee cultivation showed an increasing trend with 0.8 percent per interval as in the analysis of prices and exports, low absolute values in the analysis have been compensated for by a few high absolute values (Fig. 3.6 and Table A 6). However some differences between the acreage analysis of coffee prices and exports were observed. Firstly, the absolute values for coffee under cultivation varied from 16,000 to 25,000 acres in extent, but most figures were between 19,000 and 22,000 and only two values were below 19,000 and two were above 22,000 acres in extent. Therefore, the computed values also varied only between 19,000 and 22,000 (column 3 of Table A 6). Secondly, unlike the coffee prices and exports there was no close relationship of acreage either with exports or prices, because of the lag response of acreage to prices and exports due to a requirement of a substantial time period for the maturation of coffee bushes. Therefore it can be assumed that acreage did not fluctuate excessively because of the reluctance to withdraw acreage under production due to the expectation of higher prices in subsequent years. If however, the area under cultivation was compared with the period before emancipation, a single parish like Manchester would have accounted for more than the entire country's acreage under cultivation, even during

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND
EQUATION BY THE LEAST SQUARE METHOD

COFFEE ACRÉAGE



SOURCE: Table A6

Figure 3.6

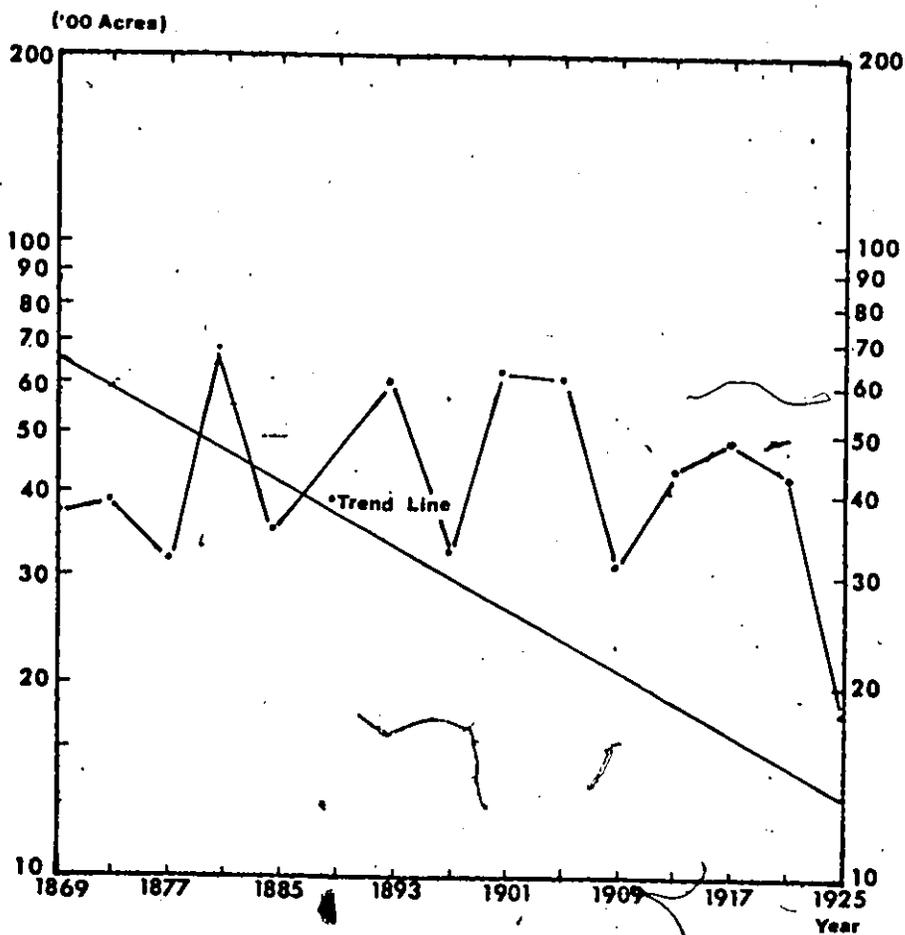
the period of Jamaica's highest acreage after 1869.

(a) The Impact of Price Conditions of Coffee on the Parish of Manchester:

As noted earlier the parish of Manchester became an export oriented region in the early part of the eighteenth century with coffee cultivation as the predominant crop. The parish maintained its position as one of the leading coffee producers until the time of emancipation. After emancipation, declining importance of coffee production at national level closely affected the parish of Manchester. The declining importance of Manchester parish as a leading coffee producer is clearly evident from the area under coffee cultivation (Fig. 3.7, Table A 7). The estimated land devoted to coffee cultivation in the early 1830's was about 60,000 acres and this is roughly about one third of the total area of the parish. Along with the declines at the national level, the coffee acreage in the parish of Manchester also declined from 60,000 acres to 7,027 acres in 1870, but still maintained its position as the leading coffee parish in acreage and accounted for a little more than one third of the country's total acreage. However, the decline in acreage under coffee cultivation was more marked in the parish of Manchester after 1870 than at the national level. The area under cultivation declined from 7,027 in 1870 to 6,970 in 1890 and 6,550 acres in 1900. The decline became more

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND EQUATION BY THE LEAST SQUARE METHOD

COFFEE ACREAGE (MANCHESTER)



SOURCE: Table, A7

Figure 3.7

rapid thereafter, reaching as low as 591 acres in 1930.

There are two important reasons for the failure to accommodate a substantial share of the coffee industry in the parish of Manchester, particularly after 1900. Firstly, as Norton and Cumper (1968) noted with the Brazilian competition for the coffee industry in the world market, only the coffee with relatively high quality known as 'Blue Mountain Coffee' entered world markets. Thus, competition influenced the acreage under cultivation in coffee throughout the country, and finally confined it, primarily to the north western area of St. Andrew parish. Under the circumstances it was therefore inevitable that the decline of coffee acreage in the parish of Manchester would have been paralleled by other parishes, where high quality coffee was not grown. Secondly, from the latter part of the nineteenth century, the pattern of exports from Jamaica began to change with fruits and raw materials as important crops. As will be shown later, Manchester parish was able to respond to these developments, and therefore, the coffee industry did not receive as prominent a position as before.

The analysis above reveals that two major export crops which were primarily responsible for foreign exchange earnings and internal economic conditions were gradually falling as leading crops after 1830, and

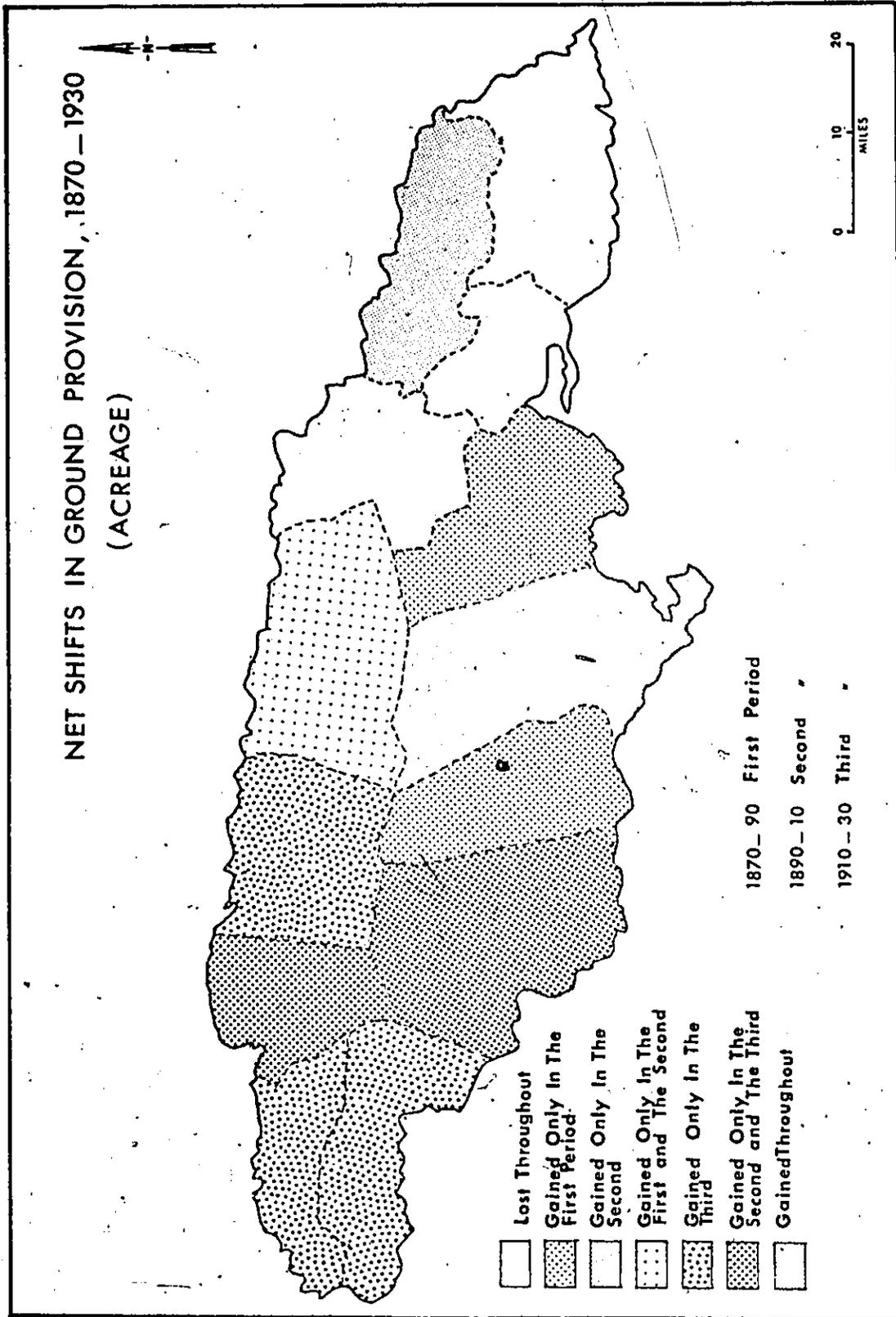
this situation mainly occurred due to the price condition in the world market. Since the national economic structure was based on these two crops, their declining importance therefore, affected the changes in the pattern of development in subsequent years. Although, the national trends were reflected in the parish of Manchester, slight deviations were however, observed because of the restrictions for quality products and the changes in the pattern of demand in the world market.

(b) Emergence and the Development of Peasant Agriculture in Jamaica and the Parish of Manchester:

The collapse of the plantation economy in the latter part of the nineteenth century had an immediate impact on the pattern of development in Jamaica. Labourers who became independent, under the Emancipation Act, began to acquire small land holdings with the little savings they had accumulated over years. However, they did not make any attempt to grow traditional cash crops as they were aware of the falling prices. It is therefore reasonable to assume that the unfavourable conditions of sugar and coffee prices, prevented the labourers from engaging in the plantation of sugar and coffee although they were acquainted with the techniques of plantation agriculture through a century of experience. On the other hand, when they were engaged in plantation agriculture, they could either purchase their food from

the market or their masters saw to it that enough food was provided to them. When they became independent cultivators, they could no longer depend on the foods available in the market or from the landlords - their former masters. Therefore, under the given conditions, it was inevitable that they should use their little land holdings for the cultivation of their own food.

Under the peasantry system, the most commonly grown crops were root crops and yams, normally referred to as ground provisions. In 1870, total land utilized for ground provisions was 39,150 acres and by 1890, the acreage increased more than twice reaching 87,940 acres in extent. The increase of acreage under ground provisions between 1870 and 1890 was evident in almost all parishes in the country. However, when shift and share technique was applied to the acreage under ground provisions, the parishes of Manchester and St. Catherine showed an increase more than the increase of the country as a whole. Therefore, these parishes had a greater importance than the other parishes in the country during this period (Fig. 3.8, Table B 1). The acreage under ground provision continued to expand until 1910, when it reached 102,370 acres in extent showing an increase of fifty percent more than the area under cultivation in 1890. During this period the parishes of Portland and St. Ann had a greater increase than the country as



SOURCE: Table, B-1

Figure 3.8

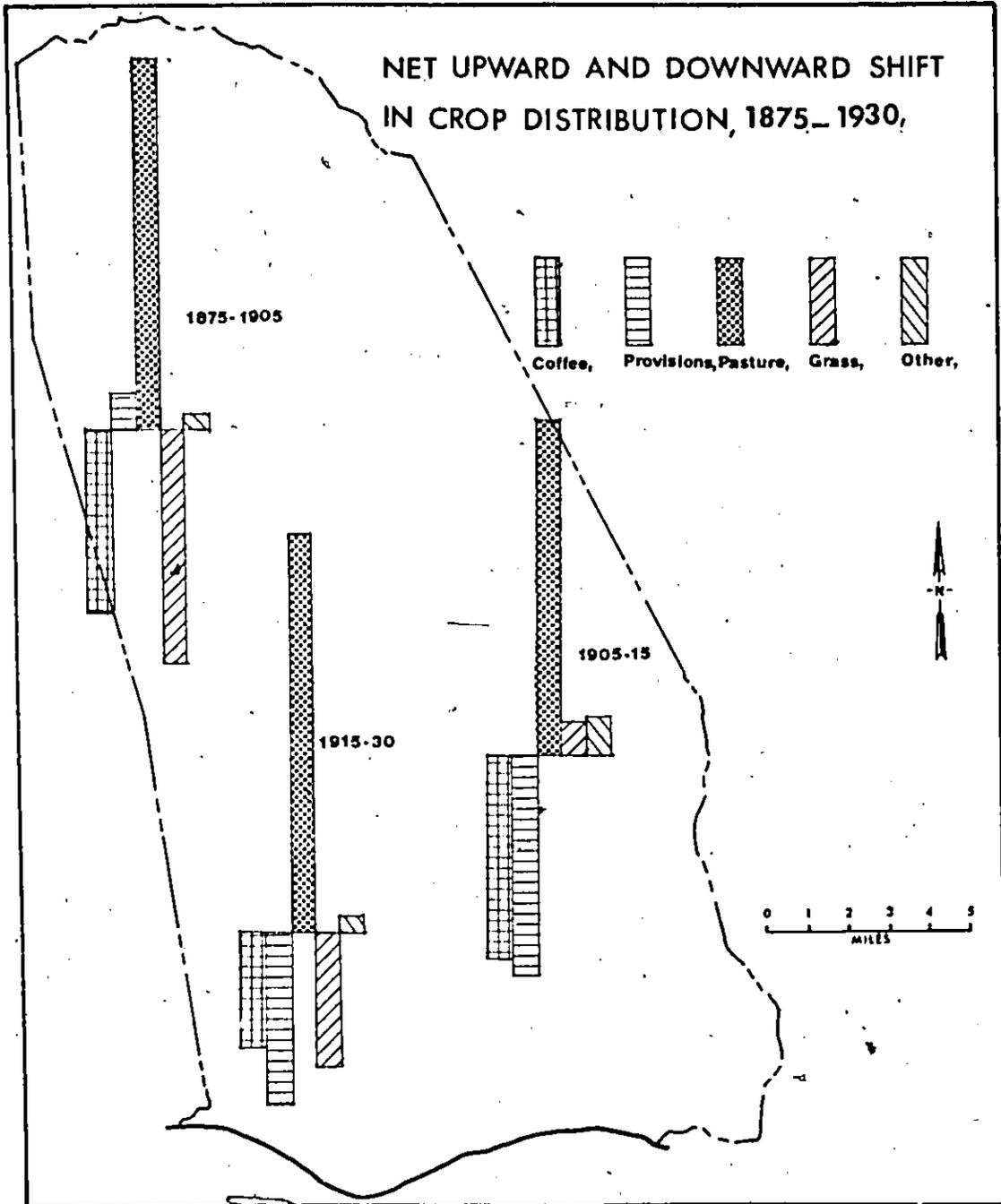
a whole. After reaching its highest levels in 1910, the area under cultivation in ground provision began to decline, reaching 80,900 in 1930. The decline of ground provisions affected almost all parishes, but it was less evident in the parishes of Hanover, Westmoreland, St. James, St. Elizabeth and Clarendon because the decline of ground provisions in these parishes was less than the average decline in the country as a whole.

The development of ground provisions under peasant agricultural systems after the mid-nineteenth century had some important affects on the internal development of the country, especially in the internal marketing system. As noted by Mintz (1960) the ground provision production often exceeded the needs of the former slaves' own requirements, and from the exchange of the resulting surplus there sprang up an internal market which played its part in the establishment of a partly independent Jamaican economy and society in subsequent years.

The declining coffee production in the parish of Manchester after emancipation was closely reflected in the development of peasant agriculture showing a similar trend to the national development. It should, however, be emphasized that except during the period between 1870 and 1890, the parish of Manchester never held an important position in the cultivation of ground provision. In 1870, out of the total of 31,498 acres as the declared

area under cultivation, only 1,466 were devoted for ground provisions. Most of the area at this date being covered by pasture and grass, which together accounted for 20,330 acres. The limitation of the expansion of ground provision was mainly due to the physiographic characteristics of the parish which prevented easy accessibility. Because of the inaccessibility, freed labourers did not produce in excess of their requirements, hence acreage in ground provision did not expand substantially. Movements within the parish, as well as between parishes, became relatively easier along with transportation development in the early twentieth century. Hence, until transportation improved, Manchester lagged behind the national trend in ground provision production (Fig. 3.9, Table B 2).

Although pasture and grass cover were of little significance in the early years, they both became major land uses in the latter part of the nineteenth century - - - reflecting an internal economic growth of the region. However, the major development in these uses came after the 1930's, with growing demand from the St. Andrew and Kingston areas for beef and dairy products followed by an improved transportation network. However, the development of beef and dairy products primarily came from the introduction of an improved breed of cattle known as "Jamaican Hope". In 1943, nearly 58,000



SOURC: Table, B-2

Figure 3.9

acres were devoted to pasture with a cattle population of 12,000 in the parish (Soil and Land Use Survey, 1970). This development along with similar developments in neighbouring parishes created the opening of the Bog Walk condensory factory.

Although the price conditions were the main cause responsible for the emergence of the peasant agriculture and other similar activities in Jamaica and in the parish of Manchester immediately after emancipation, the development thereafter cannot totally be attributed to it because of the important contributions made by the other two factors noted in our analysis. The affects of population growth and the changing pattern of demand from developed countries and the response of Jamaica and Manchester parish to these will be discussed later.

(ii) CHANGES IN THE SUPPLY OF EXPORTS AND ITS IMPACT ON JAMAICAN DEVELOPMENT

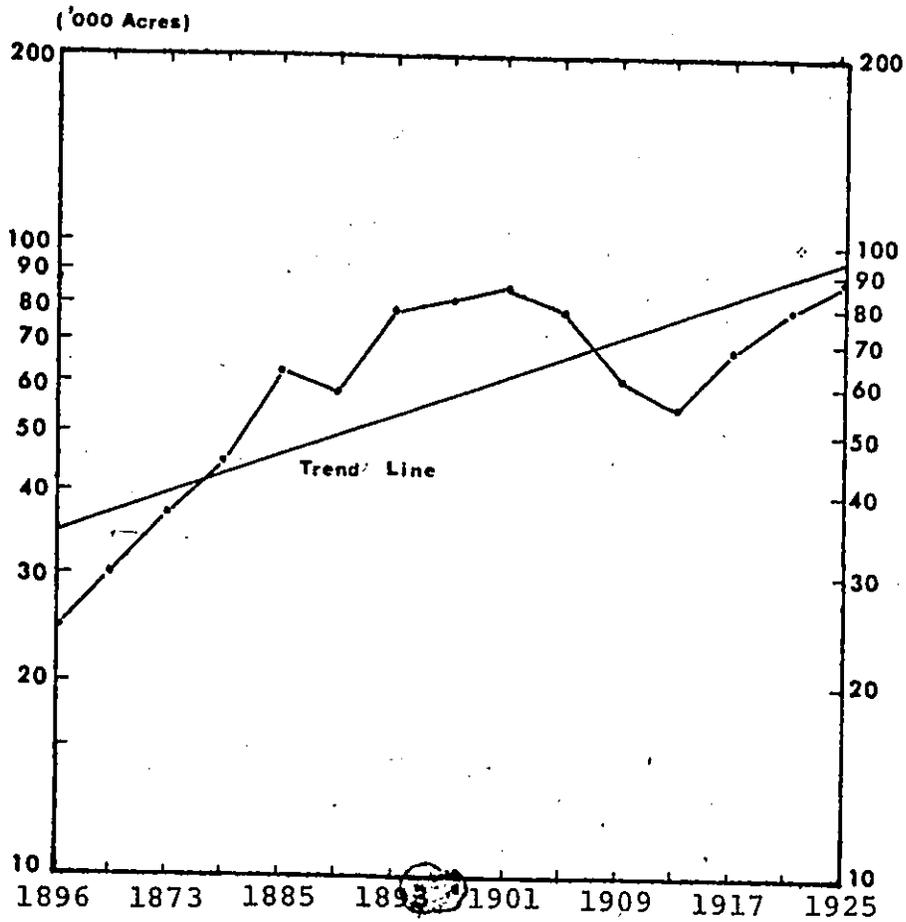
The changing pattern of demand from developed countries in latter part of twentieth century enabled Jamaica to begin a new phase of development. These changes in demand for products from Jamaica resulted from the technological development in developed countries. Initially, technological development created a demand for agricultural products, mainly fruits, but subsequently all agricultural exports were replaced by raw material exports as the demand for these increased rapidly after the 1920's.

The invention of refrigerator facilities enabled the transportation of perishable goods to distant markets, especially to North American and European markets. The impact of this development affected the country as a whole and it triggered internal adjustments among regions as well. The effect of this development was marked in agriculture and there followed a rapid conversion of lands for fruit crops in response to the growing demand. The changing pattern was most spectacular with the introduction of bananas, but other types of fruits which were introduced subsequently, assumed significant importance as well.

The influence of banana cultivation was closely reflected in the area under cultivation (Fig. 3.10, Table A 8). In the latter part of the nineteenth century, 25,880 acres in Jamaica were brought under banana cultivation, and by 1915 the acreage increased to 85,854 acres. The cultivation of banana spread to almost all parishes with great variations in acreage amongst them. The parishes of St. Mary, St. Catherine, Portland and St. Thomas became leading banana growing parishes, with relatively larger areas under banana cultivation. In order to accommodate this new crop, changes in the crop distribution pattern in these parishes became necessary. The crops which were mostly affected by the spread of banana cultivation were ground provisions. In the parishes of St. Catherine, Portland and St. Thomas, ground provisions acreage declined rapidly in response to the demand for land

LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND EQUATION BY THE LEAST SQUARE METHOD

BANANA ACREAGE (JAMAICA)



SOURCE: Table A8.

Figure 3.10

for the expansion of banana cultivation. The only exception to this pattern was in St. Mary. In St. Mary there were 4,470 acres under ground provisions in 1895 and in 1910 the acreage increased to 5,549. Thus, the conversion to banana production in this parish came from the unused lands.

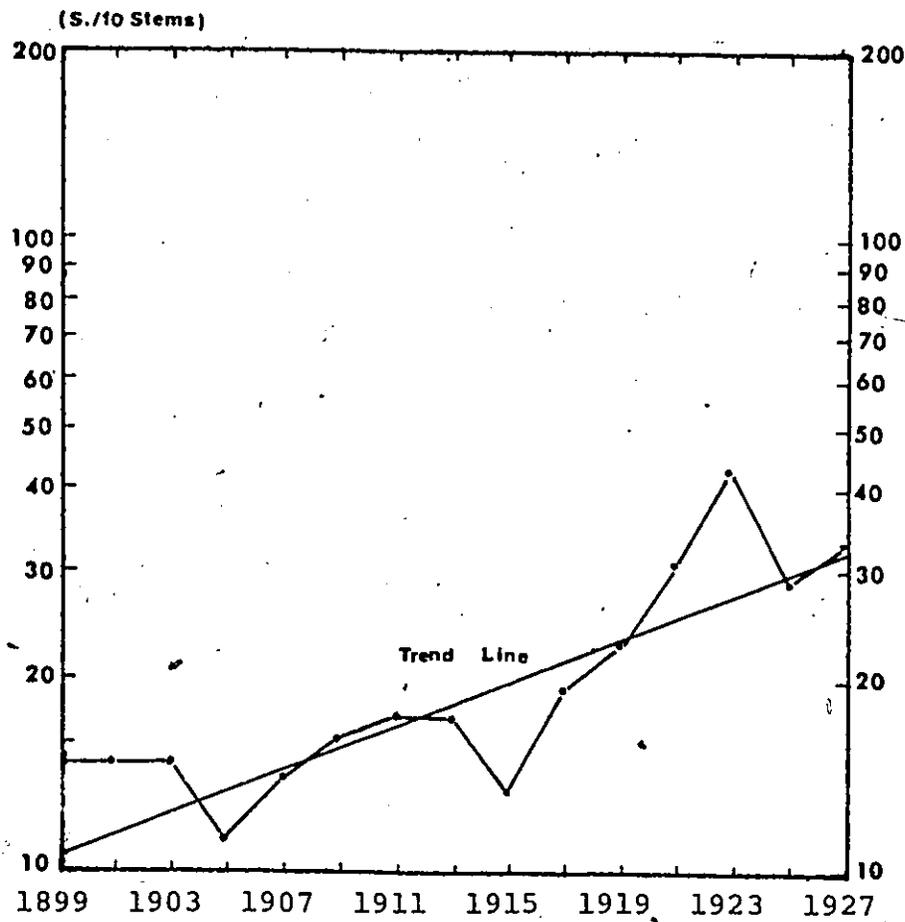
Banana cultivation assumed greater importance in the economy of Jamaica since the late nineteenth century for two reasons. Firstly, the prices for banana were generally favourable and were increasing considerably over the period. In 1899, 10 stems of banana received 15 S. and the prices increased to 43.4 S. per 10 stems in 1923, and the prices continued to be favourable after 1915. The favourable conditions for banana are clearly evident from the time series analysis which showed an increasing trend with 7.6 percent per annum between 1899 - 1927. However, there were a few instances with unfavourable conditions for banana prices, especially before 1915 (Fig. 3.11, Table A 9).

Although the time series analysis for banana exports with 1.3 percent per interval¹ reveals a close relationship with that of prices, some exceptions were also noted in the analysis having periods of increasing exports with declining prices (Fig. 3.12, Table A 10). Between 1902 and 1915 the prices for banana were relatively low, but exports were at higher levels until 1911. This exception is primarily due

1. Banana values are plotted at 2 year intervals. Therefore percentage refer to two year intervals.

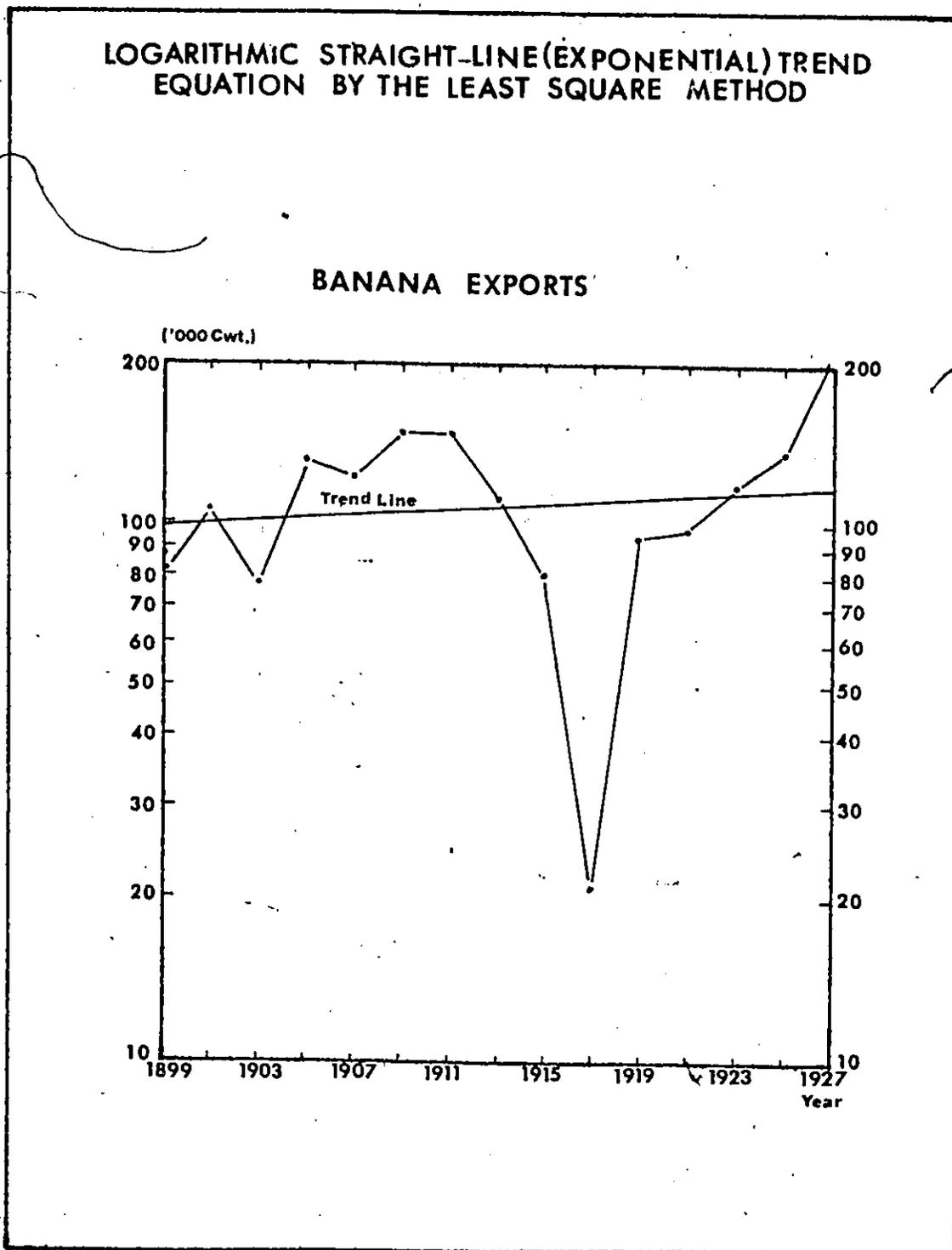
LOGARITHMIC STRAIGHT-LINE (EXPONENTIAL) TREND
EQUATION BY THE LEAST SQUARE METHOD

BANANA PRICES (JAMAICA)



SOURCE: Table A9

Figure 3.11



SOURCE: Table, A 10

Figure 3.12

to the increased production with increased land under cultivation. Although there were minor fluctuations in absolute acreage in banana, the time series analysis, however, showed similar trends especially to that of banana prices, having 7.0 percent per annum increase between 1899 and 1927.

Secondly, the major share of the banana cultivation came from peasants, who were earlier engaged in ground provisions. Since banana created an export demand, it was more profitable for peasants to cultivate banana than ground provisions because there was a steady demand for banana and it could also be grown in small land holdings. Therefore, these two factors along with price conditions changed the pattern of production from ground provisions to cash crops on small holdings owned by peasants. Eisner's (1962) national statistics can be used to show the changing pattern of peasant production during this period. In 1850, out of the total export crops, just over ten percent amounting to 1,113,500 pounds were contributed by small settlers. In 1890, the value of export crops reached 2,028,300 pounds and small settlers contributed 1,798,800 pounds, or about 89 percent of total exports. The increased share of peasants in agricultural exports were primarily obtained from banana and other fruit crops.

Although banana cultivation became the leading agricultural activity late in the nineteenth century, this, however, did not affect all parishes of the country, especially the parish

of Manchester. The parish counted only about 652 acres in banana cultivation even during the 1920's, the period of great success. The only reasonable explanation for this is that there was no well established transportation network to bring more perishable banana into ports for exports. Although banana cultivation failed to account for a considerable share the parish, became a leading producer in citrus, especially grapefruits and oranges. In 1925, the parish accounted for 4,130 grapefruit farms, and 6,033 farms in oranges, out of the country's total of 20,160 and 41,531 in grapefruit and oranges, respectively.

(a) The Effects of Technological Development on Jamaican Economy:

The technological development in developed countries once again changed the demand of exports from Jamaica, after the mid-1920's. This time the changes occurred from agricultural to raw material exports, and the development resulting from these changes was outstanding in parishes which possessed quality materials to satisfy the external demand. In Jamaica, the extraction of bauxite began in late 1920's and accelerated its development subsequently because of the possession of large bauxite reserves in the country. This development not only helped the country's overall development but it also created new centers of attraction in economic growth as well. In 1928, bauxite exports brought

17.3 million pounds¹ worth of foreign exchange and in 1962 this increased to 62.3 million pounds accounting for about 65 percent of the total export of the country. As a result of this increase, the per capita income of the country also rose from 15.1 pounds to 136.7 pounds during the same period (Hall, 1972).

While the bauxite industry affected the country's overall growth, at the regional level, the distribution of bauxite reserves caused a differential growth between parishes. Unfortunately, data on the output of bauxite of each parish is not available to analyse the position of each parish in relation to others. In the absence of these figures, the data on employment is utilized to show the pattern of development of the bauxite industry in each parish. As revealed in Table 6 the parishes of St. Ann, St. Catherine, St. Elizabeth and Manchester are highlighted in the bauxite industry of Jamaica.

The parishes which possess mineable bauxite reserves are undoubtedly responsible for the country's recent economic growth because a greater proportion of foreign exchange earnings are derived from exports of bauxite and aluminum, a by-product of bauxite. The differential economic growth becomes self-explanatory when the wage

1. Pounds refers to Jamaican sterling.

TABLE 6

ESTIMATED PRESENT AND ANTICIPATED PERMANENT EMPLOYMENT IN THE
BAUXITE-ALUMINUM INDUSTRY BASED ON
INSTALLATIONS EXISTING OR UNDER CONSTRUCTION - 1970

PARISH	LOCATION		EMPLOYMENT	
	Excavation	Plant	Excavation	Plant
St. Elizabeth	Near Maggoty	Maggoty	25	500
St. Elizabeth	Near Main	Main	100	700
Manchester	Near Kirkvine	Kirkvine	128	985
Clarendon	Teak Peas Area	Kirkvine	112	500
St. Catherine	Ewarton Area	Ewarton	201	837
St. Ann	Line Tree Edun	Part Rhodes	150	1223
St. Ann	Belmont Excavation Plant			500
Total			716	5245

Source: Dept. of Town Planning: A National Plan for Jamaica, (1970) p. 25.

structure of the labour force is considered. As shown in Table 7, the wage rate in the bauxite-aluminum industry is about five times higher than the agricultural wage rate, and approximately twice greater than that of commerce which is the second highest wage rate. In addition, the increase in wage rate between 1963 and 1964 was higher in mining than in any other activity. The agricultural sector, including crops grown for export markets, did not make any increases between the two dates.

TABLE 7

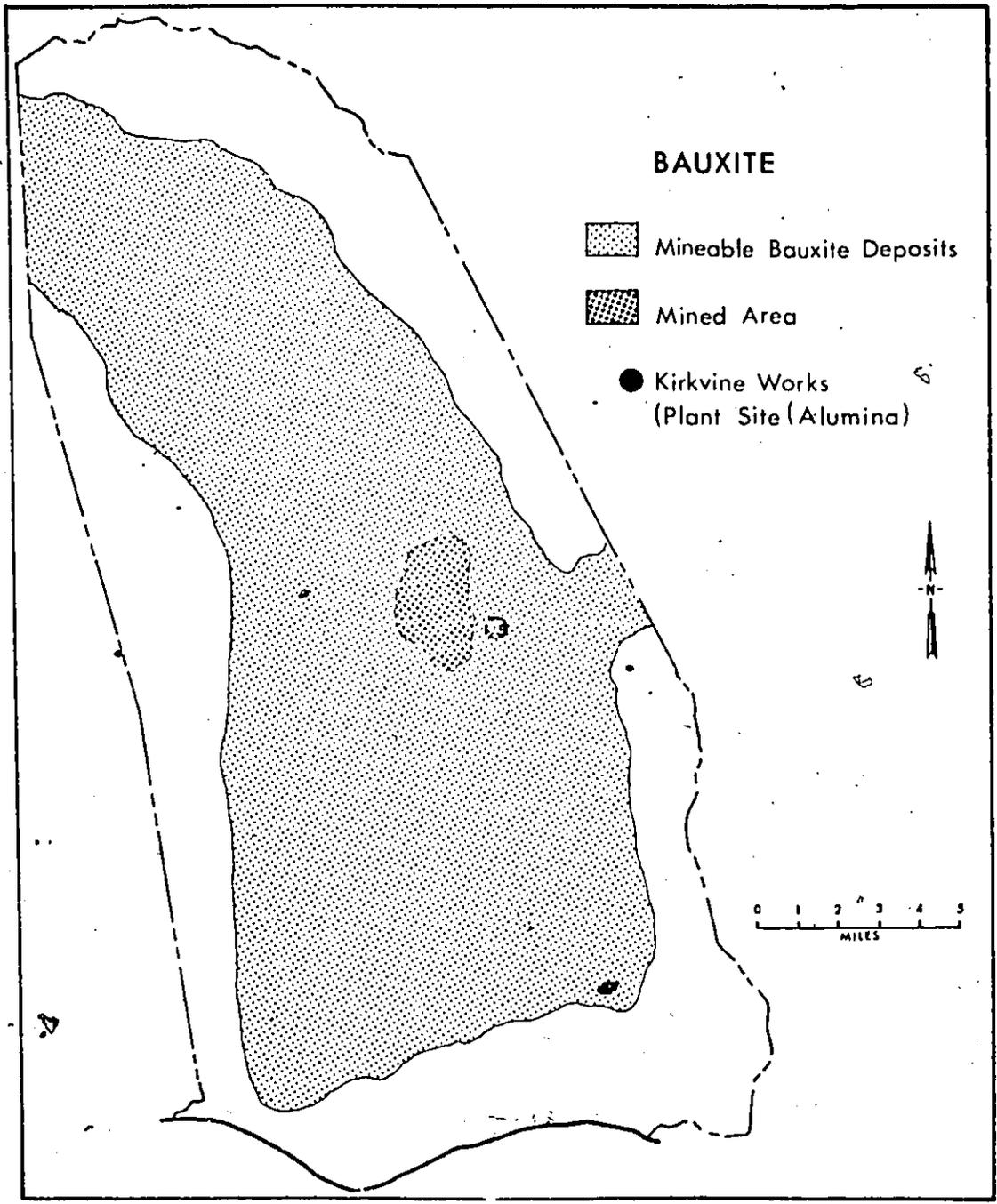
AVERAGE WEEKLY EARNINGS OF JAMAICA BETWEEN 1963
AND 1964 - (JAMAICAN POUNDS)

	1963 March	1964 March
Agriculture	5.7	3.7
Mining	18.3	20.0
Manufacturing	6.6	6.9
Commerce	10.2	11.1
Transport	7.2	7.6

Source: Hall, p. 31.

It is, however, fortunate for Manchester parish that it possessed bauxite at a time when demand for exports from Jamaica was changing from agricultural products to raw materials and its by-products. Therefore, the economic growth of Manchester parish would have accelerated when it entered a new phase of development providing bauxite and aluminum products to external markets, and so developed when compared with other parishes which did not possess bauxite reserves. Although the impact of these developments definitely reflected on the economy of the entire parish, the existence of disparities within the region itself should also be emphasized. In a comparison of the location of the bauxite industry shown in Fig. 3.13 with agricultural-

2



SOURCE: Dept. of Town Planning, 1971

Figure 3.13

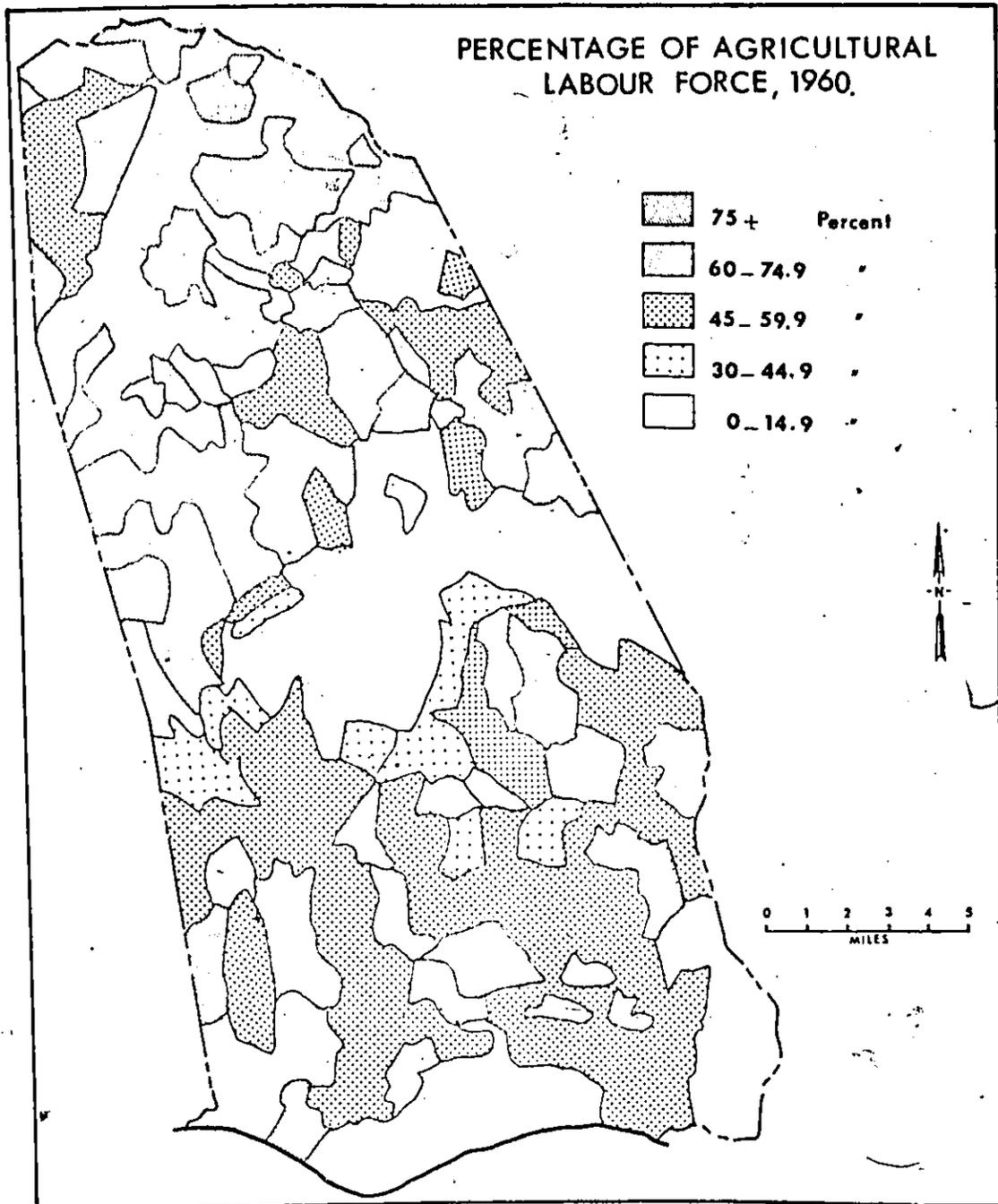
non-agricultural labour distribution (Fig. 3.14 and 3.15), it becomes clearly evident that the non-agricultural labour force¹ concentrated in the middle section coincides with the location of the bauxite industry. As Hall (1972) noted these concentrations create high income pockets, while the rest of the areas possessing low income groups primarily engaged in agriculture, allowed developments of disparities within the region itself.

(iii) THE DEMOGRAPHIC STRUCTURE AND ITS IMPACT ON THE NATIONAL AND REGIONAL PATTERNS OF DEVELOPMENT

The demographic picture of the country is the other important aspect affecting the country's development pattern. While price conditions for sugar and coffee and changing patterns of demand for products from Jamaica were generally responsible for the overall growth of the country, the demographic structure of the country made adjustment to the internal economic growth. The sub-division of land holdings, changing pattern of agricultural activities among peasants, and the urbanization process generally spells out the influence of population growth on the pattern of development in Jamaica.

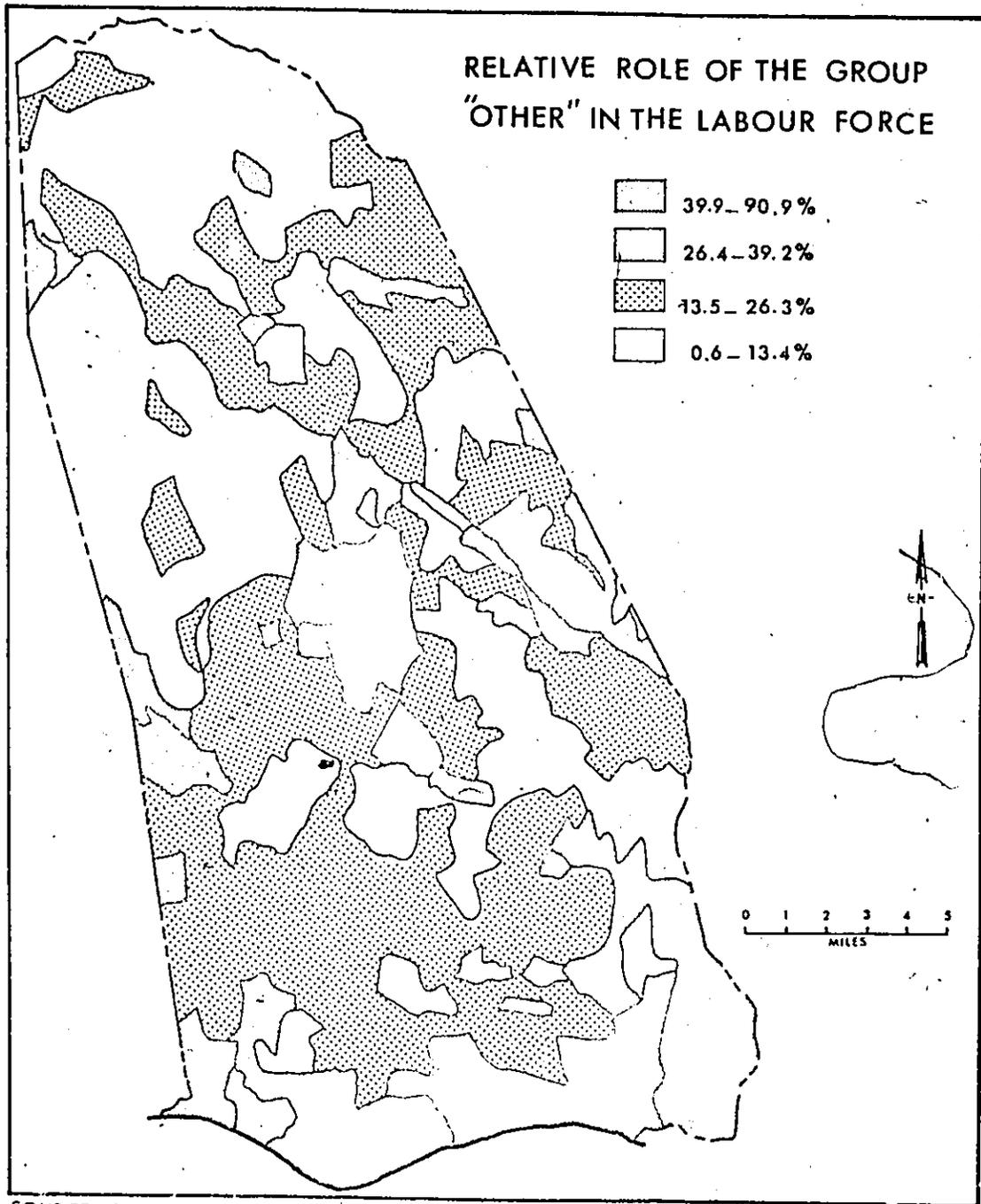
According to estimated records the population of Jamaica

1. Fig. 3.15 indicates few other areas having high concentration in non-agricultural labour force. In south non-agricultural labour force is engaged in fishing industry. This fact is not dealt with in this analysis because of the lack of data. The fishing industry is only now gaining national importance. The other areas can generally be classified as urban centers.



SOURCE: Census of Jamaica, April, 1960

Figure 3.14



SOURCE: Census of Jamaica, April, 1960

Figure 3.15

in 1831 was 312,876 (Roberts, 1957). In 1871, the census of Jamaica recorded a population of 506,000. During the forty year period between 1871 and 1911 the population increased from 506,000 to 831,000, or about sixty percent.

The population growth between 1911 and 1943 recorded a fifty percent increase reaching 1.2 million in 1943.

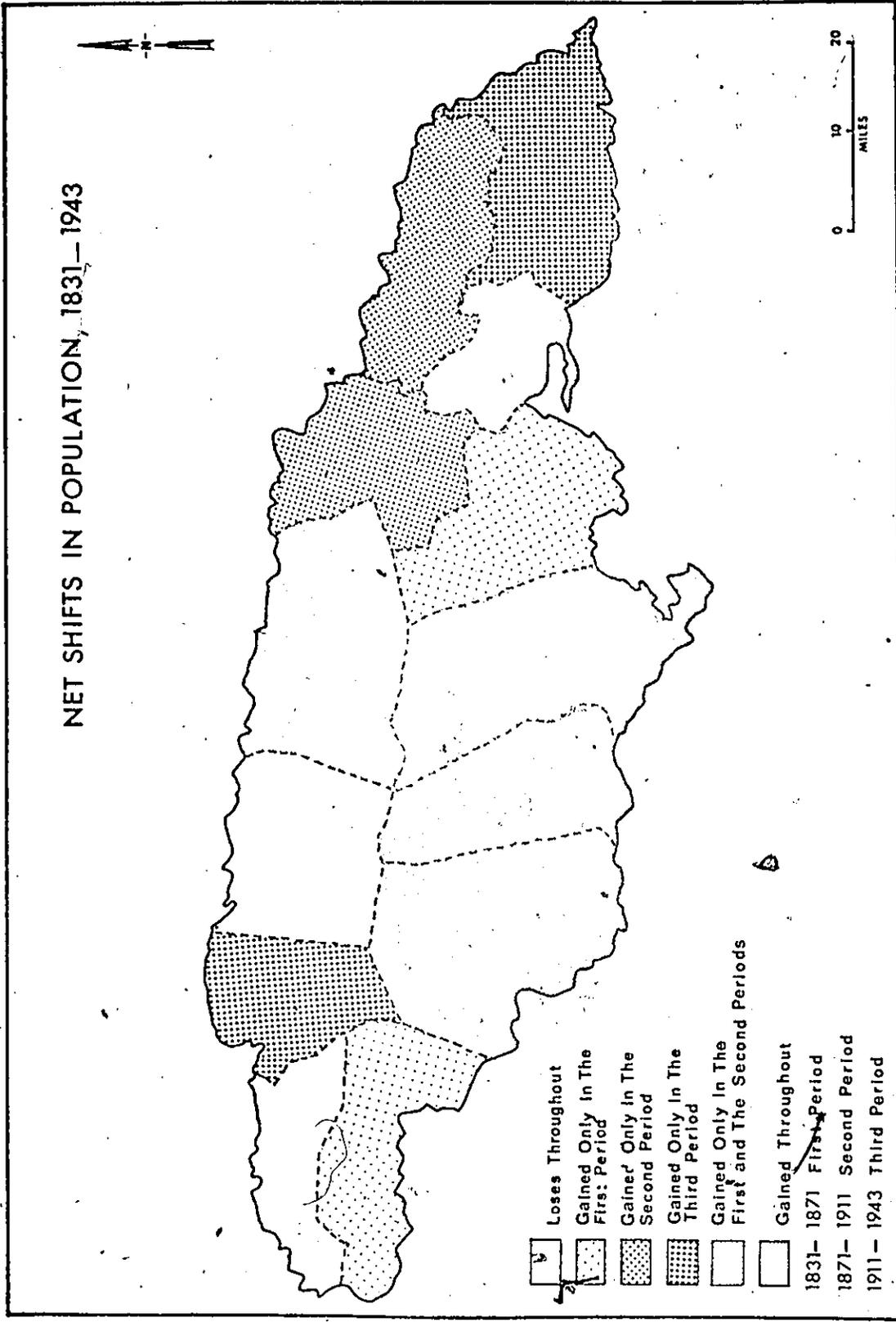
Although a few ethnic groups exist within the Jamaican population, the majority consists of descendents of slaves accounting for more than ninety-five percent of the total population.

The increase in population of Jamaica over the years is basically due to natural increases. Although the immigration of indentured labour continuously took place, since the 1840's the contribution made by them to the total population was insignificant. As noted earlier only about 27,000 indentured labourers, from East Asian countries, permanently settled in the country. Hence, the population growth was only slightly affected by the immigration of indentured labour to the country. The natural increase, that is, the difference between births and deaths, is therefore the major factor responsible for population growth in the country.

At the regional level, internal migration is, however, the more dominant influence on the growth of population. The differential growth between parishes is analyzed here utilizing the shift and share technique to the population

growth between 1831 and 1943. During the period of 1831 and 1871, the parishes of Westmoreland, St. Ann, St. Catherine, St. Elizabeth, St. Andrew, Manchester and Clarendon recorded an increase more than the average increase of the country. Between 1871 and 1911, St. Mary, St. Andrew, Portland, St. Elizabeth, Manchester, St. Ann and Clarendon showed a greater increase than the country as a whole. The increase of population in the parishes of St. James, Clarendon, St. Andrew and St. Thomas was greater during the period between 1911 and 1943. While the population growth of St. Andrew and Clarendon was greater throughout, between 1831 and 1943, in the parish of Trelawny, the growth was lower throughout than the national average (Fig. 3.16, Table B 3).

The differential pattern of population growth between 1831 and 1943 can reasonably be explained through the migration process between regions. Beshers and Elenor (1961) and Dargaw (1965) have emphasized both economic and non-economic aspects as the causes behind population movements between regions. The economic aspects relate to the role of differential economic opportunity between the origin and destination regions, and the economic costs of such movement, while the non-economic factors emphasize various 'push' and 'pull' forces of a socio-cultural nature. In Jamaica too, similar forces operated in adjusting the regional distribution of population growth. Immediately after emancipation, most



SOURCE: Table, B-3

Figure 3.16

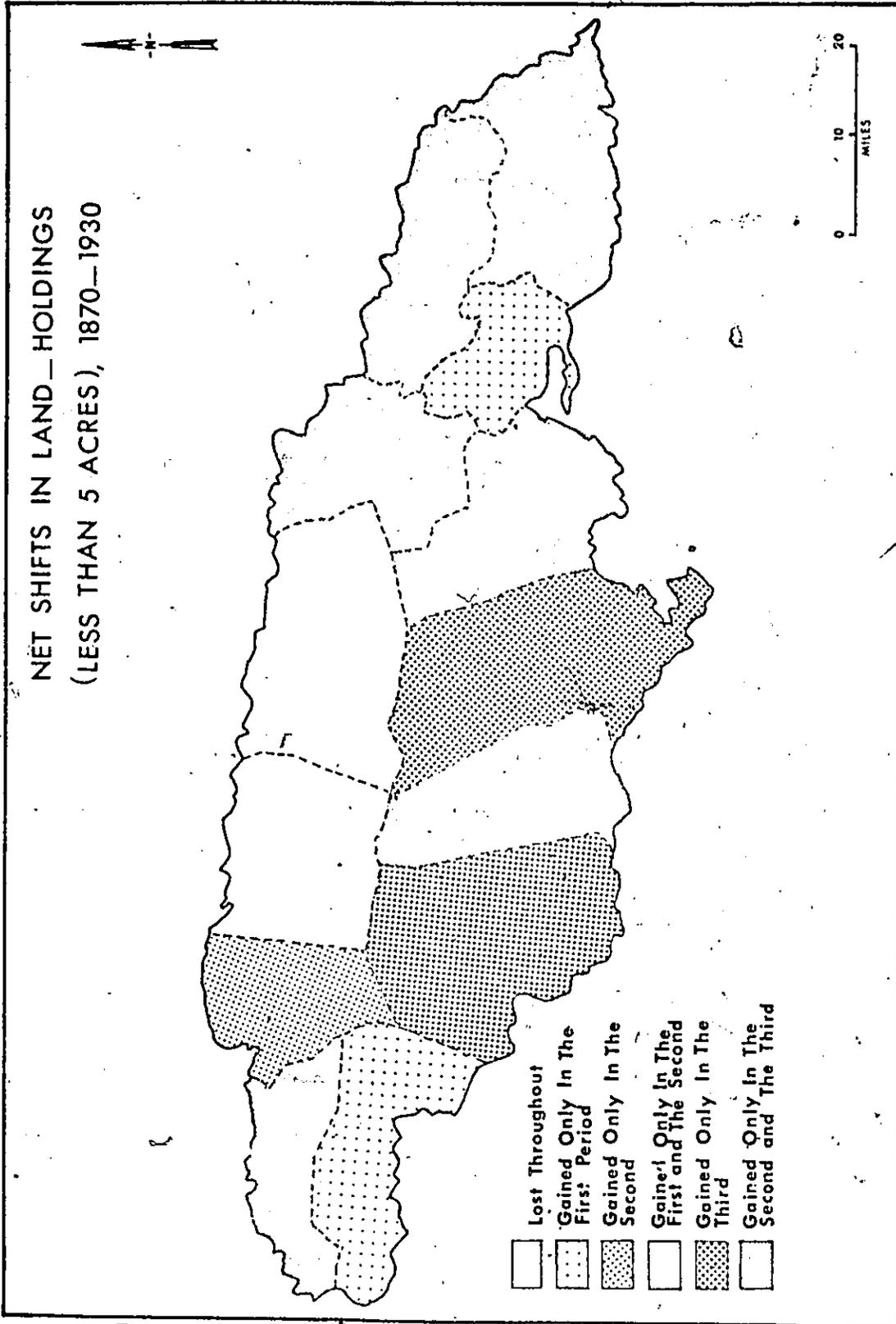
labourers, who were engaged in the plantation sector became independent cultivators. Therefore, their movements were distinctly from the plantation lowlands to the mountain backlands. Norton and Cumper (1966) have noted that their movement of the peasant population was primarily towards the areas of less precipitous hills, slopes and accessible river valleys. These less cultivated areas attracted peasants as their destination because of the availability of lands. The population increase between 1831 and 1871 therefore took place in areas where the slave density was less than the average density for the country as a whole. According to Higman's (1970: 143) calculations, the density of slaves per square mile as at 1832 was 70.9; equivalent to 247.4 per cultivated square mile. Among the parishes that showed a greater increase in population growth between 1831 and 1871, Clarendon, St. Ann and St. Catherine's densities per square mile were less than the average density per cultivated square mile for the country. However, in other parishes, i.e., Manchester, St. Elizabeth, Westmoreland and St. Andrew, the density per cultivated square mile was greater than the average density of the country, but less than the average density of slaves per square mile. This indicates that the concentration of labour was limited to a few areas of the parish, where there were suitable lands for agricultural activities. The rest of the areas of these parishes would have contained large tracts of empty lands.

Similar trends of population movements occurred, until about the early twentieth century, when the movement of population reversed carrying a rapid increase into urbanized areas. As Marshall noted, (1968: 193) although the peasants initially confined their activities to agriculture, they subsequently varied their activities, including trade and business, fishing, and casual estate works. Followed by these changes the population movements also were directed to areas where these activities were possible, mainly to St. Andrews and St. James parishes.

Since, these population movements consisted primarily of peasants, with a motivation of acquiring lands, the impact of such movements are closely reflected in the pattern of sub-division of land-holdings. Although the relationship of population movements with the development of sub-divisions land-holdings are not completely accurate, there is some significant relationship between these two variables. Under the plantation economy, most of the cultivated land-holdings were large in extent, and the holdings under five acres were small in number in almost all parishes. However, along with increased peasant agricultural activities, the development of land holdings showed a reversed pattern with more small land-holdings and less large land-holdings. Between 1870 and 1890 our analysis based on shift and share technique shows that the increase in number of the land-holdings under five acres were greater in the parishes of Westmoreland,

St. Andrew, St. Mary, and St. Catherine while land-holdings less than one acre were greater in number in the parishes of Westmoreland, Manchester, Trelawny, St. Catherine, Clarendon, St. Ann, Portland and St. Thomas. Between 1890 and 1910 the increases in the number of land-holdings under five acres were greater in the parishes of St. James, St. Mary and St. Catherine and the parishes of Manchester, Trelawny, St. James, Clarendon, St. Catherine, St. Andrews and St. Thomas showed a greater increase of land-holdings under one acre in number, in comparison with the national average of sub-divisions of land-holdings. Until 1910, the land subdivisions both under five acres and one acre were closely associated, the pattern of population growth in parishes except in Hanover and Trelawny. The relationship after 1910 is also quite significant between these two variables especially between population growth and land-holdings under one acre in size. During this period land-holdings under five acres had an increase greater than the national pattern in St. Elizabeth and Clarendon, while the number of land-holdings under one acre were increasing in the parishes of Hanover, St. James, Clarendon, St. Catherine, St. Andrew, St. Thomas and Portland in response to population movements to urban areas and the adjacent parishes to urban centers (Fig. 3.17, 3.18 and Table B 4, B 5).

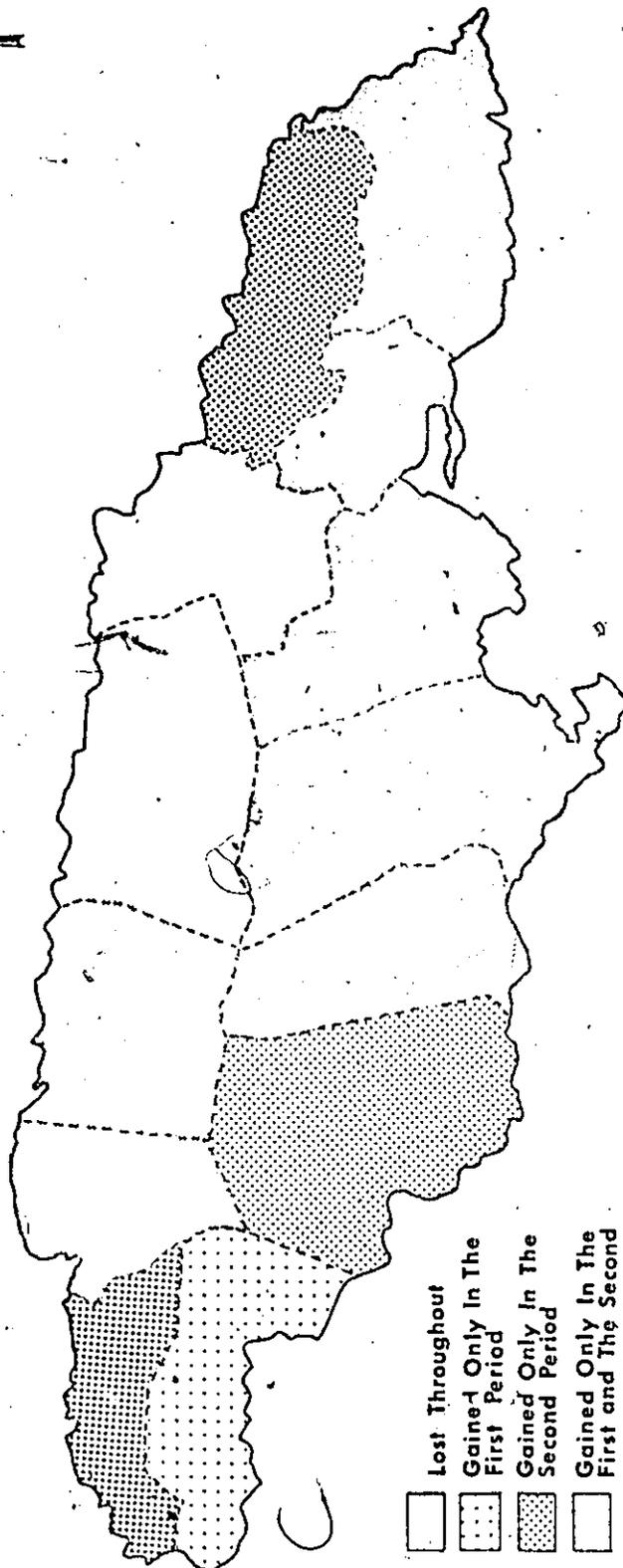
While population growth and population movements between parishes generally affected the subdivision of land-holdings



SOURCE: Table, B.4

Figure 3.17

NET SHIFTS IN LAND-HOLDINGS
(LESS THAN 1 ACRES), 1870-1930



- Lost Throughout
 - ▤ Gained Only In The First Period
 - ▥ Gained Only In The Second Period
 - Gained Only In The First and The Second
 - ▦ Gained Only In The First and The Third
 - Gained Throughout
- 1870 — 90 First Period
 1890 — 10 Second Period
 1910 — 30 Third Period

SOURCE: Table, B-5

Figure 3.18

into smaller and smaller segments, both factors combined affected the system of agricultural activities in the country. Previously, under the plantation economy most of the national output was obtained from the cultivation of coffee and cane which were derived from large land-holdings. However, after emancipation with a growing desire to acquire lands, a sizeable peasantry was established. Initially, they cultivated ground provisions mainly for their subsistence. Subsequently, with the external demands for fruits especially for bananas they switched from ground provisions to cash crops. These changes are clearly reflected in the peasants contribution to the total output of the country. The value of ground provisions increased from 854,000 pounds in 1850 to 2,601,200 pounds in 1890. In 1850, ground provisions contributed 83 percent of the peasants output while in 1890, it had dropped to 74 percent and cash crops increased from 11 percent to twenty-three percent during the same period. These changes clearly indicate an era of new development which Eisner (1962: 216) calls a 'new peasantry' after the late nineteenth century.

In the parish of Manchester too, a reflection of the national pattern of population growth and land subdivisions was observed. Between 1831 and 1871, the parish's population increased from 18,900 persons to 38,900 person or about an increase of one hundred percent. During the same period the nation experienced about a forty-five percent increase.

Manchester parish therefore, experienced a more rapid population growth than the country as a whole. Between 1871 and 1911, the population of the parish increased from 39,000 persons to 65,200 persons or about a 68 percent increase, whilst the population of the country increased by 65 percent. During the period 1911 to 1943 the population increased by 27,000 reaching 92,700 in 1943, an increase of forty percent, while the population of the country increased by about fifty percent.

The increased population growth, following the national pattern, caused land-holdings to be subdivided into smaller segments (Table B 6). In 1880, there were 5,296 land-holdings in the parish of Manchester and by 1890 these increased to 8,268 holdings. The increase became much more rapid after 1900, reaching 11,820 in 1903 and 22,971 in 1943. The number of land-holdings less than five acres in size doubled during this period and the pressure on land is most clearly evident in the number of them that were less than one acre in size. As Innes (1973) noted that subdivision in minute holdings became much more common, though many of them were not much more than house spots. By 1943, the parish of Manchester had 3,840 land-holdings less than one acre each, covering 1,251 acres in total. The large number of small land-holdings less than one acre in the parish of Manchester, relative to the national pattern is due to the localization of accessible land areas in less precipitous hills and river valleys.

The analysis above showing the causes of the pattern of development in Jamaica and Manchester parish does not show any relationship with labour shortages at any stage of their developments after emancipation. The analysis can also be extended to show the influence of price conditions and increasing demand as main factors affecting development prior to emancipation. As an example, during the period of the fluctuations of coffee prices, the volume of exports from Jamaica was directly influenced, and this in turn affected the spatial distribution of the cultivation of coffee. On the other hand plantation agriculture also emerged as a result of the favourable situation for sugar and coffee in the world market. It is therefore unacceptable that the labour shortages had any influence on the pattern of development of Jamaica or in Manchester parish. On the other hand the labourers were in the country throughout, but their participation was limited in the cultivation of cash crops to the periods when the prices were favourable. Further more, labourers had little influence during the period of export changes from agricultural commodities to raw materials, but the development pattern was affected only by demand and the resource endowment of given regions.

CHAPTER 4

INTERPRETATION OF THE FINDINGS OF THE ANALYSIS

Differential economic growth is an integral characteristic of both agriculturally and industrially dominant economies. Because demand and supply conditions are subject to change due to various factors, regions have differing advantages for production and this causes the different nature of economic growth. As a result of these conditions, periods of faster and slower growth of economies can be expected through time, and in the same manner lagging and growing regions may be expected at any one point of time.

In Jamaica, the present analysis reveals that the differential economic growth through time and between regions resulted from three major factors. These are: (a) the price conditions for agricultural commodities in the world market and its effect on the economy of Jamaica; (b) the changes in the supply of exports, associated with changes in demand from importing countries; and (c) the demographic structure and its impact on the economy of the country. In most instances these three factors are highly related and it is difficult to separate their respective influence. However, present analysis reveals that these factors, in some instances, acted differently in economic growth, showing different pattern of development between the national and regional level. At the national level, during the periods of increased demand for Jamaican exports, the economic growth

was higher, while at regional level, the very same forces created a stronger differentiation of leading and lagging regions.

A As Jamaica and other Caribbean islands virtually held the monopoly of supplying sugar and coffee to foreign markets, the economic growth during this period, especially before emancipation, was significantly higher. After emancipation, however, with declining prices for coffee and sugar there emerged peasant agriculture to a more significant position lowering the importance of export commodities in the economy of Jamaica. The overall economic growth during this period was however, lower because of the low income derived from exports of cash crops due to unfavourable price conditions on the world market. On the other hand national pattern of development were more even in all parts of the country during this period. These national developments, such as cultivation of ground provisions, and subdivisions of land-holdings followed by rapid population growth, were generally seen in almost all parishes. Under the plantation economy settlements too like the pattern of cultivation were concentrated into few areas. However, with the development of a peasantry both became more dispersed. One important aspect of peasant development is that once established this pattern underlay all subsequent ones. Thus even in subsequent years the economy was adjusted to suit the structure developed during this period. When exports

recovered with new crops like banana after the late nineteenth century, they were however grown primarily in small land-holdings. These cultivations at present are grown under plantation agricultural systems in some parts of the world especially in west African countries. However, in Jamaica cultivation under plantation system was not possible because subdivisions of land-holdings came earlier than the crop. In addition, because of these changes the cultivation became primarily a peasant activity as against a plantation economy before.

The overall economic growth again accelerated when bauxite became the major export product, contributing a larger share to the exports from Jamaica after 1920. However, the peasants share in this activity was quite limited, because of the nature of the industry, which required substantial capital and improved techniques. The activities among peasants were slightly changed from the cultivation of ground provisions or cash crops, because of the lack of opportunities for them to be involved in the bauxite industry. Economic growth during this period was however, reflected in the other sector of the economy, especially in the process of urbanization, the emergence of the service and commerce activities, the transportation and communication sectors and the development of ports. It is therefore seen that Jamaican national development pattern varied through time showing faster and slower growth in

different periods. The periods of faster growth were however, associated with higher export demands for Jamaican export commodities.

While at national level, economic growth varied over time due to the price condition of sugar and coffee, the changing supply of export commodities and the demographic structure of the country, the same forces affected a differential growth within the nation showing disparities between regions through time. The impact of these forces therefore, has both a temporal and spatial dimension. This situation leads to our second hypothesis of the analysis which is stated as:

The regional differences in growth results from the ability to produce export commodities, with relatively high demand, which in turn results from the regional differences in resource endowment. At the same time the developments of faster and slower growth of regions are related to the changes in demand of external commodities.

In Jamaica, major economic activities, such as agriculture and mining were largely based on the natural resource endowment of the country. Therefore, regional differences are associated with the differences of natural resource endowment between regions, the better endowed regions then growing relatively rapidly. On the other hand when an economic activity declines nationally, it generally reduces its production and finally concentrates into areas which possess the most suitable conditions, accelerating the

growth only in this particular region.

During the period when sugar production became the predominant crop in Jamaica economic growth in the parish of Manchester was relatively low, because the parish failed to accommodate the leading crop due to a lack of suitable physical characteristics. When coffee became the second leading crop in the country, the parish rose to a high position in economic growth by contributing a substantial share of the total coffee production of the country. During these periods, the parishes which were growing sugar and coffee experienced a more rapid growth than other parishes. These conditions in the country prevailed until the early nineteenth century when they were replaced by a more diversified economy.

The period which began in the early twentieth century, was not favourable for exports from Jamaica, and similar trends were observed in the parish of Manchester as well. Sugar and coffee cultivation failed to recover to its original position, and this resulted in a concentration of coffee and sugar plantations on to those areas growing a good quality product. Following the national trends, Manchester parish also lost most of its coffee lands to St. Andrew. the area which cultivated the best quality coffee.

However, when the demand for citrus increased in the world market, the parish again held an advantageous position primarily because of its natural resource conditions.

However, the cultivation of banana did not make significant changes in the economic structure of Jamaica, although many other parishes adjusted their land use pattern to accommodate banana, the leading crop during this period. The demand for bauxite products since the early twentieth century, on the other hand, had greater impacts on the development pattern in the parish of Manchester, which possessed large bauxite reserves. This development resulted in the decline of agricultural activities especially in areas where there were mineable bauxite reserves.

(a) Conclusion:

As discussed earlier throughout its economic history Jamaica has displayed leading and lagging regions. Regions which were dominant in economic activities declined over time along with national declines. At the same time some regions reached higher rates of economic growth along with increases of demand for export commodities. One important aspect observed in this study is that the regions in Jamaica did not follow a sequential development pattern. The principle argument against sequential development by Hirshman (1970) was that regional economic growth in the United States did not follow the stages introduced by Hoover and Fisher. However, he suggested that these developments may be observed in developing countries and therefore the theory might have some applicability in

such regions. The analysis on the economic growth as a whole of Jamaica or that of Manchester parish in particular does not provide evidence for such stages in development.

One of the basic points that emerge from this analysis is that regional development takes place in a national framework and depends very strongly upon forces operating at the national level. Over time, it is observed that the demand for different products was not uniform. Likewise on the supply side, technological changes affected regions in different ways according to their given natural resource endowment, agreeing with the principles laid down in export base theory. In addition the analysis reveals that differences in regional growth are not uncommon even in an agricultural setting.

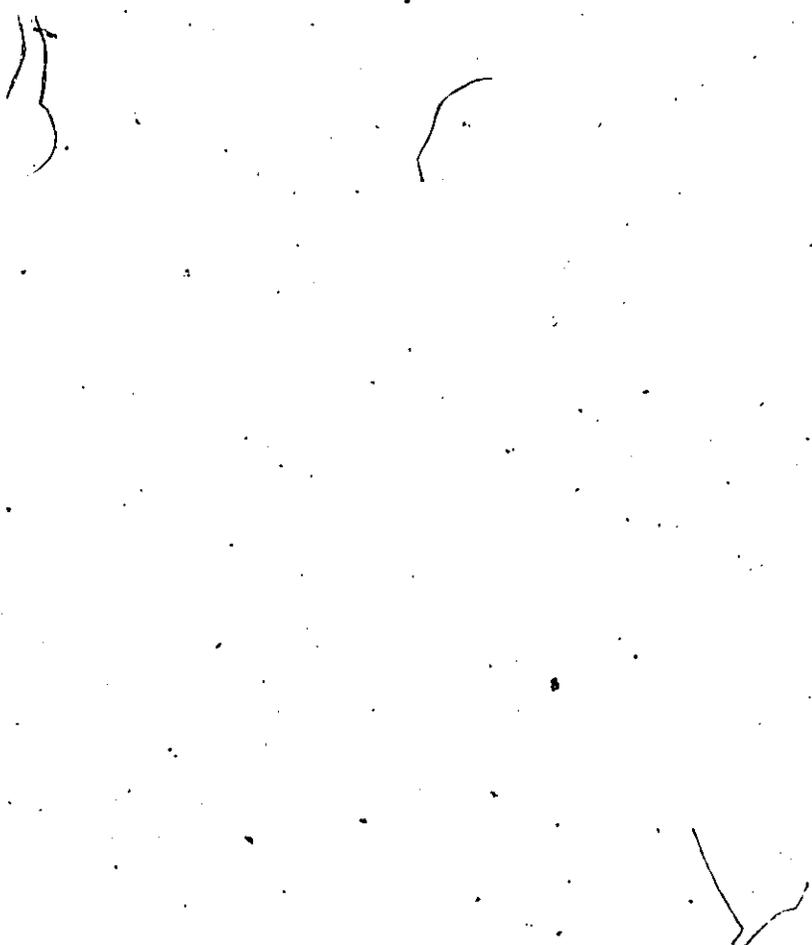
To understand economic growth within a particular region therefore, requires analysis of both the demand and supply sides of the situation. As these conditions change, regions do not share equally in the impact of change-initiating factors. It is true that these situations were observed before in many economies. However, few studies have attempted to examine corresponding patterns of regional development in developing countries (Lewis, 1970). As regards this point, this study has suggested some interesting conclusions. First,

it was found that the role of natural resources was very dominant in influencing the composition of regions at different points of time. It is shown for example, how the given physical conditions of Manchester parish prevented it on many occasions from sharing in the cultivation of crops that became the basis of national prosperity. Similarly, because of its given resource endowment of bauxite, the parish is today relatively prosperous and, given a full suite of industrial linkage effects, this will place it in a position to be even more prosperous in future years.

However, important as are the physical resources, they must not distract us from the fact that there were more basic and fundamental forces operating to effect the ensuing patterns of growth. As White (1965) argued, natural resources possess little deterministic power. Their role in explaining particular lines of development is merely permissive and one must look more to factors of demand and technological developments that made their utilization realizable for an ultimate explanation.

A second point of great importance is the fact that the persuasive influence in regional development was not conditions native to the country itself but factors of demand and technology outside the nation. This is very important for policy implementations aimed at adjusting relative regional positions. Developed

countries today are facing numerous problems, social, economic and political, because of marked regional disparities in income levels, participation rates, employment, etc. If developing countries are to attempt to steer courses that would at least initiate the trends for the development of backward regions, they must first be able to identify the basic causes and factors responsible for creating and perpetuating these disparities.



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TABLE A 1
 TIME SERIES TRENDS (SUGAR PRICES)
 FOUR-YEAR TIME INTERVAL

YEAR	PRICES (s./cwt)	Yc VALUE
1869	24.0	19.3
1873	25.5	18.8
1877	24.5	18.2
1881	21.2	17.7
1885	13.5	17.2
1889	16.0	16.6
1893	14.2	16.2
1897	9.2	15.7
1901	9.2	15.2
1905	11.0	14.8
1909	10.2	14.3
1913	9.5	13.9
1917	31.5	13.5
1921	19.5	13.1
1925	16.2	12.7

Log b = -0.013

Rate of decrease = -2.9% per interval

TABLE A 2
 TIME SERIES TRENDS (SUGAR EXPORTS)
 FOUR-YEAR TIME INTERVAL

YEAR	EXPORTS (in '000 cwt)	Yc VALUE
1869	49.2	40.9
1873	48.3	40.3
1877	52.0	39.7
1881	35.8	39.1
1885	50.0	38.5
1889	32.3	38.0
1893	41.1	37.4
1897	28.4	36.9
1901	32.2	36.3
1905	23.9	35.8
1909	19.8	35.3
1913	9.9	34.7
1917	64.0	34.2
1921	53.7	33.7
1925	75.4	33.2

Log b = -0.006
 Rate of decrease = 1.4% per interval

TABLE A 3
 TIME SERIES TRENDS (SUGAR ACREAGE)
 FOUR-YEAR TIME INTERVAL

YEAR	ACREAGE (in '000)	Yc VALUE
1869	47.4	39.5
1873	48.5	38.9
1877	46.2	38.4
1881	43.2	37.9
1885	40.5	37.3
1889	32.5	36.8
1893	31.5	36.3
1897	26.7	35.8
1901	25.2	35.3
1905	23.8	34.8
1909	28.2	34.3
1913	31.7	33.8
1917	33.4	33.4
1921	53.7	32.9
1925	46.7	32.5

Log b = -0.006

Rate of decrease = 1.3% per interval

TABLE A 4
 TIME SERIES TRENDS (COFFEE PRICES)
 FOUR-YEAR TIME INTERVAL

YEAR	PRICES (s./cwt)	Yc VALUE
1869	71	76.7
1873	100	78.3
1877	102	80.3
1881	87	81.7
1885	60	83.4
1889	95	85.2
1893	103	87.0
1897	95	88.8
1901	70	90.7
1907	75	92.6
1909	70	94.6
1913	87	96.6
1917	95	98.6
1921	121	100.7
1925	154	102.8

Log b = 0.009

Rate of increase = 2.1% per interval

TABLE A 5
 TIME SERIES TRENDS (COFFEE EXPORTS)
 FOUR-YEAR TIME INTERVAL

YEAR	EXPORTS (in '000 cwt)	Yc VALUE
1869	49	73.8
1873	64	74.0
1877	85	74.3
1881	88	74.5
1885	81	74.8
1889	85	75.0
1893	88	75.3
1897	85	75.5
1901	103	75.8
1905	81	76.0
1909	74	76.3
1913	58	76.5
1917	51	76.8
1921	65	77.0
1925	104	77.3

Log b = 0.001
 Rate of increase = 0.3% per interval

TABLE A 6
 TIME SERIES TRENDS (COFFEE ACREAGE)
 FOUR-YEAR TIME INTERVAL

YEAR	ACREAGE (in '000 acres)	Yc VALUE
1869	16.6	19.8
1873	19.3	20.0
1877	22.9	20.2
1881	19.8	20.4
1885	19.6	20.5
1889	19.8	20.7
1893	22.4	20.9
1897	22.3	21.1
1901	24.2	21.3
1905	24.4	21.4
1909	25.0	21.6
1913	22.2	21.8
1917	20.4	22.0
1921	22.2	22.2
1925	17.8	22.4

Log b = 0.004
 Rate of increase = 0.8% per interval

TABLE A 7

TIME SERIES TRENDS (MANCHESTER PARISH COFFEE ACREAGE)
AT A FOUR-YEAR TIME INTERVAL

YEAR	ACREAGE (in hundred acres)	Yc VALUE
1869	38.2	65.8
1873	39.0	62.1
1877	31.7	58.4
1881	69.2	52.3
1885	34.9	49.4
1889	41.0	46.5
1893	62.8	43.8
1897	36.3	39.9
1901	55.5	35.8
1905	62.7	31.9
1909	34.3	27.8
1913	44.9	23.6
1917	49.6	19.9
1921	43.4	16.2
1925	18.6	13.1

Log b = -0.017

Rate of decrease = 5.3% per interval

TABLE A 8
 TIME SERIES TRENDS. (BANANA ACREAGE)
 TWO-YEAR TIME INTERVAL

YEAR	ACREAGE (in '000)	Yc VALUE
1899	25.1	36.3
1901	30.1	38.8
1903	37.5	41.6
1905	44.3	44.5
1907	62.6	47.7
1909	59.7	51.1
1911	79.2	54.7
1913	81.0	58.6
1915	85.8	62.7
1917	78.8	67.2
1919	60.5	71.9
1921	55.3	77.0
1923	68.8	82.5
1925	79.1	88.4
1927	89.7	94.6

Log b = 0.030

Rate of increase = 7.0% per interval

TABLE A 9
 TIME SERIES TRENDS (BANANA PRICES)
 TWO-YEAR TIME INTERVAL

YEAR	PRICES (s./10 stems)	Yc VALUE
1899	15.0	11.7
1901	15.0	12.6
1903	15.0	13.6
1905	11.3	14.6
1907	14.9	15.7
1909	16.8	16.9
1911	17.7	18.2
1913	17.0	19.6
1915	14.7	21.1
1917	19.0	22.7
1919	23.6	24.5
1921	30.5	26.3
1923	43.4	28.3
1925	29.2	30.5
1927	34.6	32.8

Log b = 0.032
 Rate of Increase = 7.6% per interval

TABLE A 10
 TIME SERIES TRENDS (BANANA EXPORTS)
 TWO-YEAR TIME INTERVAL

YEAR	EXPORTS (in '000 cwt)	Yc VALUE
1899	80.4	98.8
1901	110.0	100.1
1903	78.0	101.4
1905	149.8	102.8
1907	139.4	104.1
1909	167.1	105.5
1911	164.9	106.9
1913	115.9	108.3
1915	81.5	109.7
1917	23.9	111.1
1919	96.7	112.6
1921	99.5	114.0
1923	124.5	115.5
1925	150.1	117.0
1927	211.5	118.6

$\text{Log } b = 0.006$

Rate of increase = 1.3% per interval

TABLE B 1

COMPUTED DATA FOR GROUND PROVISION DISTRIBUTION: 1870 - 1930
(SHIFT AND SHARE TECHNIQUE)

LOCATION	1870 - 1890	1890 - 1910	1910 - 1930
St. Andrew	- 9.2	- 0.8	- 2.6
St. James	-11.4	28.9	2.7
St. Catherine	15.6	-21.5	-30.9
Clarendon	31.9	7.2	55.6
Westmoreland	- 3.9	- 6.5	8.5
St. Thomas	- 6.3	-33.0	- 0.7
Portland	-14.4	22.7	-10.1
St. Mary	-21.2	-24.1	- 8.0
St. Ann	26.2	31.2	-32.3
Trelawny	- 8.0	- 1.4	2.1
Hanover	-18.2	- 4.0	8.5
Manchester	26.2	- 8.6	-15.4
St. Elizabeth	- 7.4	10.0	22.6

TABLE B 2

COMPUTED DATA FOR MANCHESTER CROP DISTRIBUTION PATTERN
1875 - 1930, (SHIFT AND SHARE TECHNIQUE)

	1875 - 1905	1905 - 1915	1915 - 1930
COFFEE	-43.4	-48.7	-27.3
PROVISIONS	8.2	-51.3	-40.1
PASTURE	88.1	83.3	95.3
GRASS	-56.6	8.2	-32.6
OTHER	3.7	8.5	4.7

TABLE B 3

COMPUTED DATA FOR POPULATION ANALYSIS 1831 - 1943
(SHIFT AND SHARE TECHNIQUE)

LOCATION	1831 - 1871	1871 - 1911	1911 - 1943
Kingston	-25.1	8.3	24.0
St. Andrew	1.1	1.8	55.9
St. James	-10.1	-16.9	2.2
St. Catherine	8.9	-1.6	-11.3
Clarendon	9.1	9.3	15.3
Westmorland	19.3	-1.4	-9.9
St. Thomas	-13.8	-36.1	2.5
Portland	-16.0	19.5	-14.4
St. Mary	-4.5	32.5	-19.9
St. Ann	0.2	14.4	-10.1
Trelawny	-18.3	-29.5	-6.0
Hanover	-12.2	-14.5	-4.4
Manchester	21.5	3.2	-4.8
St. Elizabeth	39.9	11.0	-19.0

TABLE B 4
 SUBDIVISION OF LAND HOLDINGS: LESS THAN FIVE ACRES
 (SHIFT AND SHARE TECHNIQUE)

LOCATION	1880 - 1890	1890 - 1910	1910 - 1943
St. Andrew	4.6	- 1.2	- 2.7
St. James	- 9.3	2.6	-11.5
St. Catherine	37.6	16.1	- 7.3
Clarendon	- 5.3	-26.7	41.2
Westmoreland	11.5	-33.3	-22.0
St. Thomas	-37.4	16.4	2.9
Portland	- 3.6	13.0	16.1
St. Mary	35.0	24.0	- 6.9
St. Ann	- 8.0	-20.9	- 4.7
Trelawny	-26.7	- 8.9	- 6.4
Hanover	11.3	17.7	-38.6
Manchester	0.0	10.2	2.9
St. Elizabeth	- 9.7	- 9.0	37.0

TABLE B 5

SUBDIVISION OF LAND HOLDINGS: LESS THAN ONE ACRE
1870 - 1930, (SHIFT AND SHARE TECHNIQUE)

LOCATION	1870 - 1890	1890 - 1910	1910 - 1930
St. Andrew	16.0	20.1	50.7
St. James	4.0	11.7	15.7
St. Catherine	11.0	13.7	3.1
Clarendon	9.7	16.0	9.1
Westmoreland	8.7	-18.1	- 2.0
St. Thomas	13.1	11.0	9.3
Portland	11.5	- 5.0	6.3
St. Mary	-49.1	-40.9	-18.7
St. Ann	-41.2	-28.6	-40.6
Trelawny	9.6	10.1	- 5.3
Hanover	8.1	- 6.4	5.1
Manchester	7.9	11.7	- 9.7
St. Elizabeth	- 9.7	7.9	-23.7

TABLE B 6
 COMPUTED DATA FOR LAND HOLDINGS: MANCHESTER PARISH
 1880 - 1943, (SHIFT AND SHARE TECHNIQUE)

	1880 - 1890	1890 - 1905	1905 - 1943
Less than 5 acres	100.0	100.0	-100.0
5 - 10	- 41.2	- 34.2	64.2
10 - 20	- 39.8	- 22.3	31.0
20 - 50	- 7.0	- 21.3	0.7
50 - 100	- 0.4	- 6.3	2.0
100 - 200	- 2.4	- 6.2	0.8
200 - 500	- 2.4	- 5.9	0.7
500 - 800	- 4.1	- 2.0	0.4
800 - 1,000	- 2.1	- 0.9	0.2
over 1,000	- 0.6	- 0.9	0.0

APPENDIX-A

Method of computation of Logarithmic Straight-line (exponential) trend line by the least square method.

An exponential straight line trend shows the increase of Y values of a time series at a constant rate. The straight line method is useful to show the rate of change over different periods or between different variables. Conclusion may be reached by comparing the b values of individual groups of data.

The exponential equation which is used in describing the trend is written:

(i) $Y_c = ab^x$

(ii) The log values of both sides of the equation is then obtained.

$$\log Y_c = \log a + (\log b)x$$

Where x = unit: (1 year)

(iii) Calculate the log a;

$$\log a = \frac{\sum(\log y)}{n}$$

Where y is the actual observation and n is the number of observations.

(iv) Calculate the log b

$$\log b = \frac{\sum(X \cdot \log y)}{\sum X^2}$$

$$\log Y_c = \log a + (\log b)x$$

(v) Obtain the antilog of Y_c

(vi) Rate of increase or decrease (r) is the difference between b and 1 (1 = 100% or the base); when b is larger than 1, the difference is an increase rate or (r = b-1); when b is smaller than 1, it is a decrease rate or (r = 1-b).

Time series analysis has been applied using two year and four year time intervals.

APPENDIX-B

Method of Computation of the Shift and Share Technique.

- (i)
- Actual Increase or decrease between two different periods. (E)

$$E = E^2 - E^1$$

Where E^1 = Variable under consideration for the whole country (or region) at the initial period.

E^2 = The same in the terminal period.

- (ii)
- Increase or Decrease as a Percentage. (EP)

$$EP = E/E^1 \cdot 100$$

- (iii)
- Actual Increase or Decrease for the Region. (E_j)

$$E_j = E_j^2 - E_j^1$$

- (iv)
- Expected Increase or Decrease for the Region. (EXP)

$$EXP = E_j^1 \cdot EP$$

- (v)
- Regions Upward or Downward shift. (RUD)

$$RUD = E_j^1 - EXP$$

- (vi)
- Total Upward or Downward Shift. (TRUD)

$$TRUD = RUD_1 + RUD_2 + \dots + RUD_n$$

- (vii)
- Regions Shift as a Percentage of Total Net Shift. (INC(r))

$$INC(r) = RUD/TRUD \cdot 100$$

The upward shift is the excess of increase of the region as a percentage of the total excess above the expected increase. The same method applies to regions which shows increase less than the expected increase. (Downward Shift).

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